Course Libraries 2016/17

Courses G - M

Course	Pages
Gas Energy	3 – 15
Geographical Information Management	16 – 26
Geospatial Intelligence	27 – 41
Global Product Development and Management	42 – 54
Guided Weapon Systems	55 – 71
Information Capability Management	72 – 83
Innovation and Creativity in Industry	84 - 96
Integrated Landscape Ecology	97 – 108
International Defence and Security	109 – 122
Investment Management	123 – 134
Knowledge Management for Innovation	135 – 147
Land Reclamation and Restoration	148 – 160
Leadership and Conflict Studies	161 – 169
Logistics and Supply Chain Management	170 – 182
Logistics and Supply Chain Management (Exec)	183 – 192
Management	193 – 206

COURSE SPECIFICATION

Cranfield University: Course Specifications

Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.

COURSE TITLE:	MSc in Gas Energy

Date of first publication/latest revision:	22/07/16

1. What is the course?

Course information

Course Title	Gas Energy
Course code	MSGENFTC, MSGENPTC, PDGENFTC, PDGENPTC, PCGENFTC, PCGENPTC
Academic Year	2016/17
Valid entry routes	MSc, PgDip, PgCert
Exit routes	MSc, PgDip, PgCert
Mode of delivery	Full-time, Part-time
Location of Study	Cranfield
School(s)	School of Water, Energy & Environment
Theme	Energy & Power
Centre	Centre for Offshore Renewable Energy Engineering
Course Director	Prof Vasilije Manovic
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	Standard University entry requirements
UK Qualifications Framework Level	QAA FHEQ Level 7 (Masters)
Benchmark Statement(s)	N/A
Registration Period(s) available	Full-time MSc - one year, Part-time MSc - up to three years, Full-time PgCert - one year, Part-time PgCert - two years, Full-time PgDip - one year, Part-time PgDip - two years
Course Start Month(s)	Full-time: October Part-time: throughout the year

1

Institutions delivering the course

This course is delivered by Centre for Offshore Renewable Energy Engineering where the research interests include specialist research in fossil fuel power generation, energy conversion technologies, gas cleaning, CO_2 capture and transport, wet and dry renewable energy, biomass conversion and energy from waste, materials for energy systems, amenity impacts, contaminated land landfill science, life cycle engineering, policy appraisal and implementation, sustainable resource recovery, process simulation, pipeline engineering, offshore materials engineering, subsea engineering, risk management and reliability engineering

Cranfield University interacts with the following institutions and in the following ways:

The course is part of the suite of the MSc courses currently provided within IERT. Current members of the Industrial Advisory Panel (chosen from among E.ON, EDF, RWE npower, BP, Environ, WRG, Shanks, CIWEM, CIWH, Doosan Energy Systems, Alstom Power, Siemens, Rolls Royce, Caterpillar, BOC/Linde, Air Products, Shell, AMEC, Mott MacDonald) will also help in steering and updating the course content.

Cranfield University also actively seeks sponsorship and support for individual thesis projects from the energy sector employers to provide professional experience and development opportunities for students through group study project and thesis sponsorships.

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is not accredited by any external bodies.*

2. **What are the aims of the course?**

Cranfield University offers this course in order to:

- Prepare science and technology graduates to meet the increasing demand of industry, consultancies and the public sector for scientists in the energy production and demand management sectors to deal with a future in which the majority of the UK's fossil fuel energy mix will be provided by gas, with an increasing emphasis on unconventional natural gas sources
- Critically apply scientific, technical and engineering principles, and provide an assessment of the economic consequences and risks of energy production technologies options. This will explore the implications of technologies like hydraulic fracturing, biogas, which will demand restricting of the supply chain, and development and modification of existing energy technologies.
- Develop the capacity to understand the key features of particular gas technologies for all aspects of the UK's energy chain, including extraction production, transportation, and use. This will include an understanding of the soft side (sociological implications and impacts), analysis of the supply system, and the implications for existing UK markets and its financial sector, as well as the technological impacts of using unconventional natural gas both in terms of technological impacts and effect on the existing energy infra-structure.
- To provide a future generation of professionals in the financial and engineering sectors who understand the new natural gas markets that will operate in the UK over the next several decades.

This programme is intended for the following range of students:

- Graduates with science or related degrees keen to pursue careers in gas and energy production technologies

- Graduates currently in employment keen to extend their qualifications or to pursue a career change
- Individuals with other qualifications but who possess considerable relevant experience

Postgraduate Diploma (PgDip) and Postgraduate Certificate (PgCert) routes are provided for students who wish to access only parts of the course provided.

3. <u>What should students expect to achieve in completing the course?</u>

Award intended learning outcomes (ILOs) (skills and knowledge).

A. Postgraduate Certificate in Gas Energy

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1.   Explain the key concepts pertaining to the availability, sources and use of conventional and unconventional gas

ILO 2.   Critically analyse the engineering principles and technologies that underpin the production, distribution and use of energy, with respect to the market for gas

ILO 3.   Critique both the economic and environmental implications of using conventional and unconventional gas in a carbon constrained economy

ILO 4.   Critically assess the implications of using such sources of gas on UK water supplies and all relevant natural capital

ILO 5.   Review the principles of maintaining the reliability of energy production and distribution systems and their asset management

ILO 6.   Apply the concepts and principles of energy demand management to develop new insights into enhancing policy development and systems design as they relate to an energy economy dominated by natural gas

ILO 7.   Systematically evaluate the mechanisms involved in carbon markets and their influence on the availability and affordability of energy and future energy policy as they relate to natural gas

ILO 8.   Critically analyse relevant energy engineering problems and design novel solutions taking account of social, environmental, technical, regulatory and commercial constraints

ILO 9.   Effectively communicate their work via oral and written presentations and reports

B. Postgraduate Diploma in Gas Energy

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 10.   Develop problem definition, hypothesis setting, analysis and problem solving skills to address challenges faced by environmental engineers, financial planners and policy analysts in future energy markets

3

ILO 11.   Integrate knowledge, understanding and skills from the taught modules in a real-life situation.

ILO 12.   Effectively work in a small project team to identify project objectives and select appropriate methodologies to address problems faced by industrial clients; collaborating with other team members to communicate findings in a professional manner in written, oral and visual forms

C. MSc in Gas Energy

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 13.   Develop and deliver successful independent research projects relevant to appropriate public and private sector organisations

ILO 14   Define a research question, develop aim(s) and objectives, select and execute a methodology, analyse data, and evaluate findings and draw appropriate conclusions.

ILO 15   To communicate their findings successfully via a thesis, written in an approved School style and in an oral presentation

4. How is the course taught?

The MSc course will be taught in three sections: taught modules (40%), a group project (20%), and an individual research project (40%).

The taught programme, typically delivered between October and February, comprises a structured sequence of modules, each containing a series of lectures and other classroom-based teaching, supplemented by practical work. The taught modules are assessed by assignments and formal written examinations.

The Group Projects are founded on group-based research programmes typically undertaken between February and April. The projects are designed to integrate knowledge, understanding and skills from the taught modules in a real-life situation.

The thesis project, typically delivered between May and September, further develops research and project management skills that: provide the ability to think and work in an original way; contribute to knowledge; overcome genuine problems; and communicate through a thesis and oral exam. Each student is allocated a supervisor, who will guide and assess the student work.

Guidance sessions are provided as to what is required from thesis and oral presentation.

Within induction week, students will be introduced to personal development planning and asked to reflect on their transferable skills and to take ownership of their personal development during the course.

5. What do students need to achieve in order to graduate?

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A.   Postgraduate Certificate
The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Module 1 Module 2	0 10
ELECTIVE MODULES:	
Any five chosen from modules 3-9	50
TOTAL:	**60**

B.   Postgraduate Diploma
The accumulation of 120 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Module 1 Modules 2-9 Module 10 Module 11 in place of Module 10 for part time students	0 80 40 40
ELECTIVE MODULES:	
	40
TOTAL:	**120**

C.   MSc
In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
Module 1 Modules 2-9 Module 10 (Group project) Module 11 in place of Module 10 for part time students Module 12 (Thesis project)	0 80 40 40 80
ELECTIVE MODULES:	
	40
TOTAL:	**200**

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria
The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does <u>not</u> have discretion to overrule this limit, but can refer a case to Senate's Education Committee);[1] [2]
- **For Taught Assessments,** the minimum mark for each individual taught assessment <u>on the first attempt</u> for the significant majority of the taught assessments, noting that:
  - o if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
  - o if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);
  - o it is <u>not</u> permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

6. **How is the course structured?**

Full-time students register for the course in October and are expected to complete the course within 12 calendar months.

All options are also offered on a part-time basis and such students are expected to complete the course within 2 to 3 years. Part-time students are not restricted to starting in October. Instead they are offered individual guidance on the best sequence of study based on their prior knowledge and availability to attend.

---

[1] For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2] Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

Course modules

The following modules outline all parts of the programme leading to **MSc**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates		
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
1	I-ENE-INWK	Induction	G Drew	24		0	Y		03/10/16	07/10/16	N/A	AO	N/A				N/A	
2	I-ESL-CUGP	Conventional and Unconventional Gas Production	B Anthony	30		10	N		07/11/16	11/11/16	40	ICW	100				26/11/16 FT 03/12/16 PT	
5	I-OOT-A1084	Safety, Risk and Reliability Offshore	M Shafiee	32		10	Y		14/11/16	18/11/16	40	EX	100				W/C 02/01/17	

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7](100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
												Independent Assessment		Multi-part Assessment			Submission dates	
4	I-OOT-A1079B	Inspection and Maintenance	M Shafiee	32		10	Y		24/10/16	28/10/16	40	ICW	100				12/11/16 FT 19/11/16 PT	
6	I-MES-A2032	Fuels and Energy Conversion	B Fidalgo Fernandez	27		10	Y		28/11/16	02/12/16	40	EX	100				W/C 12/12/16	
9	G-MTI	Management for Technology	S Carver	50		10	Y		13/02/17	17/02/17	40	EX GCW	50 50				20/03/17 25/03/17	
8	I-OOT-A1080B	Pipelines and Gas Processing	F Kara	32		10	Y		23/01/17	27/01/17	40	EX	100				W/C 20/02/17	
7	I-MES-A2033	Energy Production, Emissions Control, Carbon Capture and Transport	K Patchigolla	25		10	Y		09/01/16	13/01/16	40			100	ICW OR	50 50	28/01/17 FT 11/02/17 PT	
3	I-MES-A2020	Introduction to Materials Engineering for Energy Systems	J Sumner	32		10	Y		17/10/16	21/10/16	40	EX	100				W/C 02/01/17	
10	I-ENE-GRPP	Group Project	Supervisor	16		40	Y		27/02/17	05/05/17	50	GPROJ	80				02/05/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
												ICW	20					
11	I-ENE-DISS	Dissertation in place of group project for part time students	Supervisor	10		40	Y		03/10/16	30/09/17	50	IPROJ	100				30/09/1	
12	I I-ENE-THESIS	Individual thesis project	Supervisor	20		80	Y		08/05/17	08/09/17	50	THESIS OR	90 10				04/09/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
I-OOT-A1084	Safety, Risk and Reliability	Offshore	• Offshore and Ocean Technology With Offshore Materials Engineering • Offshore and Ocean Technology With Pipeline Engineering • Offshore and Ocean Technology With Offshore Renewable Energy • Offshore and Ocean Technology With Risk Management • Offshore and Ocean Technology With Subsea Engineering • Gas Energy
I-MES-A2032	Fuels and Energy Conversion	Materials for Energy Systems	• Energy Supply for Low Carbon Futures • Materials for Energy Systems • Renewable Energy Technology • Gas Energy
I-MES-A2033	Energy Production, Emissions Control, Carbon Capture and Transport	Materials for Energy Systems	• Materials for Energy Systems • Energy Supply for Low Carbon Futures • Energy from Waste • Atmospheric Emission Technology • Gas Energy
I-MES-2020	Introduction to Materials Engineering for Energy Systems	Materials for Energy Systems	• Energy Supply for Low Carbon Futures • Materials for Energy Systems • Gas Energy
G-MTI	Management for Technology	School of Management	• Materials for Energy Systems • Advanced Mechanical Engineering • Biofuels Process Engineering • Design of Rotating Machines • Energy Supply for Low Carbon Futures • Offshore and Ocean Technology With Offshore Materials Engineering

			• Offshore and Ocean Technology With Pipeline Engineering • Offshore and Ocean Technology With Offshore Renewable Energy • Offshore and Ocean Technology With Risk Management • Offshore and Ocean Technology With Subsea Engineering • Renewable Energy Engineering • Renewable Energy Technology • Flow Assurance for Oil and Gas Production, Carbon Capture and Storage • Energy Systems and Thermal Processes • Process Systems Engineering • Energy from Waste • Gas Energy
I-OOT-A1079B	Inspection and Maintenance	Offshore	• Offshore and Ocean Technology (Offshore Inspection) • Gas Energy
I-OOT-A1080B	Pipelines and Gas Processing	Offshore	• Offshore and Ocean Technology (Offshore Pipeline Design & Installation Module) • Gas Energy

7. **How are the ILOs assessed?**

The following assessment types are utilised:

- the taught modules (40%) are assessed by in-module assessment (including coursework, which focuses on application of principles studied and class tests, which support underpinning knowledge) or examination in December and January.
- the group project (20%) is assessed by means of a written group report, a reflective exercise, individual contribution and an oral presentation.
- the research project (40%), is assessed by a thesis and an oral examination

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

11

Title	Modules Covered	Assessment	
		Type	Weight (%)

8. <u>How will the University assure the quality of the provision?</u>

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. What opportunities are graduates likely to have on completing the course?

On completion, graduates will have a broad network of global contact and increased opportunities for individual specialism in their chosen career in the energy production and demand management industries. It is anticipated that the course will allow students to seek positions both at the government level (e.g. in institutions such as the Department of Energy, and Climate Change; the Department of Transport) and various other agencies which are involved with the purchase, use and regulation of gas in the UK. The MSc will also give the holder superior credentials to work in companies that supply natural gas to both the domestic and industrial sectors, as well as agencies and companies involved in the extraction and production of natural gas. The degree will also be of value to those seeking careers with companies like Alstom, Doosan, Drax, E.ON UK and the various other companies that would be members of an association such as Energy UK, as well as those involved in the financial sectors dealing with the gas industry. Finally the course will be of value to anyone involved in developing unconventional natural gas reserves in the UK or abroad.

COURSE SPECIFICATION

<table>
<tr><td colspan="2">Cranfield University: Course Specifications
Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.</td></tr>
</table>

COURSE TITLE:	MSc in Geographical Information Management

Date of first publication/latest revision: 20/01/2016 – 07/09/16

1. What is the course?

Course information

Course Title	Geographical Information Management
Course code	MSGIMFTC, MSGIMPTC, PDGIMFTC, PDGIMPTC, PCGIMFTC, PCGIMPTC
Academic Year	2016/17
Valid entry routes	MSc, PgDip, PgCert
Exit routes	MSc, PgDip, PgCert
Mode of delivery	Full-time, Part-time
Location of Study	Cranfield
School(s)	School of Water, Energyand Environment
Theme	Environment & Agrifood
Centre	Cranfield Soil and Agrifood Institute
Course Director	Dr Toby Waine
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	1st or 2nd class UK honours degree or equivalent; in a science or engineering subject Candidates with other qualifications will be considered according to experience; Where applicable minimum IELTS score of 6.5 or TOEFL 580
UK Qualifications Framework Level	QAA FHEQ Level 7 (Masters)
Benchmark Statement(s)	N/A
Registration Period(s) available	Full-time MSc - one year, Part-time MSc - up to three years, Full-time PgCert - one year, Part-time PgCert - two years, Full-time PgDip - one year, Part-time PgDip - two years
Course Start Month(s)	October: Full-time Part-time: throughout the year (October preferred, other times on

1

case by case basis)

Institutions delivering the course

This course is delivered by the School of Water, Energy, and Environment where the research interests include remote sensing, GIS and spatial data management.

Cranfield University interacts with the following institutions and in the following ways:

The Course has an Industrial Advisory Panel that formally meets each year. Current members of the Industrial Advisory Panel include representatives from: Airbus Defence and Space; The Joint Research Centre, Italy; and Geospatial Insights Ltd..

In addition, the Royal Institution of Chartered Surveyors (RICS) reviews the course each year. There are currently five members of the review group: one from a surveying practice, one being the RICS external examiner and the remainder from RICS.

Students are involved with field trips off-campus. In recent years these have included the following organisations: New Forest National Park, TrafficMaster, Geoplan, Surrey Satellites, the Medmenham Collection.

Students can undertake their individual research project off campus. In recent years, projects have been undertaken with ESRI UK, British Waterways, the British Geological Survey, the National Trust, Natural England, TrafficMaster.

The course benefits from links to a significant number of European Universities through the Cranfield University European Partnership Programme.

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is accredited formally by Royal Institution of Chartered Surveyors (RICS) until (ongoing, reviewed annually).*

2. What are the aims of the course?

Cranfield University offers this course in order to:

- To provide the participant with the capability to develop practical and sustainable applications of remote sensing, Geographic Information Systems and Global Positioning Systems, based upon emerging scientific principles and technological developments;
- To enable the selection of appropriate processing methods for geo spatial data combined with the design, analysis and integration of field survey techniques;
- To focus on integrated analysis of resource assessments from traditional natural resources and socio-economic surveys by the application of spatial analytic capabilities of GIS

Postgraduate Diploma (PgDip) and Postgraduate Certificate (PgCert) exit routes are provided for students who wish to access only parts of the course provided.

This programme is intended for the following range of students:

- Those wishing to work in the geographic information industry
- Those wishing to work for government departments, agencies, NGOs and consultancies applying GI technologies to their particular areas of work
- Those wishing to develop a research career utilising GI data and methods

3. What should students expect to achieve in completing the course?

Award intended learning outcomes (ILOs) (skills and knowledge).

A. Postgraduate Certificate in Geographical Information Management

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1.   Apply the principles of geographic information management technologies and processes to a range of geospatial problems

ILO 2.   Interpret spatial data to derive pertinent conclusions

ILO 3.   Evaluate geographic information management methodologies to enable the selection of appropriate analysis methods for a range of applications

ILO 4.   Manage geographical information in a sustainable manner to deliver accurate, timely and appropriate data to a range of clients

ILO 5.   Integrate analogue and digital spatial data derived from geographic information management technologies to produce quality-assured solutions

ILO 6.   Advise non remote sensing or geographic information system specialists as to the role and implementation of geographic information management technologies within a range of applications

B. Postgraduate Diploma in Geographical Information Management

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:
ILO 7.Integrate knowledge, understanding and skills from the taught modules in a real-life situation

ILO 8. Effectively work in a small project team to identify project objectives and select appropriate methodologies to address problems faced by industrial clients; collaborating with other team members to communicate findings in a professional manner in written, oral and visual forms
ILO 7.

C. MSc in Geographical Information Management

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:
ILO 9 Define a research question, develop aim(s) and objectives, select and execute a methodology, analyse data, and evaluate findings and draw appropriate conclusions.

ILO 10 To communicate their findings successfully via a thesis, written in an approved School style and in an oral presentation.

3

4. How is the course taught?

The MSc course is taught in three sections: taught modules (40%), a group project (20%), and an individual research project (40%). The taught modules are delivered with one week contact time between October and February. The teaching methods include practical sessions, field visits, lectures, seminars, and presentations.

The Group Project is a group-based activity typically undertaken between March and May.

The Project is designed to integrate knowledge, understanding and skills from the taught modules in a real-life situation.

For the Individual Research Project, each student is allocated a supervisor. Guidance sessions are provided as to what is required from the thesis and oral presentation.

Within the induction week, students will be introduced to personal development planning and asked to reflect on their transferable skills and to take ownership of their personal development during the course. During the group project students will be given training in group-working and project management, and will reflect on their personal development.

5. What do students need to achieve in order to graduate?

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A. Postgraduate Certificate
The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Module 1	10
ELECTIVE MODULES:	
Any six chosen from modules 2-9	60
TOTAL:	**60**

B. Postgraduate Diploma
The accumulation of 120 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Module 1	0
Modules 2-9	80
Module 10	40
Module 11 in place of Module 10	40

4

ELECTIVE MODULES:	
TOTAL:	120

C.   MSc

In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
Module 1	0
Modules 2-9	80
Module 10 (Group project)	40
Module 11 in place of Module 10	40
Module 12 (Thesis project)	80
ELECTIVE MODULES:	
TOTAL:	**200**

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria

The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does <u>not</u> have discretion to overrule this limit, but can refer a case to Senate's Education Committee);[1] [2]
- **For Taught Assessments,** the minimum mark for each individual taught assessment <u>on the first attempt</u> for the significant majority of the taught assessments, noting that:
    - o if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit

---

[1]   For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2]   Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
- if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);
- it is <u>not</u> permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

How is the course structured?

Please see the course structure document for details on the individual elements of the course. Full-time students register for the course in October and are expected to complete the MSc course within 12 calendar months.

This course is also offered on a part-time basis. In such a situation, students typically complete the various components of the course over two or three years. One example is to complete four taught modules and a dissertation in year 1, four taught modules and a thesis and oral presentation in year 2. An alternative is to spread the taught modules over three years completing the dissertation by the end of year 2 and the thesis and oral presentation in year 3.

Course modules

The following modules outline all parts of the programme leading to an **MSc**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
1	I-ENV-INWK	Induction Week	T Brewer	33		0	Y		03/10/16	07/10/16	N/A	AO	N/A				N/A	
2	I-GIM-A1135	Aerial Photography & Digital Photogrammetry	T Brewer	50		10	Y		10/10/16	14/10/16	40	ICW	100				FT - 22/10/2016 PT - 29/10/2016	
3	I-GIM-A1131	GIS Fundamentals	T Brewer	42		10	Y		24/10/16	28/10/16	40	ICW	100				FT - 05/11/2016	

---

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7](100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
																	PT - 12/11/2016	
4	I-GIM-A1134	Spatial Data Management	S Hallett	33		10	Y		07/11/16	11/11/16	40	ICW	100				FT - 19/11/2016 PT - 26/11/2016	
5	I-GIM-A1129	Image Processing and Analysis	T Waine	35		10	Y		21/11/16	25/11/16	40	ICW	100				FT - 03/12/2016 PT - 10/12/2016	
6	I-GIM-A1130	Physical Principles of Remote Sensing	T Waine	20		10	N		05/12/16	09/12/16	40	EX	100				FT/PT - Exam Week 2	
7	I-GIM-A1132	Advanced GIS Methods	TBrewer	35		10	N		09/01/17	13/01/17	40	ICW	100				FT - 21/01/2017 PT - 28/01/2017	
8	I-GIM-A1133	Environmental Resource Survey	T Farewell	40	3	10	Y		23/01/17	27/01/17	40	ICW	100				FT - 04/02/2017 PT - 11/02/2017	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment					Submission dates	
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment				
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
9	I-GIM-A1136	Spatial Data and the Internet	S Hallett	36.5		10	Y		06/02/17	10/02/17	40	ICW	100				FT - 18/02/2017 PT - 25/02/2017	
10	I-ENV-GRPP	Group Project	Supervisors	16		40	Y		20/02/17	05/05/17	50	GPROJ ICW	80 20				GPROJ - 02/05/2017 ICW - 06/05/2017	
11	I-ENV-DISS	Dissertation for part time students	Supervisors	10		40	N		03/10/16	30/09/17	50	IPROJ	100				30/09/16	
12	I-ENV-THESIS	Individual Research Project	Supervisors	20		80	Y		08/05/17	08/09/17	50	THESIS OR	90 10				4/9/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
I-GIM-A1135	Aerial Photography & Digital Photogrammetry	Geographical Information Management	• Integrated Landscape Ecology
I-GIM-A1133	Environmental Resource Survey	Geographical Information Management	• Environmental Informatics • Integrated Landscape Ecology
I-GIM-A1131	GIS Fundamentals	Geographical Information Management	• Environmental Informatics • Environmental Risk Management • Integrated Landscape Ecology • Land Reclamation and Restoration
I-GIM-A1129	Image Processing and Analysis	Geographical Information Management	• Integrated Landscape Ecology
I-GIM-A1136	Spatial Data and the Internet	Geographical Information Management	• Environmental Informatics
I-GIM-A1134	Spatial Data Management	Geographical Information Management	• Environmental Informatics

7. How are the ILOs assessed?

The following assessment types are utilised:

Students on the MSc can typically expect to have two written examinations, six pieces of individual assessment by submitted work, one piece of group project work, and one element assessed by a thesis and an oral presentation.

This approach has been adopted in order to assess the ability of the student to demonstrate their ability in a range of environments.

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

Title	Modules Covered	Assessment	
		Type	Weight (%)
N/A			

8. How will the University assure the quality of the provision?

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. **What opportunities are graduates likely to have on completing the course?**

The career prospects from the course have been excellent. Examples of organisations employing graduates from the course include: Airbus Defence and Security, ESRI, JARIC, local authorities, Natural England, Black and Veatch, universities, research organisations.

COURSE SPECIFICATION

Cranfield University: Course Specifications

Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.

COURSE TITLE: MSc in Geospatial Intelligence

Date of first publication/latest revision: 23/08/2016

1. What is the course?

Course information

Course Title	Geospatial Intelligence
Course code	MSGSIFTR, PDGSIFTR, PCGSIFTR
Academic Year	2016/17
Valid entry routes	MSc, PgDip, PgCert
Exit routes	MSc, PgDip, PgCert
Mode of delivery	Full-time and Part-time
Location of Study	Cranfield Defence and Security/Royal School of Military Survey (RSMS)
School(s)	Cranfield Defence and Security
Theme	Defence and Security
Centre	Centre for Cyber Security and Information Security
Awarding Body	Cranfield University
Teaching Institution	Royal School of Military Survey, with collaborative provision
Admissions body	Cranfield University, through RSMS
Entry requirements	1st or 2nd class honours degree; 3rd class degree with three years relevant experience; pass degree with five year relevant experience; HND/C with seven years' experience. Extensive relevant practical with or without a lower qualification or lower achievement in an honours qualification (or equivalent).
UK Qualifications Framework Level	QAA FHEQ level 7 (Masters)
Benchmark Statement(s)	As set out in the Quality Assurance Agency for Higher Education 2000 for Engineering, Geography and other disciplines with relevance to GEOINT
Registration Period(s) available	Maximum 3 years (PgCert), 4 years (PgDip) or 5 years (MSc)
Course Start Month(s)	September

Institutions delivering the course

This course is delivered by Joint Intelligence Training Group – Royal School of Military Survey (RSMS), the School's primary role being the provision of education and training in the field of defence geospatial intelligence. Research interests include:

- **Spatial Analysis**
- **Military Geography**
- **Remotely Sensed Imagery**
- **Photogrammetry**
- **Geodesy**
- **Information Systems**
- **Web Services**

Cranfield University interacts with the following institutions and in the following ways:

RSMS interacts with the following institutions and in the following ways:

- Some individual research projects may be managed away from RSMS where students require access to operational work areas. Where this occurs RSMS will negotiate with the appropriate operational units to ensure that the necessary management processes are in place and standards are maintained. Any students undertaking research projects where work is required outside the school and/or University facilities will be allocated both a project supervisor from RSMS and an operational advisor from the operational chain of command.

- A small number of external speakers with expertise to support some of the modules delivered at RSMS. This external support is provided by a mix of experienced Royal Engineer officers, military officers working within Defence Intelligence, experienced civil servants from other government departments or technical staff from commercial organisations.

- The course is only open to students within the MOD or to students invited to attend by the MOD. The international nature of geospatial support means that a wide range of extensive and long-standing business arrangements exist between MOD and numerous foreign nations. This means that MOD routinely offers places on the course to foreign students as part of international exchange agreements covering the provision of services and data as well as education and training.

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is not accredited by any external bodies.

2. <u>**What are the aims of the course?**</u>

RSMS offers this course in order to prepare staff from all three Services and the Civil Service for a career in the provision of GEOINT so that they can provide advice, analysis and support in its related disciplines of Imagery Analysis, Geospatial Analysis and Geospatial Information. Cranfield University aims to enhance its postgraduate portfolio by recognising the contribution this MSc offers to the wider Defence community and the opportunities for collaboration with other Masters' programmes.

This programme is intended for the following range of students:

- Royal Engineer (Geographic) officers
- Intelligence and Geospatial Community personnel involved in the provision of GEOINT, including personnel from:

The Royal Navy Hydrographic and Meteorological Branch

- The Royal Artillery
- The Intelligence Corps
- The Royal Air Force Operations Support Intelligence Branch
- Civil Service Research Analysts and Geospatial Analysts
- Overseas GEOINT officers (Defence military and civilian)
- Overseas geospatial officers (Defence military and civilian)

3. **What should students expect to achieve in completing the course?**

Award intended learning outcomes (ILOs) (skills and knowledge).

A Postgraduate Certificate in Geospatial Intelligence

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1.   Demonstrate knowledge and understanding of key facts, concepts, theories and applications of GEOINT

ILO 2.   Develop an awareness of the systems and processes used in exploiting geospatial information for intelligence exploitation

ILO 3.   Discriminate between, and evaluate the applicability of geospatial reference frames and systems

ILO 4.   Demonstrate critical awareness of spatial data types, their exploitation and application in a geospatial intelligence context

ILO 5.   Able to present geospatial information into broader intelligence decision making processes

ILO 6.   Demonstrate a wide range of transferable skills including:

(a) literature searches

(b) effective use of the internet

(c) written and oral presentations

B. Postgraduate Diploma in Geospatial Intelligence

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 7.   Demonstrate critical understanding of data, applications and processes, and their application to defence geospatial intelligence

ILO 8.   Able to exploit data, software and processes to solve problems

ILO 9.   Develop effective teamwork through participation and leadership

ILO 10.   Undertake independent work, critical and original thought

3

ILO 11.   Examine and apply cartographic principles and product design to communicate geospatial information

C. MSc in Geospatial Intelligence

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 12.   Understand and apply a range of research methodologies, methods and practices

ILO 13.   Demonstrate creativity in applied research

ILO 14.   Independently plan and execute an academic research project

ILO 15.   Able to acquire and analyse data, evaluate their reliance and validity, and

synthesise information

ILO 16.   Critically review established practice in the field of Geospatial Intelligence

ILO 17.   Critically evaluate published research and methodologies

ILO 18.   Make informed judgements on Geospatial Intelligence matters

ILO 19.   Effectively communicate the results of research, both orally and in writing

ILO 20.   Undertake reflective and self-critical evaluation

4.   How is the course taught?

In addition to the teaching methods outlined in section 3 above, students will be supported in their learning and personal development by:
- within the pre-course, students will discuss approaches to personal planning and be asked to reflect on their transferrable skills to help strengthen their personal development
- a variety of teaching and assessment methods
- opportunities to undertake group work
- peer review of previously submitted work and the use of reflective learning
- the use of e-learning resources such as ESRI Virtual Campus in GIS
- visits to external organisations including National and Defence Agencies, leading software vendors and research establishments
- presentations from external experts in the field of GEOINT and Geographic Information
- students will be asked to undertake activities that will require them to address realistic scenarios and to consider how the course content in teaching, learning and literature will guide their professional practice

5.   What do students need to achieve in order to graduate?

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7.   Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

4

A. Postgraduate Certificate

The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Fundamentals of Geospatial Science	10
Geospatial Intelligence Requirements 1	10
ELECTIVE MODULES:	
Any 4 modules from 3-10 noting pre-requisites	40
TOTAL:	**60**

B. Postgraduate Diploma

The accumulation of 120 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Fundamentals of Geospatial Science	10
Geospatial Intelligence Requirements 1	10
Geospatial Intelligence Product Design and Generation	10
Geospatial Intelligence Requirements 2	10
Military Geography	10
Imagery Exploitation	10
Geospatial Information Systems Management	10
Spatial Analysis 1	10
Spatial Analysis 2	10
Remotely Sensed Imagery	20
Geospatial Web Services	10
ELECTIVE MODULES:	
N/A	0
TOTAL:	**120**

C. MSc

In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
Fundamentals of Geospatial Science	10
Geospatial Intelligence Requirements 1	10
Geospatial Intelligence Product Design and Generation	10
Geospatial Intelligence Requirements 2	10
Military Geography	10
Imagery Exploitation	10
Geospatial Information Systems Management	10
Spatial Analysis 1	10

Spatial Analysis 2	10
Remotely Sensed Imagery	20
Geospatial Web Services	10
Research Project	80
ELECTIVE MODULES:	
N/A	0
TOTAL:	**200**

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria
The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does not have discretion to overrule this limit, but can refer a case to Senate's Education Committee);[1] [2]
- **For Taught Assessments,** the minimum mark for each individual taught assessment on the first attempt for the significant majority of the taught assessments, noting that:
  o if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
  o if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);
  o it is not permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

6. How is the course structured?

---

[1] For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2] Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

Please see the course structure document for details on the individual elements of the course. Full-time students register for the course in September and are expected to complete the course within 12 calendar months.

Course Calendar (full time option).
Start date: Early September
Taught course phase: September – May --> Postgraduate Certificate & Diploma
Individual project: June – September --> Master of Science

This course is also offered on a part-time basis. Students would instead study over a maximum of 3 years (PgCert), 4 years (PgDip) or 5 years (MSc). Part-Time students must negotiate a programme of study with the Course Director at the point of application. This programme of study forms part of the conditions of the offer of acceptance on the course. Students wishing to attend individual modules as a 'short course' to gain credit may do so, but will be expected to satisfy academic standards required for postgraduate registration. For those students who do not wish to gain credit, attendance on modules will be permitted subject to space available, and considered on a case by case basis.

Course modules

The following modules outline all parts of the programme leading to an **MSc**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module[6] (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
								Calendar			**Assessment**						
											Independent Assessment		Multi-part Assessment			Submission dates	
1	R-GSI-GIR1	Geospatial Intelligence Requirements 1	64		10	N	05/09/16	05/09/16	16/09/16	50	ICW	100				16/09/16	03/03/17
2	R-GSI-FGS	Fundamentals of Geospatial Science	85		10	N	19/09/16	19/09/16	07/10/16	50	ICW	100				07/10/16	03/03/17
3	R-GSI-GIPDG	Geospatial Intelligence	74		10	N	10/10/16	10/10/16	28/10/16	50	IPRAC	100				28/10/16	03/03/17

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
											Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
		Product Design and Generation															
4	R-GSI-SA1	Spatial Analysis 1	70		10	N	31/10/16	31/10/16	23/11/16	50	IPRAC	100				23/11/16	03/03/17
5	R-GSI-RSI	Remotely Sensed Imagery	54		20	N	24/11/16	24/11/16	11/01/17	50 50	ICW ICW	50 50				11/01/17 11/01/17	10/05/17
6	R-GSI-SA2	Spatial Analysis 2	54		10	N	12/01/17	12/01/17	03/02/17	50			100	ICW ICW	30 70	23/01/17 03/02/17	10/05/17
7	R-GSI-GISM	Geospatial Information Systems Management	80		10	N	30/03/17	30/03/17	05/05/17	50	EX	100				05/05/17	26/06/17
8	R-GSI-IE	Imagery Exploitation	40		10	N	06/02/17	06/02/17	24/02/17	50	ICW	100				24/02/17	10/05/17
9	R-GSI-GWS	Geospatial Web Services	80		10	N	11/05/17	11/05/17	02/06/17	50	ICW	100				02/06/17	26/06/17
10	R-GSI-MG	Military Geography	43		10	N	06/03/17	06/03/17	24/03/17	50	ICW	100				24/03/17	26/06/17

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

9

Module Number	Module code	Title	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
											Independent Assessment		**Multi-part Assessment**			**Submission dates**	
11	R-GSI-GIR2	Geospatial Intelligence Requirements 2	90		10	N	05/06/17	05/06/17	16/06/17	40			100	IPRAC IPRAC IPRAC IPRAC	10 50 30 10	16/06/17	21/07/17
12	R-GSI-DISS	Research Project	30		80	N	27/02/17	27/02/17 27/03/17 08/05/17 19/06/17	03/03/17 29/03/17 10/05/17 01/09/17	50 50	THESIS ICW	90 10				01/09/17 01/09/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Please list all modules that are used by another existing course.

Module code	Module title	Course that owns the module	Other course(s)/ programme(s) that share the module
N/A			

7. How are the ILOs assessed?

The following assessment types are utilised:

The course uses a range of formative and summative assessment types. Students can expect to have written examinations or coursework within all modules, incorporating elements of assessment by presentation and viva. MSc students undertaking the research project will be assessed through evidence of their progress throughout, as well as the thesis and a research poster.

This approach has been adopted in order to provide students with differentiation in assessment strategies enabling a wide range of skills to be assessed.

Assessment and ILO Mapping

Complete the grid below by inserting in the boxes which assessments from the modules directly assess the Award ILOs.

(Module numbers should correspond with those used in the Course module table above.)

For Example:

Award ILOs / Module No.		ILO 1.	ILO 2.	ILO 3.	ILO 4.	ILO 5.	ILO 6.	ILO 7.	
98	*ICW*				*EX*	*EX*	*ICW*		
99	*ICW1*		*ICW1*	*ICW2*					

A. Postgraduate Certificate

Award ILOs / Module No.	ILO 1	ILO2	ILO3	ILO4	ILO5	ILO6			
R-GSI-GIR1		ICW				ICW			
R-GSI-FGS	ICW	ICW	ICW	ICW	ICW				
R-GSI-GIPDG			IPRAC						
R-GSI-SA1	IPRAC	IPRAC		IPRAC	IPRAC	IPRAC			

11

Award ILOs \ Module No.	ILO 1	ILO2	ILO3	ILO4	ILO5	ILO6			
R-GSI-RSI	ICW1; ICW2	ICW1; ICW2	ICW2	ICW2		ICW1; ICW2			
R-GSI-SA2	ICW	ICW		ICW	ICW	ICW			
R-GSI-GISM	EX	EX	EX						
R-GSI-IE						ICW			
R-GSI-GWS	ICW	ICW		ICW	ICW	ICW			
R-GSI-MG	ICW				ICW	ICW			
R-GSI-GIR2	IPRAC		IPRAC		IPRAC	IPRAC			

B. Postgraduate Diploma

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Award ILOs \ Module No.	ILO7	ILO8	ILO9	ILO10	ILO11				
R-GSI-GIR1				ICW					
R-GSI-FGS									
R-GSI-GIPDG				IPRAC	IPRAC				
R-GSI-SA1	IPRAC	IPRAC			IPRAC				
R-GSI-RSI	ICW1; ICW2	ICW2		ICW1					
R-GSI-SA2	ICW	ICW		ICW	ICW				
R-GSI-GISM									
R-GSI-IE	ICW	ICW		ICW					
R-GSI-GWS	ICW	ICW		ICW	ICW				
R-GSI-MG				ICW					

Award ILOs / Module No.	ILO7	ILO8	ILO9	ILO10	ILO11				
R-GSI-GIR2	IPRAC	IPRAC	IPRAC	IPRAC	IPRAC				

C. MSc

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Award ILOs / Module No.	ILO12	ILO13	ILO14	ILO15	ILO16	ILO17	ILO18	ILO19	ILO20
R-GSI-GIR1						ICW		ICW	
R-GSI-FGS									
R-GSI-SA1				IPRAC			IPRAC		
R-GSI-RSI				ICW2	ICW1; ICW2	ICW1		ICW1	ICW1
R-GSI-SA2				ICW			ICW		
R-GSI-IE			ICW	ICW	ICW	ICW		ICW	ICW
R-GSI-MG	ICW				ICW	ICW	ICW	ICW	
R-GSI-GIR2				IPRAC			IPRAC	IPRAC	IPRAC
R-GSI-DISS	THESIS; ICW	THESIS; ICW	THESIS; ICW	THESIS; ICW	THESIS; ICW	THESIS; ICW	THESIS; ICW	THESIS; ICW	THESIS; ICW

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

Title	Modules Covered	Assessment	
		Type	Weight (%)

8. How will the University assure the quality of the provision?

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained

13

Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. **What opportunities are graduates likely to have on completing the course?**

The career paths for students attending the GEOINT course fall in to a number of categories:

- **Royal Engineer Officers.** Royal Engineer officers who complete this course have elected to follow a career in the Army within the Geographic Branch of the Royal Engineers. This specialisation is responsible for the effective provision of both GEOINT and geospatial information in support of UK defence requirements. Its officers may serve in general staff posts outside the specialisation to broaden their experience and employability, but they are likely to spend most of their careers in GEOINT appointments.

- **Intelligence Officers.** Officers from all parts of the Armed Services and the Civil Service may attend this course prior to or whilst serving in intelligence appointments where GEOINT forms a significant element of their responsibilities. Although they may only make direct use of what they have learnt during this appointment, many of these officers return to similar appointments later in their careers and thus the GEOINT course will be of long term value to them.
- **Overseas Students.** Officers and civilians attending the course by invitation from the MOD are normally employed in their national or defence GEOINT, geospatial and mapping organisations. The significant investment made by nations sending students on this course means that it is highly likely that these students will work within this specialist area for many years after they complete the course. Past experience has shown that many of these students progress to senior appointments within their own nation or defence organisations, with significant long-term benefits then potentially accruing to the MOD.

15

COURSE SPECIFICATION

Cranfield University: Course Specifications

Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.

COURSE TITLE:	MSc in Global Product Development and Management

Date of first publication/latest revision:	July 2016

1. What is the course?

Course information

Course Title	MSc in Global Product Development and Management
Course code	MSGPDFTC, MSGPDPTC, PDGPDFTC, PDGPDPTC, PCGPDFTC, PCGPDPTC
Academic Year	2016/17
Valid entry routes	MSc, PgDip, PgCert
Additional exit routes	Not Applicable
Mode of delivery	Full-time, Part-time
Location of Study	Cranfield University
School(s)	School of Aerospace, Transport and Manufacturing
Theme	Manufacturing
Centre	Manufacturing Informatics Centre
Course Director	Professor Tetsuo Tomiyama
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	Standard University entry requirements
UK Qualifications Framework Level	QAA FHEQ Level 7 (Masters)
Benchmark Statement(s)	Not Applicable
Registration Period(s) available	One year full-time, two-five years part-time
Course Start Month(s)	Full-time: October. Part-time: throughout the year

Institutions delivering the course

This course is delivered by The School of Aerospace, Transport and Manufacturing, Manufacturing Theme, Manufacturing Informatics Centre where the research interests include:

- Product Service Systems
- Product Life Cycle Costing
- Lean Product and Process Development
- Knowledge-Based Engineering
- Mathematical Modelling and Optimisation
- Creative Design
- New Manufacturing Technologies

Teaching and/or assessment is also provided by the School of Management and the School of Water, Energy and Environment.

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is accredited formally by Institution of Mechanical Engineers (IMechE) up to and including Academic year 2019-20, Institution of Engineering and Technology (IET) up to and including Academic year 2019-20, Royal Aeronautical Society (RAeS) up to and including Academic year 2019-20, and Institute for Engineering Designers (IED) up to and including Academic year 2018-19.

2. What are the aims of the course?

Cranfield University offers this course in order to:

- Deliver a premium high M-level course which aims at ambitious international students and mid-career professionals who want to boost their career prospects within the global market.
- Introduces cutting edge technology through an industry oriented education scheme.
- Improve the employability of students ready to manage issues arising with an increasingly globalised world.

Postgraduate Diploma (PgDip) and Postgraduate Certificate (PgCert) exit routes are provided for students who wish to access only parts of the course provided.

This programme is intended for the following range of students:

- Mid-career professionals who want to boost their career.
- Ambitious high quality students with an international background.
- Talented students with a high grade BSc level.

3. What should students expect to achieve in completing the course?

Award intended learning outcomes (ILOs) (skills and knowledge).

A. **Postgraduate Certificate**

In completing this course, and achieving the associated award, a diligent student should be able to:

 ILO 1.   Evaluate the up-to-date methods and techniques in global product development and management.

ILO 2. Assess the use of modern tools to facilitate product engineering, including information systems, management tools and cost engineering software packages.
ILO 3. Apply the principles of requirements engineering and management to reduce product engineering time and cost.
ILO 4. Analyse how IT tools and technologies are used for product evaluation.
ILO 5. Act as a global player in a fictive product development scenario.

B. Postgraduate Diploma

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:
ILO 6. Demonstrate knowledge and critical understanding of a broad range of product development approaches.
ILO 7. Compare state-of-the-art techniques for product development.
ILO 8. Design new products and services by integrating various knowledge.
ILO 9. Demonstrate skills to professionally manage culture and communication issues in product development.
ILO 10. Demonstrate advance international communication skills.
ILO 11. Demonstrate leadership skills to run individually small international projects.
ILO 12. Become a well informed and educated person being able to bridge/ interface/ communicate management and workshop decisions.

C. MSc

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:
ILO 13. Identify relevant areas of previous research, placing them in context with a research, project and providing critical appraisal.
ILO 14. Demonstrate knowledge and understanding of facts, concepts, principles and theories and articulate these through reasoned analysis and discussion.
ILO 15. Analyse the background to an area of research, justify the research methodologies and discuss the main findings and conclusions in a scholarly written report and a viva voce examination.
ILO 16. Demonstrate the skill to perform a research project in a clear and concise manner.
ILO 17. Explain and practice the concept of scientific work. This includes that the student will be able to identify new research ideas, concepts or methodologies, develop experiments or case studies, and analyse the results systematically as well as justify the whole process of arriving at the results.
ILO 18. Produce project aims, objectives, risk assessment and time lines for a research project.
ILO 19. Write a clear and concise research report using correct citations and showing a systematic structure of thoughts.

4. How is the course taught?

Students will be supported in their learning and personal development in modules given in the form of lecture, group/individual coursework, and personal study based on the materials available through the University's virtual learning environments (VLEs). Following modes of learning will be available depending on the subject:

- Remote on-line education delivered by international lecturers via internet.
- Interactive role plays.
- Mini-group project of 2 days as part of the module (contained within the one week module).
- Students will be provided with pre-course and post-course reading and assessment as dictated by the individual course modules. It is intended that all lecture material will be made available through the VLEs.

- Research and private study is necessary for the successful completion of these projects which also enhances knowledge and individual study abilities.
- Formative feedback on assessed assignments enhances the learning process and informal feedback on non-assessed individual or group exercises are also used.

5. What do students need to achieve in order to graduate?

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A. Postgraduate Certificate
The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Modules 2-9 (Select 6)	60
ELECTIVE MODULES:	
None	
RECOMMENDED MODULE:	
Induction	0
TOTAL:	60

B. Postgraduate Diploma
The accumulation of 120 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Modules 2-9 Group Project for full-time students (10a) or Dissertation for part-time students (10b)	80 40
ELECTIVE MODULES:	
None	
RECOMMENDED MODULE:	
Induction	0
TOTAL:	120

C. MSc
In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES	

Modules 2-9	80
Group Project for full-time students (10a) or Dissertation for part-time students (10b)	40
Individual Research Project (11)	80
ELECTIVE MODULES:	
None	
RECOMMENDED MODULE:	
Induction	0
TOTAL:	200

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria
The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does <u>not</u> have discretion to overrule this limit, but can refer a case to Senate's Education Committee);[1][2]
- **For Taught Assessments,** the minimum mark for each individual taught assessment <u>on the first attempt</u> for the significant majority of the taught assessments, noting that:
  - if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
  - if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);
  - it is <u>not</u> permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

6. <u>How is the course structured?</u>

---

[1] For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2] Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

Full-time students register for the course in October and are expected to complete the course within 12 calendar months.

This course is also offered on a part-time basis. In such a situation, students typically complete the various components of the course over two or three years. Typical case is to complete four taught modules plus a Dissertation in year 1 and the remainder of the modules plus the Thesis in year two and/or year 3.

Course modules

The following modules outline all parts of the programme leading to an **MSc**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar Module Start Date (eg Pre-course task)	Calendar 'Residential' Start Date	Calendar 'Residential' End Date	Minimum Mark[5] - 40% or 50%	Independent Assessment Type of Assessment	Independent Assessment Weighting within module6 (%) of Independent assessments	Multi-part Assessment Weighting within module of multi-part assessments[7] (100%)	Multi-part Assessment Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Submission dates Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
1	I-MAN-INWK	Induction	Dr Konstantinos Salonitis	22		0	Y		03/10/16	07/10/16	N/A	AO	N/A				N/A	
2	I-ICI-A1019	Technology and Prototyping	Matthew Collins	38		10	Y		10/10/16	14/10/16	40	ICW	100				29/10/16	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
3	I-MNU-A1034	Operations Management	Prof Charalampos (Harris)	32		10	Y		17/10/16	21/10/16	40	EX	100				11/11/16	Manufacturing resit exams will be during week

---

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers [4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments [7](100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
			Makatsoris															commencing 18/09/17
4	I-ICI-A1020	Managing Innovation and New Product Development	Dr Clive Savory	35		10	Y		31/10/16	04/11/16	40	GCW	100				26/11/16	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
5	I-KME-A1022	Design Driven Innovation Processes	Prof Tetsuo Tomiyama	32		10	Y		14/11/16	18/11/16	40			100 MULTI	GCW GPRES ICW	50 25 25	12/12/16	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
6	I-MNU-A1018	General Management	Dr Yuchun Xu	32		10	Y		21/11/16	25/11/16	40	EX	100				06/01/17	Manufacturing resit exams will be during week commencing 18/09/17
7	I-GPD-A1505	Product Development	Dr Ahmed Al-Ashaab	32		10	N		28/11/16	02/12/16	40	GCW	100				16/01/17	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

8

Module Number	Module code	Title	Module Leader	Contact hours³	Total hours delivered by Visiting Lecturers⁴	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark⁵ - 40% or 50%	Independent Assessment Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments⁷(100%)	Multi-part Assessment Type of Assessment	Weighting of individual elements of multi-part assessment⁸	Submission dates Assessment Submission and/or exam date⁹	Assessment / Exam Retake date
8	I-KME-A1037	Enterprise Modelling	Dr John Ahmet Erkoyuncu	32		10	Y		16/01/17	20/01/17	40			100 MULTI	ICW GCW	60 40	27/01/17	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
9	I-GPD-A1507	Decision Engineering	Dr John Ahmet Erkoyuncu	32		10	Y		23/01/17	27/01/17	40	EX	100				17/02/17	Manufacturing resit exams will be during week commencing 18/09/17
10a	I-MNU-GRPP	Group Project for Full Time Students	Dr David Ayre	20		40	Y		06/02/17	28/04/17				80 MULTI 20 MULTI	GPRES GPROJ ICW observed behaviour	16 64 10 10	28/04/17	
10b	I-MNU-DISS	Dissertation for Part Time Students	Dr Konstantinos Salonitis	20		40	Y		01/02/17	31/08/17		ICW	100				31/08/17	
11	I-MNU-THESIS	Individual Research Project	Dr Yuchun Xu	20		80	Y		02/05/17	04/09/17		THESIS OR	90 10				04/09/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
I-MAN-INWK	Induction	Engineering and Management of Manufacturing Systems	Engineering & Management of Manufacturing Systems, Management and Information Systems, Manufacturing Consultancy, Knowledge Management for Innovation, Aerospace Manufacturing, Cyber-Secure Manufacturing
I-ICI-A1019	Technology and Prototyping	Innovation and Creativity in Industry	Innovation and Creativity in Industry, Cost Engineering
I-MNU-A1034	Operations Management	Engineering and Management of Manufacturing Systems	Manufacturing Technology and Management, Engineering & Management of Manufacturing Systems, Management and Information Systems, Manufacturing Consultancy, Cost Engineering, Aerospace Manufacturing, Cyber-Secure Manufacturing
I-ICI-A1020	Managing Innovation and New Product Development	Innovation and Creativity in Industry	Design Strategy and Leadership, Design and Innovation for Sustainability, Innovation and Creativity in Industry, Manufacturing Technology and Management, Digital Design and Strategic Communication
I-KME-A1022	Design Driven Innovation Processes	Global Product Development and Management	Knowledge Management for Innovation
I-MNU-A1018	General Management	Engineering and Management of Manufacturing Systems	Advanced Materials, Applied Nanotechnology, Manufacturing Technology and Management, Management and Information Systems, Manufacturing Consultancy, Knowledge Management for Innovation, Engineering & Management of Manufacturing Systems
I-KME-A1037	Enterprise Modelling	Management and Information Systems	Management and Information Systems, Knowledge Management for Innovation
I-GPD-A1507	Decision Engineering	Global Product Development and Management	Cost Engineering
I-MNU-DISS	Dissertation for Part Time Students	Manufacturing Systems and Management Programme	Engineering & Management of Manufacturing Systems, Manufacturing Consultancy, Management and Information Systems, Knowledge Management for Innovation, Aerospace Manufacturing

I-MNU-GRPP	Group Project for Full Time Students	Manufacturing Systems and Management Programme	Engineering & Management of Manufacturing Systems, Manufacturing Consultancy, Management and Information Systems, Knowledge Management for Innovation, Aerospace Manufacturing, Cyber-Secure Manufacturing
I-MNU-THESIS	Individual Research Project	Manufacturing Systems and Management Programme	Engineering & Management of Manufacturing Systems, Manufacturing Consultancy, Management and Information Systems, Knowledge Management for Innovation, Aerospace Manufacturing, Cyber-Secure Manufacturing

7. **How are the ILOs assessed?**

The course uses a range of assessment types. Students can expect to have 3 written examinations (Operation Management, General Management, and Decision Engineering), 5 pieces of assessment by submitted work and 2 elements of assessment by presentation or viva. The course is assessed as three elements:

- Taught modules (40%) are assessed by in-module assessment (including coursework, which focuses on application of principles studied and class tests, which support underpinning knowledge) or examination;
- Group project (20%) is assessed by means of a written group report and presentations.
- Individual thesis project (40%) is assessed by a thesis and an oral examination.

This approach has been adopted because the course focuses on product development that requires coursework. Assignment type assessment is the best for such modules.

Assessment and ILO Mapping

Complete the grid below by inserting in the boxes which assessments from the modules directly assess the Award ILOs.

(Module numbers should correspond with those used in the Course module table above.)

A. Postgraduate Certificate

Award ILOs Module No.	ILO 1	ILO 2	ILO 3	ILO 4	ILO 5
2		ICW	ICW	ICW	
3	EX				EX
4	GCW	GCW	GCW		GCW
5	GCW	GCW	GCW		GCW
6	EX				
7	GCW	GCW	GCW		GCW
8	ICW	ICW		ICW	
9	EX	EX		EX	

B. Postgraduate Diploma

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Award ILOs / Module No.	ILO 6	ILO 7	ILO 8	ILO 9	ILO 10	ILO 11	ILO 12
10a	GPRES GPROJ ICW	GPRES GPROJ ICW	GPRES GPROJ ICW	GPRES GPROJ ICW	GPRES GPROJ ICW	GPRES GPROJ ICW	GPRES GPROJ ICW
10b	ICW	ICW	ICW	ICW	ICW	ICW	ICW

C. MSc

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Award ILOs / Module No.	ILO 13	ILO 14	ILO 15	ILO 16	ILO 17	ILO 18	ILO 19
11	THESIS OR	THESIS OR	THESIS OR	THESIS OR	THESIS OR	THESIS OR	THESIS OR

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

Title	Modules Covered	Assessment	
		Type	Weight (%)

8. How will the University assure the quality of the provision?

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known

as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. **What opportunities are graduates likely to have on completing the course?**

The course is designed to equip the students with all the knowledge and skills necessary to work successfully in integrated international project teams. The close collaboration of the course with industry improves the employability of the students immediately. Exposing students to well-known industry broadens the student's horizon and introduces the student to industrial best practice. Working with worldwide well-known brands improves the vita of the students. A placement within industry also leverages the distance between the potential new employee – the student – and the potential employer.

In addition, the qualification obtained will support their professional development towards Incorporated or Chartered Engineer status (after accreditation).

COURSE SPECIFICATION

Cranfield University: Course Specifications

Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.

COURSE TITLE: MSc in Guided Weapon Systems

Date of first publication/latest revision: 06/09/16

1.   What is the course?

Course information

Course Title	Guided Weapon Systems
Course code	MSGWSFTR, PDGWSFTR, PCGWSFTR, MSGWSPTR, PDGWSPTR, PCWTSFTR SPGWSPTR
Academic Year	2016/17
Valid entry routes	MSc, PgDip, PgCert
Exit routes	PgDip, PgCert
Mode of delivery	Full-time/Part time
Location of Study	Shrivenham
School(s)	Cranfield Defence & Security
Theme	Defence and Security
Centre	Centre for Defence Engineering
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	Standard University entry requirements; additionally an IELTS score of 7.0 is usually required by students for whom English is not a first language.
UK Qualifications Framework Level	QAA FHEQ level 7 (Masters)
Benchmark Statement(s)	N/A
Registration Period(s) available	1 year Full-time, 5 years Part-time
Course Start Month(s)	September

Institutions delivering the course

1

This course is primarily delivered by the Cranfield School of Defence and Security, where the research interests include:

GW control, guidance, propulsion, aerodynamics, EO/IR systems, imaging systems, radar systems, warheads, materials, vibrations, aeroelasticity, lethality etc.

Cranfield University interacts with the following institutions and in the following ways:

- Industrial visits to: MBDA (Stevenage), Dstl (Portsdown West), Roxel (Summerfield), Thales (Belfast and Basingstoke), Royal Navy (HMS Collingwood and Portsmouth Dockyard), DI (London).

- Industrial lectures from MBDA and Thales on the subjects of project management, fuzing, systems engineering, software engineering and GW electronics engineering.

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

The Full-time MSc course is already fully accredited by the Institution of Mechanical Engineers (2010-14 cohorts) and also by the Royal Aeronautical Society (2012-13 to 2016-17). Re-accreditation presently being sought from the IMechE, to include the part-time variant and PgCert and PgDip courses.

2. <u>What are the aims of the course?</u>

The aim of the course is to provide students with a detailed knowledge and understanding of guided weapon systems, such that they are fully equipped for roles in defence intelligence and acquisition, involving the specification and analysis of such systems, working individually or as part of a team. It also enables students to carry out an in-depth investigation into an area of GW technology to further enhance their analytical capability.

The main objective of the course is to bring together the wide variety of disciplines constituting guided weapons technology and to present them in an integrated manner. Interactions between one field and another are emphasized throughout. The GWS course is now in its 65th consecutive year and satisfies a requirement for specialists trained in the field of guided weapons systems. Graduates of this course go on to work in defence analysis and intelligence, research establishments and education in the UK and abroad. It attracts students from RN, RAF and civil services in the UK, and increasingly from a number of other IDT-cleared countries, including Australia, Canada, USA, Greece, Netherlands, Brazil, India and Italy, and is seen as an essential prerequisite for a number of RAF, RN and RAAF jobs. The only other course of its kind is at the Naval Postgraduate School, Monterey in California (which runs over 2 years).

The number of students attending the course has been reasonably consistent over the past ten years, typically ten to thirteen students per year, roughly 50% UK and 50% overseas. It has many parallels with the Military Electronics Systems Engineering (MESE) course at Shrivenham and also shares many modules with it.

It was only available on a Full-Time basis, with a single award of MSc up to and including entry year 2014/15. It is now available to be taken on a Part-Time basis. In addition, Postgraduate Diploma (PgDip) and Postgraduate Certificate (PgCert) entry and exit routes have since been provided for students who wish to access only certain parts of the course.

This programme is intended for the following range of students:

It is of primary benefit to services personnel who are about to be posted into GW-related positions with organizations such as DI, DSTL and DE&S (and their international equivalents). It would also be eminently suitable for anyone intending to embark upon a GW-based career in industry.

3. <u>What should students expect to achieve in completing the course?</u>

Award intended learning outcomes (ILOs) (skills and knowledge).

A. Postgraduate Certificate

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1. Investigate and appraise, via written and spoken communicative means, the key advanced technological disciplines associated with modern guided weapons (radar systems, EO/IR systems, propulsion, aerodynamics, control and guidance).

ILO 2. Review and justify performance variations in mechanical and electrical sub-systems relative to the capabilities of a platform and appropriately investigate and analyse the key sub-systems that make up a guided weapon, through a wide range of modelling, simulation, synthesis and experimental methods.

B. Postgraduate Diploma

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 3. Establish and justify, via written and spoken communicative means, appropriate selection criteria, and the inherent inter-linked constraints for each of the major technical disciplines associated with modern guided weapons technology (e.g. signal processing, radar EW, structures, warheads, vibrations, aeroelasticity, materials, power supplies, explosives, etc.).

ILO 4. Propose and develop the design, operation and performance of a modern guided weapon and be able to discuss the findings in both written and viva voce examinations.

ILO 5. Assess and appraise, confidently and correctly using both written and oral communicative means, the principal trade-offs required to produce a successful guided weapon design.

ILO 6   Formulate and solve detailed calculations in order to fulfil a given complete missile system design requirement, including a detailed assessment of the target threat characteristics and then propose strategies, involving appropriate GW system and sub-system designs, to optimise the eventual system design based upon appropriate multi-disciplinary methods.

C. MSc

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 7. Assess new research ideas, concepts or methodologies through the use of a variety of techniques such as experimentation, analytical models and numerical

models in order to perform an extended investigation into a given facet of a missile-related problem.

ILO 8. Investigate research methodology tools in an extended GW-related study, incorporating recognised project management principles.

ILO 9. Appraise, assess and document an extended research project in the field of GW requiring elements of information retrieval, modelling, experimentation and theoretical analysis.

4. How is the course taught?

The course is delivered by conventional and traditional academic means. Although the course is specified and described in modular terms, these modules will be integrated as best as practicably possible into a continuous taught phase (for those enrolled on the Full-Time MSc programme). Apart from standard academic lectures, course delivery also includes the following:

- Numerous visits to a wide variety of relevant industrial and military establishments: MBDA (Stevenage), Dstl (Portsdown West), Roxel (Summerfield), Thales (Belfast and Basingstoke), Royal Navy (HMS Collingwood and Portsmouth Dockyard), DI (London). These visits will be scheduled as far as practicably possible to maximise possible attendance by Part-Time students (within applied security classification limitations). They are intended to enhance student's understanding of GW-related subject areas but are not assessed.
- Visiting lecturers (industry) using appropriate subject matter experts (project management, systems engineering, software engineering, electronics engineering, etc.).
- A parametric study (software-based missile design exercise).
- Tutorials (complete missile design exercises).
- Comprehensive use of the Virtual Learning Environment (VLE), with an increasing tendency towards Technology Enhanced Learning (TEL) methods. This is especially pertinent for the "Introductory & Foundation Skills" module, largely comprising studies in maths and Matlab/Simulink programming, along with the necessary induction sessions regarding the Library, IT, VLE, Turnitin, etc. It is envisaged that much of this module will be delivered via pre-reading and VLE means, with self-assessment in the future. It is appreciated that changes will be introduced into the Course Management with the introduction of the Part-time course options, particularly regarding student experience and progression. The Course Team will be appreciative of this and take appropriate measures to minimise any detrimental effects to the students. This will be done through the Course Director keeping in contact with the part-time students and having regular meetings and consultation with appropriate members of the SAS team and Academic Registry.

5. What do students need to achieve in order to graduate?

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A. Postgraduate Certificate
The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

4

Description	Credits
COMPULSORY MODULES:	
Module 1: Introductory & Foundation Studies (zero credits)	0
Module 3. EO & IR Systems 1	10
Module 4. Radar Principles	10
Module 5. GW Propulsion & Aerodynamics Theory	10
Module 6. GW Control Theory	10
ELECTIVE MODULES:	
Plus, any two of:	
Module 2. Signal Processing, Statistics & Analysis	10
Module 7. GW Applications - Control & Guidance - must be taken after pre-requisite module 6	10
Module 8. GW Applications - Propulsion & Aerodynamics - must be taken after prerequisite module 5	10
Module 9. Radar EW - must be taken after pre-requisite module 4	10
Module 10. EO & IR Systems 2 - must be taken after pre- requisite module 3	10
Module 11. GW Warheads, Explosives & Materials	10
Module 12. GW Structures, Aeroelasticity & Power Supplies	10
TOTAL:	**60**

B. Postgraduate Diploma

The accumulation of 130 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Module 1: Introductory & Foundation Studies (zero credits)	0
Module 2. Signal Processing, Statistics & Analysis	10
Module 3. EO & IR Systems 1	10
Module 4. Radar Principles	10
Module 5. GW Propulsion & Aerodynamics Theory	10
Module 6. GW Control Theory	10
Module 7. GW Applications - Control & Guidance - must be taken after pre-requisite module 6	10
Module 8. GW Applications - Propulsion & Aerodynamics - must be taken after pre-requisite module 5	10
Module 9. Radar EW - must be taken after pre-requisite module 4	10
Module 10. EO & IR Systems 2 - must be taken after pre-requisite module 3	10
Module 11. GW Warheads, Explosives & Materials	10
Module 12. GW Structures, Aeroelasticity & Power Supplies	10
Module 13. Parametric Study - must be taken after pre-requisite modules 7 and 8	5
Module 14. GW Systems	15
ELECTIVE MODULES:	
N/A	
TOTAL:	**130**

C. MSc

In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
Module 1: Introductory & Foundation Studies (zero credits)	0
Module 2. Signal Processing, Statistics & Analysis	10
Module 3. EO & IR Systems 1	10
Module 4. Radar Principles	10
Module 5. GW Propulsion & Aerodynamics Theory	10
Module 6. GW Control Theory	10
Module 7. GW Applications - Control & Guidance - must be taken after pre-requisite module 6	10
Module 8. GW Applications - Propulsion & Aerodynamics - must be taken after pre-requisite module 5	10
Module 9. Radar EW - must be taken after pre-requisite module 4	10
Module 10. EO & IR Systems 2 - must be taken after pre-requisite module 3	10
Module 11. GW Warheads, Explosives & Materials	10
Module 12. GW Structures, Aeroelasticity & Power Supplies	10
Module 13. Parametric Study - must be taken after pre-requisite modules 7 and 8	5
Module 14. GW Systems	15
Module 15. Individual Project	70
ELECTIVE MODULES:	
N/A	
TOTAL:	**130**

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria
The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does <u>not</u> have discretion to overrule this limit, but can refer a case to Senate's Education Committee); [1] [2]

---

[1] For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2] Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than

- **For Taught Assessments,** the minimum mark for each individual taught assessment <u>on the first attempt</u> for the significant majority of the taught assessments, noting that:
  - if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
  - if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);
  - it is <u>not</u> permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

6. How is the course structured?

Full-time students register for the course in September and are expected to complete the course within 12 calendar months.

Part-time students register for the course in September and are expected to complete the course within 5 years. The maximum registration period for the Part-Time MSc programme is five years.

Each 10-credit module is taught over a single week, with the following week kept free of structured teaching to allow time for more independent learning and reflection, especially for the Full-time students. Most industrial visits, if appropriate, are also scheduled for the second week, with Part-Time students offered the opportunity to attend as far as practicably possible. The main exception is the 15-credit GW Systems module, which runs over two weeks.

A thesis workshop will be programmed into the course schedule in March, which will generally be suitable for all Full-time and most Part-time students. A separate workshop will be organised, in September, for Part-time students for which this scheduling is deemed to be unsuitable. The Full-time course is generally structured in three distinct and chronological phases: firstly "theory" modules, secondly "applications" modules and thirdly "systems" modules. Some modules may therefore only be taken after its relevant pre-requisite module has
been taken (and passed). The module descriptors will reflect all such pre-requisites. In particular, they are:

- EO/IR Systems 1 is a pre-requisite for EO/IR Systems 2.
- Radar Principles is a pre-requisite for Radar EW.
- GW Control Theory is a pre-requisite for GW Applications - Control & Guidance.
- GW Propulsion & Aerodynamics Theory is a pre-requisite for GW Applications - Propulsion & Aerodynamics.
- Both GW Control Theory and GW Propulsion & Aerodynamics Theory are prerequisites for the Parametric Study.

The course structure (module breakdown) for both the Full-time and Part-time versions of the PgCert, PgDip and MSc qualifications are as follows:

PgCert Guided Weapon Systems (60 credits)

---

30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

Compulsory Modules
Module 1: Introductory & Foundation Studies (zero credits)
Module 3. EO & IR Systems 1
Module 4. Radar Principles
Module 5. GW Propulsion & Aerodynamics Theory
Module 6. GW Control Theory

Elective Modules
Plus, any two of:
Module 2. Signal Processing, Statistics & Analysis
Module 7. GW Applications - Control & Guidance - must be taken after pre-requisite
module 6
Module 8. GW Applications - Propulsion & Aerodynamics - must be taken after prerequisite
module 5
Module 9. Radar EW - must be taken after pre-requisite module 4
Module 10. EO & IR Systems 2 - must be taken after pre-requisite module 3
Module 11. GW Warheads, Explosives & Materials
Module 12. GW Structures, Aeroelasticity & Power Supplies

PgDip Guided Weapon Systems Candidates (130 credits)
All of the above PgCert compulsory and elective modules, plus:
Module 13. Parametric Study - must be taken after pre-requisite modules 7 and 8
Module 14. GW Systems

MSc Guided Weapon Systems (200 credits)
All of the above PgDip modules plus an individual project

Typical 5 Year (Part-Time) MSc Programme Plan
The following plan shows how a part-time student could complete the MSc programme within a
five year time-frame.

Year 1:

Module 1: Introductory & Foundation Studies (September)
Module 4: Radar Principles (October)
Module 6: GW Control Theory (December)
Module 11: GW Warheads, Explosives & Materials (January)
Module 12: GW Structures, Aeroelasticity & Power Supplies (February)

Year 2:

Module 2: Signal Processing, Statistics & Analysis (September)
Module 5: GW Propulsion & Aerodynamics Theory (November)
Module 7: GW Applications - Control & Guidance (February)
Module 8: GW Applications - Propulsion & Aerodynamics (March)

Year 3:

Module 3::EO & IR Systems 1 (October)
Module 9: Radar EW (January)
Module 10: EO & IR Systems 2 (November)

Year 4:

Commence Individual Project (Sept to July)
Module 13: Parametric Study (March)
Module 14: GW Systems (April)
Year 5:
Thesis workshop (Sept)
Complete Individual Project (Sept to July)

Typical 3 Year (Part-Time) PgCert Programme Plan
The following plan shows how a typical part-time student could complete the PgCert programme within a three year time-frame, though there are many other ways in which this could be done, dependent on an individual's elective module selection.

Year 1:

Module 1: Introductory & Foundation Studies (September)
Module 6: GW Control Theory (December)
Module 7: GW Applications - Control & Guidance (February)

Year 2:

Module 4: Radar Principles (October)
Module 5: GW Propulsion & Aerodynamics Theory (November)
Module 8: GW Applications - Propulsion & Aerodynamics (March)

Year 3:

Module 3::EO & IR Systems 1 (October)
Module 10: EO & IR Systems 2 (November)

Course modules

The following modules outline all parts of the programme leading to an **MSc**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7](100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
								Calendar			Independent Assessment		Multi-part Assessment			Submission dates	
1	R-GWS-IFS	Introductory and Foundation	20		0	N	05/09/16	05/09/16	09/09/16	N/A	AO	N/A				N/A	
2	R-MES-SPSA	Signal Processing, Statistics & Analysis	30		10	Y	26/09/16	26/09/16	30/09/16	50			100	ICW ICW ICW	40 40 20	28/10/16 (FT) 11/11/16 (PT)	13/01/17 (FT) 20/01/17 (PT)
3	R-MES-EOIS1	Electro-Optic & Infrared Systems, Part 1	32		10	Y	10/10/16	10/10/16	14/10/16	50	EX	100				20/12/16	21/02/17

---

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of m30arks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates fo32r both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module[6] (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
4	R-MES-RP	Radar Principles	30		10	Y	28/11/16	28/11/16	02/12/16	50			100	ICW ICW ICW		13/1/17 (FT & PT)	24/03/17 (FT) 07/04/17 (PT)
5	R-GWS-GWPAT	Guided Weapons Propulsion & Aerodynamics Theory	28		10	N	12/09/16	12/09/16	16/09/16	50 50	OR IPRAC	75 25				19-20/10/16 14/10/16 (FT) 04/11/16 (PT)	09/11/16 13/01/17 (FT& PT)
6	R-GWS-GWCT	Guided Weapons Control Theory	30		10	N	31/10/16	31/10/16	4/11/16	50 50	OR ICW	75 25				13-14/12/16 13/1/17 (FT) 03/02/17 (PT)	18/01/17 31/03/17 (FT & PT)
7	R-GWS-GWACG	Guided Weapons Applications – Control & Guidance	30		10	N	06/02/17	06/02/17	10/02/17	50 50	EX ICW	75 25				31/03/17 10/03/16 (FT) 31/03/16 (PT)	17/05/17 09/06/17 (FT & PT)
8	R-GWS-GWAPA	GW Propulsion & Aerodynamics Applications	28		10	N	06/03/17	06/03/17	10/03/17	40 40	EX IPRAC	50 50				30/03/17 21/04/17 (FT) 12/05/17 (PT)	18/05/17 09/06/17 (FT & PT)

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

| Module Number | Module code | Title | Contact hours[3] | Total hours delivered by Visiting Lecturers[4] | Credits | Is the module shared? Y/N | Calendar | | | Minimum Mark[5] - 40% or 50% | Assessment | | | | | | |
| | | | | | | | Module Start Date (eg Pre-course task) | 'Residential' Start Date | 'Residential' End Date | | Independent Assessment | | Multi-part Assessment | | | Submission dates | |
											Type of Assessment	Weighting within module[6] (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
9	R-MES-REW	Radar Electronic Warfare	30		10	Y	23/01/17	23/01/17	27/01/17	50	ICW	100				24/02/17 (FT) 10/03/17 (PT)	26/05/17 (FT) 09/06/17 (PT)
10	R-MES-EOIS2	Electro-Optic and Infrared Systems, Part II	32		10	Y	09/01/17	09/01/17	13/01/17	40	ICW	100				10/02/17 (FT) 24/02/17 (PT)	05/05/17 (FT) 19/05/17 (PT)
11	R-GWS-GWA	Guided Weapons Warheads, Explosives & Materials	30		10	N	14/11/16	14/11/16	18/11/16	40 40	EX ICW	75 25				16/12/16 20/01/17 (FT&PT)	19/01/17 03/03/17(FT) 24/03/17 (PT)
12	R-GWS-GWA2	Guided Weapons Structures, Aeroelasticity & Power Supplies	26		10	N	20/02/17	20/02/17	24/02/17	40 40	EX ICW	75 25				06/04/17 24/03/17 (FT) 21/04/17 (PT)	19/05/17 26/05/17 (FT&PT)
13	R-GWS-PS	Parametric Study	5		5	N	20/03/17	20/03/17	24/03/17	50 50	GPRAC GPRES	75 25				06/04/17 (FT&PT) 28/03/17 (FT&PT)	10/05/17 (FT&PT) 10/05/17 (FT&PT)
14	R-GWS-GWSLSA	Guided Weapon Systems	48		15	N	10/04/17	10/04/17	28/04/17	50 50	OR ICW	50 50				03-04/05/17 12/05/17 (FT) 2/06/17 (PT)	17/05/17 21/07/17 (FT) 21/07/17 (PT)

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

12

Module Number	Module code	Title	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment						
							Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
											Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7](100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
15	R-GWS-DISS	Research Project	3		70	N	02/01/17	02/01/17	28/07/17	50	THESIS	100				28/07/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

13

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
R-MES-SPSA	Signal Processing, Statistics & Analysis	Military Electronic Systems Engineering	Military Electronic Systems Engineering
R-MES-EOIS1	Electro-Optic & Infrared Systems, Part 1	Military Electronic Systems Engineering	Military Electronic Systems Engineering
R-MES-RP	Radar Principles	Military Electronic Systems Engineering	Military Electronic Systems Engineering
R-MES-REW	Radar Electronic Warfare	Military Electronic Systems Engineering	Military Electronic Systems Engineering
R-MES-EOIS2	Electro-Optic & Infrared Systems, Part 2	Military Electronic Systems Engineering	Military Electronic Systems Engineering

7. How are the ILOs assessed?

The course uses a wide range of assessment types. Students can expect to have written examinations (both open-book and closed-book), oral examinations (in the subjects of propulsion, aerodynamics, control and GW systems) and a large number of submitted work assessments. There will also be some group activities, e.g. in the Parametric Study, Radar Principles and GW Systems modules. The individual project will be assessed via dissertation submission. This provides a balanced approach to the overall course assessment.

Assessment and ILO Mapping

Complete the grid below by inserting in the boxes which assessments from the modules directly assess the Award ILOs.

(Module numbers should correspond with those used in the Course module table above.)

For Example:

Award ILOs / Module No.	ILO 1.	ILO 2.	ILO 3.	ILO 4.	ILO 5.	ILO 6.	ILO 7.	ILO 8.	
98	ICW				EX	EX	ICW		
99	ICW1		ICW1	ICW2					

A. Postgraduate Certificate

Award ILOs / Module No.	ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6	ILO 7	ILO 8	ILO 9
1									
2	ICW	ICW	ICW						

Module No. \ Award ILOs	ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6	ILO 7	ILO 8	ILO 9
3	EX	EX	EX						
4	ICW	ICW	ICW						
5	OR & IPRAC	OR & IPRAC	OR & IPRAC						
6	OR & ICW	OR & ICW	OR & ICW						
7	EX & ICW	EX & ICW	EX & ICW						
8	EX & IPRAC	EX & IPRAC	EX & IPRAC						
9	ICW	ICW	ICW						
10	ICW	ICW	ICW						
11	EX & ICW	EX & ICW	EX & ICW						
12	EX & ICW	EX & ICW	EX & ICW						

B. Postgraduate Diploma

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Nothing for PGDip in addition to those above for PGCert

C. MSc

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Module No. \ Award ILOs	ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6	ILO 7	ILO 8	ILO 9
13	GPRES & GPRAC	GPRES & GPRAC	GPRES & GPRAC	GPRES & GPRAC	GPRES & GPRAC				
14	OR & ICW	OR & ICW	OR & ICW	OR & ICW	OR & ICW	OR & ICW			
15							THESIS	THESIS	THESIS

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

Not applicable

Title	Modules Covered	Assessment	
		Type	Weight (%)

15

N/A			

8. How will the University assure the quality of the provision?

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.
The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. What opportunities are graduates likely to have on completing the course?

Nearly all students in recent years have been directly sponsored to undertake the course with a subsequent specific weapons-related position in mind. It is envisaged that this will remain the case in the foreseeable near and mid-terms, though the availability of PgCert and PgDip exit

routes, and the possibility for taking the course on a Part-Time basis, may eventually change the nature of the student profile. The field of guided weapon systems technology is ever-changing and there are many opportunities within industrial companies (such as Thales and MBDA in the UK) for successful GWS students.

Cranfield University: Course Specifications

Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.

COURSE TITLE: MSc in Information Capability Management

Date of first publication/latest revision: August 2016

1. What is the course?

Course information

Course Title	Information Capability Management
Course code	MSICMFTR – PDICMFTR – PCICMFTR – MSICMPTR - PDICMPTR- PCICMPTR - SPICMPTR
Academic Year	2016/17
Valid entry routes	MSc, PgDip, PgCert
Additional exit routes	PgDip, PgCert
Mode of delivery	Full time, part time and short course for credit
Location of Study	Cranfield Defence and Security
School(s)	Cranfield Defence and Security
Theme	Defence and Security
Centre	Centre for Cyber Security and Information Systems
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	Standard University entry requirements
UK Qualifications Framework Level	QAA FHEQ level 7 (Masters)
Benchmark Statement(s)	Benchmarked against QAA Master's Benchmark Statements for
Registration Period(s) available	A student who registers for the PgCert will have a registration period of 3 years. For the PgDip this will be 4 years, and for the MSc 5 years.
Course Start Month(s)	Full-time & Part-time – September Part-time - January

1

Institutions delivering the course

This course is delivered by Cranfield Defence and Security, Centre of Cyber Security and Information Systems where the research interests include:

Information Management, Human Factors, Enterprise Architecture and Information Systems (IS)

Cranfield University interacts with the following institutions and in the following ways:

The course has no academic or industrial partners. Students will probably undertake their research for the dissertation stage through another organisation (often their sponsor).

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

The course is accredited formally by the British Computer Society (BCS) up to and including the 2015 intake. Successful completion of the MSc can lead to Chartered Professional Status. The course is also accredited by the Chartered Institute of Library and Information Professionals (CILIP).

2. <u>What are the aims of the course?</u>

Cranfield University offers this course in order:

- to provide students with a broad base of information system (IS) and management theories, concepts, applications and techniques in order to contribute to IS provision in support of an organisation's business goals
- to develop or enhance professional competence and agility in individuals who wish to become senior managers who can master the disciplines of both business and information.
- to develop students' ability through comprehensive analysis and synthesis of key issues and specific areas of interest that will enable them to be effective within the IS profession
- to provide students with a knowledge of information systems, management theories and enabling technologies along with the skills to critically analyse their practical application in order to support business goals.
- to develop the skills to work with others in a team based environment.
- to enable optimum effectiveness through conceptualisation, abstraction, and evaluation of complex often competing requirements, constraints and imperatives from a variety of stakeholders in order to exercise informed professional IS judgement.

Additional MSc Aims

- to enhance and synthesise independent learning abilities.
- to apply critical appraisal skills to research and analyse a relevant information system issue, challenge or opportunity in an evidence based dissertation.

Postgraduate Diploma (PgDip) and Postgraduate Certificate (PgCert) exit routes are provided for students who wish to access only parts of the course provided.

This programme is intended for the following range of students:

- personnel from the Ministry of Defence
- personnel from Government bodies
- employees from industry

- people wishing to develop the skills and knowledge associated with development of business systems.

3. What should students expect to achieve in completing the course?

Award intended learning outcomes (ILOs) (skills and knowledge).

A. Postgraduate Certificate/Postgraduate Diploma

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1.	analyse the conceptualisation of the information systems environment in the UK specifically and more generally in a global context
ILO 2.	compare contemporary IS methodology and their applicability to the development of strategy and systems
ILO 3.	distinguish the nature and impact of project management on the effective delivery and operation of information systems
ILO 4.	outline contemporary emerging technology and illustrate its application to a range of scenarios
ILO 5.	critically evaluate requirements within selected business environments (including legal, ethical) in order to best support business process with information systems
ILO 6.	demonstrate synthesis and evaluation in the consideration of key approaches to strategic information system development
ILO 7.	develop representational models of information system processes and apply them within the strategic information system development environment
ILO 8.	critically analyse information from disparate sources synthesising unique interpretation
ILO 9.	demonstrate the ability to work within teams, communicating and collaborating in order to develop solutions to information systems challenges
ILO 10.	utilise value judgement to act as an informed customer in information system discussions
ILO 11.	apply relevant theories, concepts and techniques in the development of information systems in an integrated team based environment
ILO 12.	critically analyse risk and uncertainty, undertaking alleviation action (including system protection and security) in order to achieve cost effective and timely performance
ILO 13.	develop and prioritise strategies and approaches that develop and enhance effective information systems
ILO 14.	evaluate influences, and apply concepts and techniques in the production of strategy and development of information systems

B. MSc

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 15. undertake analytical research, using appropriate research methodology, data collection and analysis into defined areas to produce evidence based meaningful and applicable recommendations for action to enhance information system development

ILO 16. exercise self-direction, independent learning abilities and originality of thought in optimising, evaluating and presenting information system development recommendations and solutions

4. <u>How is the course taught?</u>

Students will be supported in their learning and personal development by:

- dedicated study skills sessions in the Foundations module
- access to materials on the Virtual Learning Environment (VLE) that support study skills development
- case studies that translate the theories into practical solutions
- lectures from subject matter experts both internal and external to the University
- visits to relevant organisations
- group-work involving investigation into a current subject area and presentation to peers
- access to a range of material through the University Library services

5. <u>What do students need to achieve in order to graduate?</u>

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A. Postgraduate Certificate
The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Foundations of IS	10
ELECTIVE MODULES:	
5 modules chosen from 2-12	50
TOTAL:	**60**

B. Postgraduate Diploma

The accumulation of 120 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Modules 1-12	120
ELECTIVE MODULES:	
N/A	
TOTAL:	**120**

C. MSc

In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
Modules 1–12	120
Module 13 (Research Project)	80
ELECTIVE MODULES:	
N/A	
TOTAL:	**200**

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria

The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does not have discretion to overrule this limit, but can refer a case to Senate's Education Committee);[1][2]

---

[1] For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2] Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%.

- **For Taught Assessments,** the minimum mark for each individual taught assessment <u>on the first attempt</u> for the significant majority of the taught assessments, noting that:
  - o if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
  - o if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);
  - o it is <u>not</u> permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

6.   How is the course structured?

Full-time students register for the course in September and are expected to complete the course within 48 weeks. Full-time modules run in three week blocks with a week of directed study prior to a taught week and another directed study period after the taught week to allow time for more independent learning, reflection and completion of coursework. Two modules are run via the VLE over a period of approximately 14 weeks supported by face to face tutorials.

Part-time students have up to five years to complete the twelve modules and dissertation (on average four modules per year) but could complete in less than three years depending on student availability to study. Modules are taken with the full time students during the full-time delivery and via the virtual learning environment (VLE). Part time students typically complete each module over a seven week period (sharing the same taught week with the full-time students but with six weeks of directed study; 3 weeks of directed study before the taught week and 3 weeks afterwards to allow time for more independent learning, reflection and completion of coursework).

Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

6

Course modules

The following modules outline all parts of the programme leading to an **MSc**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment						
							Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
											Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
1	R-SISD-F	Foundations of IS (A) Foundations of IS (B)	30		10	N		05/09/16 09/01/17	09/09/16 13/01/17	40	ICW	100				19/09/16 FT 03/10/16 PT 06/02/17 PT(B)	
2	R-SISD-PI	Professional Issues+	10		10	N	07/09/16	-	12/12/16	40	ICW	100				12/12/16 FT 12/12/16 PT	

---

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis; MULTI – Multi-part assessment

7

Module Number	Module code	Title	Contact hours[3]	Total hours delivered by Visiting Lecturers [4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments [7](100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
								Calendar			Assessment						
											Independent Assessment		Multi-part Assessment			Submission dates	
3	R-SISD-PM	Programme and Project Management for Information Systems	30		10	N	26/09/16	17/10/16	21/10/16	40	ICW	100				31/10/16 FT

14/11/16 PT | |
| 4 | R-SISD-MT | Methods and Tools for Information Systems Development | 30 | | 10 | N | 05/09/16 | 26/09/16 | 30/09/16 | 40
40 | GPRES
ICW | 25
75 | | | | 30/09/16 FT/PT

10/10/16 FT
24/10/16 PT | |
| 5 | R-SISD-SE | Software Engineering (IS) | 30 | | 10 | N | 17/10/16 | 07/11/16 | 11/11/16 | 40
40 | GCW
ICW | 20
80 | | | | 21/11/16
21/11/16 FT
05/12/16 PT | |
| 6 | R-SISD-ISA | Systems Architecture | 30 | | 10 | N | 07/11/16 | 28/11/16 | 01/12/16 | 40
40 | GCW
ICW | 20
80 | | | | 12/12/16
12/12/16 FT
09/01/17 PT | |
| 7 | R-SISD-SAIS | Strategic Application of Information Systems | 30 | | 10 | N | 02/01/17 | 23/01/17 | 27/01/17 | 40
40 | GCW
ICW | 25
75 | | | | 06/02/17
06/02/17 FT
20/02/17 PT | |
| 8 | R-SISD-ETM | Emerging Technology Monitoring+ | 10 | | 10 | N | 09/01/17 | - | 02/05/17 | 40
40 | ICW
ICW | 50
50 | | | | 02/05/17 FT
02/05/17 PT | |

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis; MULTI – Multi-part assessment

8

Module Number	Module code	Title	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module[6] (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
										Calendar			Assessment				
											Independent Assessment		Multi-part Assessment			Submission dates	
9	R-SISD-OD	Organisational Development	30		10	N	23/01/17	13/02/17	17/02/17	40	CW	100				27/02/17 FT 13/03/17 PT	
10	R-SISD-IAS	Cyber Security & Information Assurance	30		10	N	13/02/17	06/03/17	10/03/17	40 40	GCW ICW	25 75				20/03/17 20/03/17 FT 03/04/17 PT	
11	R-SISD-DMSM	Data Modelling, Storage and Management	30		10	N	06/03/17	27/03/17	31/03/17	40 40	GCW ICW	20 80				10/04/17 10/04/17 FT 24/04/17 PT	
12	R-SISD-DLDS	Data-led Decision Support	30		10	N	27/03/17	17/04/17	21/04/17	40 40	GCW ICW	20 80				02/05/17 02/05/17 FT 15/05/17 PT	
13	R-SISD-DISS	Dissertation[10]	20		80	N	Workshop: A 02/05/17 B 30/09/16 C 31/01/17 D 31/03/17 E 31/07/17	04/07/17 05/12/17	06/07/17 07/12/17 A 28/07/17 B 29/09/17 C 31/01/18 D 29/03/18 31/07/18	AO AO 50	Thesis	100				A 28/07/17 FT B 29/09/17 PT C 31/01/18PT D 29/03/18PT E 31/07/18PT	

[10] Occurrence A is for Full time students. Occurrences B -E are for Part-time students who have completed the taught phase of the Course; Occurrence chosen is to be agreed in consultation with Course Director

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis; MULTI – Multi-part assessment

9

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module

7. How are the ILOs assessed?

The Course uses a range of assessment types. Depending on the number and type of modules taken students can expect assessment by submitted work and elements of assessment by presentation or viva. Some of this assessed work will be completed in groups. For each module students will be invited to undertake one or more pieces of coursework which collectively will form a portfolio of work to be assessed.

This approach has been adopted in order to present students with a variety of realistic problems that need to be solved using a variety of approaches which provide opportunities to demonstrate their ability to apply skills and knowledge developed on the course, many of which relate to situations that might be found in the workplace. To obtain an MSc, students must complete a dissertation, demonstrating their ability to apply the skills and knowledge gained on the course to a real world problem.

Assessment and ILO Mapping

A. Postgraduate Certificate/Diploma

Award ILOs / Module No	ILO1	ILO2	ILO3	ILO4	ILO5	ILO6	ILO7	ILO8	ILO9	ILO10	ILO11	ILO12	ILO13	ILO14	ILO15	ILO16
1	ICW							ICW								
2	ICW				ICW									ICW		
3		ICW	ICW		ICW		ICW		ICW		ICW					ICW
4	ICW	ICW			ICW			ICW	ICW		ICW		ICW	ICW	ICW	ICW
5		GCW/ICW			GCW	GCW/ICW	ICW		GCW		ICW					
6	ICW	ICW, GCW			ICW, GCW	ICW, GCW		ICW	GCW	ICW	GCW	ICW	GCW	GCW	ICW	ICW
7	GCW	ICW				ICW/GCW		ICW/GCW	GCW	GCW	GCW	GCW	ICW	GCW		
8				ICW												
9		ICW							ICW		ICW			ICW		
10								ICW	GCW			ICW				
11					ICW, GCW		ICW	ICW, GCW	GCW	ICW, GCW	GCW	ICW, GCW			ICW	ICW
12				GCW		GCW		GCW/ICW	GCW		GCW		ICW	ICW		

B. MSc

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Module No. \ Award ILOs	ILO15	ILO16
13	THESIS	THESIS

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

Title	Modules Covered	Assessment	
		Type	Weight (%)

8. How will the University assure the quality of the provision?

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the

University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. **What opportunities are graduates likely to have on completing the course?**

On successful completion of the course the student will have a Masters' Degree in Information Capability Management accredited by two professional bodies, recognised by Government and industry, representing Information Professionals (CILIP) and IT Professionals (BCS).
The course will take students on to further senior management career opportunities with skills in appropriate areas including business strategy development and implementation, information management, information assurance/ cyber security, development of appropriate business systems and strategic application of information systems.

COURSE SPECIFICATION

Cranfield University: Course Specifications

Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.

COURSE TITLE: MDes in Innovation and Creativity in Industry

Date of first publication/latest revision: 31/8/16

---

1. **What is the course?**

Course information

Course Title	Innovation and Creativity in Industry
Course code	MNICIFTC, MNICIPTC, PDICIFTC, PDICIPTC, PCICIFTC, PCICIPTC
Academic Year	2016/17
Valid entry routes	MDes, PgDip, PgCert
Additional exit routes	PgDip, PgCert
Mode of delivery	Full-time, Part-time
Location of Study	Cranfield
School(s)	School of Water, Energy and Environment
Theme	Water
Centre	Centre for Competitive Creative Design (C4D)
Course Director	Dr Matt Collins
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	Standard University entry requirements
UK Qualifications Framework Level	QAA FHEQ Level 7 (Masters)
Benchmark Statement(s)	N/A
Registration Period(s) available	Full-time PgCert - one year, Part-time PgCert - two years, Full-time PgDip - one year, Part-time PgDip - two years, Full-time MDes - one year Part-time MDes - three years
Course Start Month(s)	Full-time: October Part-time: throughout the year

Institutions delivering the course

This course is delivered by Centre for Competitive Creative Design (C4D) where the research interests include development of design-led thinking and open innovation within engineering and management sectors, innovation in the development of areas of social responsibility, evaluation of design effectiveness and methods and applications of design futures.

Cranfield University interacts with the following institutions and in the following ways:

C4D has a range of industrial associates and this group is normally expected to be among sponsors for group and individual thesis projects. This group of industrial partners currently includes Ford, Procter and Gamble, Xerox, Herman-Miller and the NHS, and design companies including Imagination Ltd. All group and individual thesis projects are normally expected to be sponsored by a private or public sector partner, although some projects are carried out internally where internal collaborations or particular subject areas are in development.

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is not accredited by any external bodies.

Accreditation will be sought from the Chartered Society of Designers. The initial accreditation meeting will take place in October 2017.

2. What are the aims of the course?

Cranfield University offers this course in order to:

- Establish study in interdisciplinary working
- Produce professionals who are able to lead in cross- disciplinary operations through methods of innovation and design thinking.
- Develop research and consultancy linking technology, management and creative design.

This programme is intended for the following range of students:

- Industry professionals who wish to develop their career through engagement with creativity and innovation.
- Graduates from design and engineering sectors
- Creative and Engineering professionals who wish to move their professional positioning to more strategic responsibility.

3. What should students expect to achieve in completing the course?

Award intended learning outcomes (ILOs) (skills and knowledge).

A. Postgraduate Certificate in Innovation and Creativity in Industry

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1.   Demonstrate a conceptual understanding of design processes in the industrial context

ILO 2.   Demonstrate knowledge of ways in which products and services are developed within industry

ILO 3.   Demonstrate knowledge of state-of-the- art methods and techniques being used in the design process

ILO 4.   Demonstrate ability to make judgements and evaluations in decisions within creative design and its relationship to engineering and management

ILO 5.   Critically evaluate their own and other's work

ILO 6.   Communicate effectively verbally or in writing and using visual media to suit a range of audiences

B. Postgraduate Diploma in Innovation and Creativity in Industry

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 7.   Develop working/application knowledge of using currently available software tools in the design process

ILO8.   Integrate knowledge, understanding and skills from the taught modules in a real-life situation.

ILO9.   Effectively work in a small project team to identify project objectives and select appropriate methodologies to address problems faced by industrial clients; collaborating with other team members to communicate findings in a professional manner in written, oral and visual forms

C   MDes in Innovation and Creativity in Industry

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 10.   Develop enhanced critical appreciation of own and other's work

ILO 11.   Define a research question, develop aim(s) and objectives, select and execute a methodology, analyse data, and evaluate findings and draw appropriate conclusions.

ILO12.   To communicate their findings successfully via a thesis, written in an approved School style and in an oral presentation.

4. How is the course taught?

Students will be supported in their learning and personal development by:

* Course delivery will be the responsibility of SWEE. Module delivery will be shared between SWEE and the School of Management (SoM). Students are encouraged to reflect on the experience of this learning at the C4D centre within the creative modules, the group project, and specifically organised sessions.
* There are three phases that make up the course (taught, group project/ dissertation and individual thesis project.
* The course applies creative learning methods to provide and to foster an applied design thinking learning experience.
* The curriculum will be delivered through the development of an appreciative learning and action based approach to maximise the benefit of the multi-disciplinary nature of the course.

5. What do students need to achieve in order to graduate?

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A.   Postgraduate Certificate

The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Any 6 compulsory taught modules (from 2-9).	60
ELECTIVE MODULES:	
N/A	
TOTAL:	**60**

B.   Postgraduate Diploma

The accumulation of 120 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
8 taught modules (2-9) Group Project (Full-time) or Individual Dissertation (Part-time)	80 40 or 40
ELECTIVE MODULES:	
N/A	
TOTAL:	**120**

4

C. MDes

In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MDes will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
8 compulsory taught modules (2-9) Group Project (Full-time) or Individual Dissertation (Part-time) Individual Thesis Project	80 40 or 40 80
ELECTIVE MODULES:	
N/A	
TOTAL:	**200**

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria

The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does <u>not</u> have discretion to overrule this limit, but can refer a case to Senate's Education Committee);[1][2]
- **For Taught Assessments,** the minimum mark for each individual taught assessment <u>on the first attempt</u> for the significant majority of the taught assessments, noting that:
  - if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
  - if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will

---

[1]   For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2]   Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);
  o it is <u>not</u> permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

6. How is the course structured?

The full time course is structured in three phases:

- The taught phase between October and January taking eight compulsory modules
- The group project phase runs between March and the following September;
- The thesis phase between March and the following September.

The part time course is structured in three phases:

- The taught phase between October and January taking eight compulsory modules (typically within the registration period)
- The dissertation phase is organised with a supervisor and typically delivered between years one and two.
- The thesis phase is typically completed as the final delivery of their course and would start after the taught phase and dissertation has been completed.

Course modules

The following modules outline all parts of the programme leading to an **MDes**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers [4]	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments [7](100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
1	I-DES-INWK	Induction *(compulsory)*	L Williams	50		0	N		03/10/16	07/10/16	N/A	AO	N/A				N/A	
2	I-ICI-A1019	Technology & Prototyping – C4D	Dr Leon Williams	38		10	N		10/10/16	14/10/16	40	ICW	100				FT-29/10/16 PT-29/10/16	

---

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate*).* If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

7

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Independent Assessment Type of Assessment	Weighting within module6 (%) of Independent assessments	Multi-part Assessment Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Submission dates Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
3	I-DFS-A1028	Whole System Design	M Moreno	30		10	Y		24/10/16	28/10/16	40	ICW	100				FT-19/11/16 PT-26/11/16	
4	I-ICI-A1020	Managing Innovation & New Product Development	C Savory	35		10	Y		31/10/16	04/11/16	40	GCW	100				FT-26/11/16 PT-03/12/16	
5	I-ICI-A1009	Creative Enterprise & Entrepreneurship	M Van Der Kamp	36		10	Y		07/11/16	11/11/16	40	GCW	100				FT-17/12/16 PT-03/01/17	
6	I-DFS-A1521	Design and Brand Management	L Williams	40		10	Y		28/11/16	02/12/16	40	ICW	100				FT-03/01/17 PT-07/01/17	
7	I-DSL-A1021	Consumer Trends	M Moreno	27		10	Y		05/12/16	09/12/16	40	GCW	100				FT-07/01/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers [4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments [7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
																	PT-14/01/17	
8	I-ICI-A1022	Smart Materials & Processes	M Collins	32		10	N		09/01/17	13/01/17	40	ICW	100				FT-21/01/17 PT-28/01/17	
9	I-ICI-A1007	Programme & Project Management	J Algar	20		10	Y		06/02/17	10/02/17	40 40	GCW ICW	60 40				FT-18/02/17 PT-25/02/17	
10	I-DES-GRPP	Group Project For Full-Time Students	Supervisors	16		40	Y		20/02/17	06/05/17	50	GPROJ IPROJ	80 20				02/05/17 06/05/17	
11	I-DES-DISS	Dissertation For Part-time Students	Supervisors	10		40	Y		03/10/16	30/09/17	50	IPROJ	100				30/09/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

9

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
12	I-DES-THESIS	Individual Research Project	Supervisors	20		80	Y		08/05/17	04/09/17	50	THESIS OR	90 10				04/09/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

10

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
I-DSL-A1021	Consumer Trends	Design Strategy and Leadership	Design & Innovation for Sustainability Digital Design and Strategic Communication Design Strategy and Leadership MDes in Innovation and Creativity in Industry
I-ICI-A1009	Creative Enterprise & Entrepreneurship	Innovation & Creativity in the Industry/ SOM programme- Bettany Centre for Entrepreneurship	Design & Innovation for Sustainability Design Strategy & Leadership Digital Design and Strategic Communication MDes in Innovation and Creativity in Industry
I-DFS-A1521	Design and Brand Management	Design & Innovation for Sustainability	Design Strategy & Leadership Digital Design and Strategic Communication MDes in Innovation and Creativity in Industry Design & Innovation for Sustainability Knowledge Management for Innovation
I-ICI-A1020	Managing Innovation and New Product Development	Innovation & Creativity in the Industry/ SOM programme- Centre for Innovative Products and Services	Design & Innovation for Sustainability Design Strategy & Leadership Digital Design and Strategic Communication MDes in Innovation and Creativity in Industry Global Product Development and Management Manufacturing Technology and Management
I-ICI-A1007	Programme & Project Management	SOM Programme- Project Management	Design & Innovation for Sustainability Design Strategy & Leadership Digital Design and Strategic Communication MDes in Innovation and Creativity in Industry
I-DFS-A1028	Whole System Design	Design & Innovation for	Design Strategy & Leadership Design & Innovation for

		Sustainability	Sustainability
			Digital Design and Strategic Communication
			MDes in Innovation and Creativity in Industry
			Cost Engineering

7. How will the University assure the quality of the provision?

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by

and acted on where appropriate by the Education Committee, Senate, School and University Executives.

8. **What opportunities are graduates likely to have on completing the course?**

The course and C4D centre are funded by HEFCE in collaboration with UAL in order to produce post -graduates who are able to take leadership positions in the private and public sectors embedding creative and innovation techniques into all areas. This is a needs- based profile supported by industries, and the course graduates are expected to find an appreciation of their abilities in the employment market. The profile is being developed in a variety of countries including Europe and America due to this identified need. C4D are part of a Design Council educational committee called the 'Interdisciplinary Design Network' at which this context is discussed and developed.

COURSE SPECIFICATION

Cranfield University: Course Specifications
Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.

COURSE TITLE: MSc in Integrated Landscape Ecology

Date of first publication/latest revision: 20/01/16 – 07/09/16

1. What is the course?

Course information

Course Title	Integrated Landscape Ecology
Course code	MSILEFTC, MSILEPTC, PDILEFTC, PDILEPTC, PCILEFTC, PCILEPTC
Academic Year	2016/17
Valid entry routes	MSc, PgDip, PgCert
Additional exit routes	PgDip, PgCert
Mode of delivery	Full-time, Part-time
Location of Study	Cranfield
School(s)	School of Water, Energy and Environment
Theme	Environment & Agrifood
Centre	Institute for Environment, Health, Risks and Future
Course Director	Dr Ron Corstanje
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	1st or 2nd class UK honours degree or equivalent; in a science or engineering subject; Candidates with other qualifications will be considered according to experience; Where applicable minimum IELTS score of 6.5 or TOEFL 580
UK Qualifications Framework Level	QAA FHEQ Level 7 (Masters)
Benchmark Statement(s)	N/A
Registration Period(s) available	Full-time PgCert - one year, Part-time PgCert - two years, Full-time PgDip - one year, Part-time PgDip - two years
Course Start Month(s)	Full-time: October Part-time: Normally October and only exceptionally at other times in

1

	the year

Institutions delivering the course

This course is delivered by the School of Energy, Environment and Agrifood where the research interests include: spatial modelling, landscape connectivity, ecosystem services, environmental assessment, landscape change.

Cranfield University interacts with the following institutions and in the following ways:

The Integrated Landscape Ecology Course has an Industrial Advisory Panel that formally meets each year. Current members of the Land Management Industrial Advisory Panel include, ERM, Natural England, the Environment Agency, Oakdene Hollins, the Landscape Institute and the National Trust.

The Landscape Institute review the course as part of their accreditation process. There are currently three members of the review group: two from landscape companies and one from a local authority. The course is also accredited by the Institution of Agricultural Engineers.

Representatives from the Landscape Institute, the Institution of Agricultural Engineers, and the British Society of Soil Scientists will make presentations to the group during the year.

Students will be involved with field trips off-campus. These typically include the following organisations: a National Park, ecological organisations and Group Project sponsor organisations..

Students can undertake their individual research project off campus. In recent years, projects have been undertaken with the Environment Agency, Heineken, RSPB, Produce World, Natural England, Yorkshire Water, the National Trust, agricultural engineering companies, Unilever, Leverhulme Trust, various County Councils, and Museo de Historia Natural Noel Kempff Mercado (Bolivia), Estación Biologica Doñana and Universidad Politecnica de Madrid and Shanghai University.

The course will benefit from links to a significant number of European Universities through the Cranfield University European Partnership Programme.

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is not accredited by any external bodies.*

NOTE: For new courses, please indicate which accrediting body/bodies (PSRBs) you are applying to for accreditation? Give details of how you have designed this course to meet the requirements of the relevant PSRB(s) - this section will be deleted in the public document)

The Integrated Landscape Ecology course is accredited by the Landscape Institute and the Institution of Agricultural Engineers.

2. **What are the aims of the course?**

Appropriate landscape processes and functions are vital if individuals, communities, businesses and governments are to balance successfully the competing demands of land use to provide food, fuel, high quality water, timber and fibre with those of environmental regulation, conservation, landscape, recreation and urban development.

2

The Integrated Landscape Ecology course has four broad aims:

- To train students to use, and critically evaluate the use of, social, scientific and engineering knowledge, understanding, and techniques to address landscape processes and problems.
- To train students in transferable skills such as communication, group-working, and personal effectiveness.
- To enhance a student's employability in the environment sector
- To assess a student's ability to demonstrate the appropriate application of knowledge, understanding, and technical and transferable skills to address landscape management problems.

This programme is intended for the following range of students:

- Those wishing to work nationally or internationally with agribusiness companies, governments, and government agencies that need to address landscape level problems.
- Those wishing to work in natural resources research and consultancy.
- Those wishing to work in the NGO sector on environmental resource management problems.

3. <u>What should students expect to achieve in completing the course?</u>

Award intended learning outcomes (ILOs) (skills and knowledge).

A. Postgraduate Certificate in Integrated Landscape Ecology

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1. Develop and assess appropriate and sustainable solutions to landscape processes and functions in natural and man-made environments, at a range of spatial scales, integrating the technical, social and institutional constraints imposed by the environment.

ILO 2. Display confidence and technical competence in assessing, critically analysing and solving complex problems

ILO 3. Use spatially-explicit methods to integrate, analyse and display environmental data

ILO 4. Utilise survey and laboratory data to assess landscape, land resources, land capability, and land use suitability for ecosystem assessment and monitoring

ILO 5. Develop appropriate plans to protect natural resources at a range of scales and specifically to propose techniques to combat degradation.
ILO 6. Develop appropriate plans to protect or enhance ecological function and integrity and mitigating land gradation at a range of spatial scales recognising that biodiversity is but one of the natural resources and services of an ecosystem;

B. Postgraduate Diploma in Integrated Landscape Ecology

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 6.

ILO 7. Facilitate an integrative approach to problem-solving, hypothesis setting; argue coherently; make effective decisions even under time pressure; and show knowledge of personal strengths and weaknesses.

ILO 8 Integrate knowledge, understanding and skills from the taught modules in a real-life situation

ILO 9 Effectively work in a small project team to identify project objectives and select appropriate methodologies to address problems faced by industrial clients; collaborating with other team members to communicate findings in a professional manner in written, oral and visual forms

C. MSc in Integrated Landscape Ecology

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:
.

ILO 10 Define a research question, develop aim(s) and objectives, select and execute a methodology, analyse data, and evaluate findings and draw appropriate conclusions

ILO 11 To communicate their findings successfully via a thesis, written in an approved School style and in an oral presentation

4. How is the course taught?

The MSc course will be taught in three sections: taught modules (40%), a group project (20%), and an individual research project (40%) in line with the School teaching strategy. The taught modules are typically delivered in one-week blocks between October and February. The course material is delivered within one week with a second week focussed on assimilation and the completion of an assignment. The teaching methods include debates, practical sessions, field visits, lectures, seminars, and presentations. The Group Project is a group-based activity typically undertaken between February and May. The project is designed to integrate knowledge, understanding and skills from the taught modules in a real-life situation. For the individual research project, each student is allocated a supervisor. Guidance sessions are provided as to what is required from the thesis and oral presentation.

Within the induction week, students will be introduced to personal development planning and asked to reflect on their transferable skills and to take ownership of their personal development during the course. During the group project students will be given training in group-working and will reflect on their personal development.

5. What do students need to achieve in order to graduate?

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A. Postgraduate Certificate

4

The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Module 1 Any six chosen from modules 2-9	0 60
ELECTIVE MODULES:	
TOTAL:	**60**

B.   Postgraduate Diploma

The accumulation of 120 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Module 1 Modules 2-9 Module 10 Module 11 in place of Module 10	0 80 40 40
ELECTIVE MODULES:	
TOTAL:	**120**

C.   MSc

In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
Module 1 Modules 2-9 Module 10 (Group project) Module 11 in place of Module 10 Module 12 (Thesis project)	0 80 40 40 80
ELECTIVE MODULES:	
TOTAL:	**200**

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria

The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does not have discretion to overrule this limit, but can refer a case to Senate's Education Committee);[1][2]
- **For Taught Assessments,** the minimum mark for each individual taught assessment on the first attempt for the significant majority of the taught assessments, noting that:
  - o if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
  - o if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);
  - o it is not permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

6. How is the course structured?

Please see the course structure document for details on the individual elements of the course.

Full-time students register for the course in October and are expected to complete the MSc course within 12 calendar months.

This course is also offered on a part-time basis. In such a situation, students typically complete the various components of the course over two or three years. One example is to complete five taught modules in year 1, three taught modules and a work-based project in year 2, and a thesis and oral presentation in year 3. An alternative is to complete the autumn term modules in year 1, to complete a research thesis between January and December in year 2, and then to complete the remaining three taught modules and group project between January and May in year 3.

---

[1] For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2] Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

Course modules

The following modules outline all parts of the programme leading to an **MSc**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates		
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
1	I-ENV-INWK	Induction Week	T Brewer	33	N/A	0	Y	N/A	03/10/16	07/10/16	N/A	AO	N/A	N/A	N/A	N/A	N/A	N/A
2	I-GIM-A1135	Aerial Photography & Digital Photogrammetry	T Brewer	50	N/A	10	Y	N/A	10/10/16	14/10/16	40	ICW	100	N/A	N/A	N/A	F 22/10/16 P 29/10/16	
3	I-GIM-A1131	GIS Fundamentals	T Brewer	42	N/A	10	Y	N/A	24/10/16	28/10/16	40	ICW	100	N/A	N/A	N/A	F 5/11/16 P 12/11/16	

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number[1]	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7](100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
4	I-ILE-AEL	Aquatic Ecosystems in the Landscape	A Gill	30	N/A	10	Y	N/A	07/11/16	11/11/16	40	ICW	100	N/A	N/A	N/A	F 19/11/16 P 26/11/16	
5	I-GIM-A1129	Image Processing and Analysis	T Waine	35	N/A	10	Y	N/A	21/11/16	25/11/16	40	ICW	100	N/A	N/A	N/A	F 3/12/16 P 10/12/16	
6	I-ILE-ALRP	Land Resource Planning	T Brewer	30	N/A	10	N	N/A	05/12/16	09/12/16	40	ICW	100	N/A	N/A	N/A	F 19/12/16 P 3/1/17	
7	I-LAM-A1522	Landscape Ecology	R Corstanje	30	N/A	10	y	N/A	09/01/17	13/01/17	40	ICW	100	N/A	N/A	N/A	F 21/1/17 P 28/1/17	
8	I-GIM-A1133	Environmental Resource Survey	T Farewell	40	3	10	Y	N/A	23/01/17	27/01/17	40	ICW	100	N/A	N/A	N/A	F 4/2/17 P 11/2/17	
9	I-LAM-A1148	Ecological Restoration	J Harris	32	N/A	10	Y	N/A	06/02/17	10/02/17	40	ICW	100	N/A	N/A	N/A	F 18/2/17 P 25/2/17	
10	I-ENV-	Group Project	Supervisors	16	N/A	40	Y	N/A	20/02/17	05/05/17	50	GPROJ	80	N/A	N/A	N/A	GPROJ 2/5/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment						
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
	GRPP											ICW	20				ICW 6/5/17	
11	I-ENV-DISS	Dissertation (part time students)	Supervisors	10	N/A	40	Y	N/A	03/10/16	30/09/17	50	IPROJ	100	N/A	N/A	N/A	30/09/17	
12	I-ENV-THESIS	Individual Research Project	Supervisors	20	N/A	80	Y	N/A	08/05/17	08/09/17	50	THESIS OR	90 10	N/A	N/A	N/A	4/9/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
I-GIM-A1135	Aerial Photography and Digital Photogrammetry	Geographical Information Management	• Geographical Information Management
I-GIM-A1131	GIS Fundamentals	Geographical Information Management	• Geographical Information Management • Environmental Informatics • Environmental Risk Management • Land Reclamation and Restoration
I-GIM-A1129	Image Processing and Analysis	Geographical Information Management	• Geographical Information Management
I-GIM-A1133	Environmental Resource Survey	Geographical Information Management	• Geographical Information Management • Environmental Informatics
I-ILE-AEL	Aquatic Ecosystems in the Landscape	Integrated Landscape Ecology	• Environmental Water Management
I-LAM-A1148	Ecological Restoration	Land Reclamation and Restoration	• Integrated Landscape Ecology
I-LAM-A1522	Landscape Ecology	Integrated Landscape Ecology	• Land Reclamation and Restoration

7. How are the ILOs assessed?

The following assessment types are utilised:

The course will use a range of assessment types. Students on the MSc can typically expect to have eight pieces of individual assessment by submitted work, one group project, and one element assessed by a thesis and an oral presentation.

This approach has been adopted because:

This approach has been adopted in order to assess the ability of the student to demonstrate their ability in a range of environments.

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

Title	Modules Covered	Assessment	
		Type	Weight (%)

8. How will the University assure the quality of the provision?

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. What opportunities are graduates likely to have on completing the course?

The course is intended for those wishing to work:
- in agribusiness companies, governments, and government agencies that need to
- address natural resource management and ecological conservation problems.
- in natural resource management research and consultancy.
- in the NGO sector on natural resource management problems.

Recent destinations of graduates from the predecessor Natural Resource Management and Ecological Conservation options of Land Management include CORIAD Ltd, De Laval International, Enitial, ESRI, Meteolgica SA, Geodata Ltd, RAW Group, RPS, the Swedish University of Agricultural Sciences, University of Alaska, the University of Helsinki, and Government Departments in Pakistan.

COURSE SPECIFICATION

Cranfield University: Course Specifications

Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.

COURSE TITLE: MSc in International Defence and Security

Date of first publication/latest revision: 30/08/2016

---

1. What is the course?

Course information

Course Title	International Defence and Security
Course code	MSIDSFTR, PDIDSFTR, PCIDSFTR
Academic Year	2016-17
Valid entry routes	MSc, PgDip, PgCert
Exit routes	MSc, PgDip, PgCert
Mode of delivery	Full Time
Location of Study	Shrivenham
School(s)	Cranfield Defence and Security
Theme	Defence and Security
Centre	Centre for International Security and Resilience
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	Standard University entry requirements.
UK Qualifications Framework Level	QAA FHEQ level 7 (Masters)
Benchmark Statement(s)	N/A
Registration Period(s) available	Full-time MSc - one year, Full-time PgCert - one year, Full-time PgDip - one year
Course Start Month(s)	September

Institutions delivering the course

This course is delivered by the Centre for International Security and Resilience where the research interests include international relations, civil-military relations, international law, military history, government and politics, terrorism, global and regional security, and resilience.

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is not accredited by any external bodies.

2. What are the aims of the course?

Cranfield University offers this course in order to enhance students' knowledge, professional understanding and analytical skills necessary to improve and/or transform the governance and management of defence and security systems.

Postgraduate Diploma (PgDip) and Postgraduate Certificate (PgCert) exit routes are provided for students who wish to access only parts of the course provided.

This programme is intended for the following range of students:

- Serving members of the UK MoD (civilian and military)
- Foreign MoD civil servants and members of foreign armed forces
- Staff from other UK and foreign government departments, as well as international governmental and non-governmental organisations, who have an identified need to develop their knowledge of defence and security
- Civilians with an interest in defence and security

3. What should students expect to achieve in completing the course?

Award intended learning outcomes (ILOs) (skills and knowledge).

A. **Postgraduate Certificate**

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1.   Analyse, evaluate and critique current research on defence and security

ILO 2.   compare and contrast different countries' approaches to ensuring defence and security

ILO 3.   Determine what is a 'security' issue and on what basis, and recognise the differences and similarities between the main security studies disciplines and integrate them into an analysis of security problems

ILO 4.   Evaluate the principal defence and security structures, agreements, alliances and methods of governance and management in place around the world

ILO 5.   Critique international relations theory and apply it to an analysis of security

B. Postgraduate Diploma

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 6.   Critique current thinking and evaluate, analyse and make policy recommendations relevant to international defence and security

ILO 7.   Critically analyse information from disparate sources so as to inform solutions to challenges and problems

ILO 8.   Evaluate and appraise conflicting interpretations and solutions to security issues

ILO 9.   Work individually and within teams so as to evolve robust recommendations in respect of defence and security issues

ILO 10. Brief audiences on issues in all of the above fields, and make policy recommendations using an appropriate mix of words, graphics and visual images

C. MSc

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 11. Analyse a selected defence or security issue/problem so as to develop an authoritative and in-depth knowledge that will have wider application and utility

ILO 12. Devise, scope and plan a research project

ILO 13. Develop and hone the individual research, information, communication and referencing skills to produce a high quality, evidence-based dissertation of 20,000 words suitable for publication within a defined period

4. How is the course taught?

Students will be supported in their learning and personal development by:

- undertaking exercises relevant to the specific area of defence or security being studied
- facilitated group discussions
- engaging in debates
- presentations from visiting speakers who will be subject matter experts
- official visits to Defence or Security HQs where appropriate
- attending relevant elements of Cranfield Symposia

5. What do students need to achieve in order to graduate?

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A.   Postgraduate Certificate

The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
C1 Research Methods C2 International Security, Conflict and Development C3 Defence in the 21st Century	10 20 20
ELECTIVE MODULES:	
1 elective module chosen from E1 – E16	10
TOTAL:	**60**

B.   Postgraduate Diploma

The accumulation of 120 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
C1 Research Methods C2 International Security, Conflict and Development C3 Defence in the 21st Century	10 20 20
ELECTIVE MODULES:	
7 elective modules chosen from E1 – E16	70
TOTAL:	**120**

C.   MSc

In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
C1 Research Methods C2 International Security, Conflict and Development C3 Defence in the 21st Century Dissertation	10 20 20 80
ELECTIVE MODULES:	
7 elective modules chosen from E1 - E16	70
TOTAL:	**200**

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria

The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does not have discretion to overrule this limit, but can refer a case to Senate's Education Committee);[1] [2]
- **For Taught Assessments,** the minimum mark for each individual taught assessment on the first attempt for the significant majority of the taught assessments, noting that:
  - o if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
  - o if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);
  - o it is not permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

6. How is the course structured?

Full-time students register for the course in September and are expected to complete the course within 48 weeks.

MSc students need to complete 3 compulsory modules, 7 electives and a Dissertation. PgDip students need to complete 3 compulsory modules and 7 electives. PgCert students need to complete 3 compulsory modules and 1 elective.

---

[1] For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2] Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

6

Course modules

The following modules outline all parts of the programme leading to an **MSc**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment						
							Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
											Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
C1	R-IDS-SSRM	Study Skills and Research Methodology	30	0	10	N	05/09/16	05/09/16	23/09/16	40	ICW	100				03/10/16	5/12/16
C2	R-IDS-IISCD	Issues in International Security, Conflict and Development	60	0	20	N	26/09/16	26/09/16	11/11/16	40	CW	50				21/11/16	23/01/17
										40	EX	50				12/12/16	06/02/17
C3	R-IDS-D21C	Defence in the 21st Century	60	10	20	N	26/09/16	26/09/16	11/11/16	40	ICW	50				21/11/16	23/01/17
										40	EX	50				14/12/16	13/02/17

---

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Module Number	Module code	Title	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment						
							Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
											Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
E1	R-IDS-DCR	Diplomacy and Conflict Resolution	30	0	10	N	14/11/16	14/11/16	02/12/16	40	CW	70				12/12/16	06/02/18
										40	IPRES	30				14/12/16	13/02/17
E2	R-IDS-MDWSC	Managing Defence in the Wider Security Context	30	0	10	N	13/02/17	13/02/17	03/03/17	40	ICW	100				13/03/17	15/05/17
E3	R-IDS-ILAC	International Law and Armed Conflict	30	4	10	N	23/01/17	23/01/17	03/02/17	40	ICW	60				13/02/17	10/04/17
										40	EX	40				06/03/17	02/05/17
E4	R-IDS-ICLHR	International Criminal Law and Human Rights	30	4	10	N	22/05/17	22/05/17	09/06/17	40	ICW	60				19/06/17	14/08/17
										40	EX	40				23/06/17	18/08/17
E5	R-IDS-AMFCMW	Intelligence in International Security	30	0	10	N	03/01/17	03/01/17	20/01/17	40	ICW	60				06/02/17	21/04/17
										40	EX	40				06/03/17	05/05/17
E6	R-IDS-TCT	Terrorism and Counter-Terrorism	30	0	10	N	03/01/17	03/01/17	20/01/17	40	ICW	70				30/01/17	27/03/17
										40	IPRES	30				20/01/17	20/03/17
E7	R-IDS-RS	Regional Security	30	0	10	N	02/05/17	02/05/17	19/05/17	40	ICW	100				30/05/17	25/07/17
E8	R-IDS-IIPS	International Interventions for Peace and Statebuilding	30	0	10	N	NOT RUNNING IN 16/17			40	ICW	100				-	-

8

| Module Number | Module code | Title | Contact hours[3] | Total hours delivered by Visiting Lecturers[4] | Credits | Is the module shared? Y/N | Calendar | | | Minimum Mark[5] - 40% or 50% | Assessment | | | | | | |
| | | | | | | | Module Start Date (eg Pre-course task) | 'Residential' Start Date | 'Residential' End Date | | Independent Assessment | | Multi-part Assessment | | | Submission dates | |
											Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
E9	R-IDS-MND	Managing Natural Disasters	30	0	10	N	20/03/17	20/03/17	07/04/17	40	ICW	100				18/04/17	20/07/17
E10	R-IDS-WMDCV	Weapons of Mass Destruction, Control and Verification	30	8	10	N	TBC	TBC	TBC	40	ICW	100				TBC	TBC
E11	R-IDS-MSD	Military Support to Disasters	30	0	10	N	13/02/17	13/02/17	03/03/17	40 40			MULTI	ICW ICW	60 40	03/04/17	02/06/17
E12	R-IDS-CM	Crisis Management	30	5	10	N	23/01/17	23/01/17	03/02/17	40	ICW	100				13/02/17	17/04/17
E13	R-RES-RC	Resilience	30	0	10	N	NOT RUNNING IN 2016/17			40	ICW	100				-	-
E14	R-IDS-RR	Risk and Resilience	30	0	10	N	14/11/16	14/11/16	02/12/16	40	ICW	100				13/12/16	14/02/17
E15	R-IDS-FMC	Future Military Conflicts	30	N/A	10	N	02/05/17	02/05/17	19/05/17	40	ICW	100				29/05/17	24/07/17

9

Module Number	Module code	Title	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
											Type of Assessment	Weighting within module[6] (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
E16	R-IDS-SFDA MW	Strategic Frameworks and Decision-making in the Ancient and Modern Worlds			10		20/03/17	20/03/17	07/04/17	40	ICW	60				18/04/17	19/06/17
											IPRES	40				07/04/17	12/06/17
D1	R-IDS-DISS	Dissertation	30	N/A	80	N	26/06/17	26/07/17	18/08/17	50	THESIS	100				18/08/17	29/12/17

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

7. How are the ILOs assessed?

Each module in the taught phase may be assessed by a written examination, coursework assignment or a combination of both. Where a module is assessed by a combination of examination and coursework, then the marks for that module are apportioned as appropriate.

Some modules may be assessed entirely by coursework and in such cases the coursework accounts for 100% of the marks for that module. The taught phase in total contributes to 60% of the overall final assessment, while the dissertation phase contributes to 40% of that overall final assessment.

Where an assessment is the product of a group effort, to ensure that individual students' efforts and contributions are fairly and accurately recognised, coursework submissions must clearly highlight how the individual responsibilities were sub-divided and each page of the submission must be clearly marked with the student's name indicating his/her contribution.

The student must satisfy the Examiners in all elements of the course.

This approach has been adopted because:

It provides for a suitable variety of assessment methodologies and formats appropriate to the level of studies and the subject-matter and discipline.

Assessment and ILO Mapping

Complete the grid below by inserting in the boxes which assessments from the modules directly assess the Award ILOs.

(Module numbers should correspond with those used in the Course module table above.)

For Example:

Award ILOs / Module No.	ILO 1.	ILO 2.	ILO 3.	ILO 4.	ILO 5.	ILO 6.	ILO 7.	ILO 8.
98	ICW				EX	EX	ICW	
99	ICW1		ICW1	ICW2				

A. Postgraduate Certificate

Award ILOs / Module No.	i	ii	iii	iv	v	xi	xii	xiii
C1						ICW	ICW	ICW

11

Award ILOs / Module No.	i	ii	iii	iv	v	xi	xii	xiii
C2	ICW/EX	ICW/EX	ICW/EX	ICW/EX	ICW/EX			
C3	ICW/EX	ICW/EX	ICW/EX	ICW/EX	ICW/EX			

B. Postgraduate Diploma

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Award ILOs / Module No.	vi	vii	viii	ix	x
E1	ICW/IPRES	ICW/IPRES	ICW/IPRES	ICW/IPRES	ICW/IPRES
E2	ICW	ICW	ICW	ICW	ICW
E3	ICW/EX	ICW/EX	ICW/EX	ICW/EX	ICW/EX
E4	ICW/EX	ICW/EX	ICW/EX	ICW/EX	ICW/EX
E5	ICW/EX	ICW/EX	ICW/EX	ICW/EX	ICW/EX
E6	ICW/IPRES	ICW/IPRES	ICW/IPRES	ICW/IPRES	ICW/IPRES
E7	ICW	ICW	ICW	ICW	ICW
E8	CW	CW	ICW	ICW	ICW
E9	CW	CW	ICW	ICW	ICW
E10	CW	CW	ICW	ICW	ICW
E11	ICW1/ICW2	ICW1/ICW2	ICW1/ICW2	ICW1/ICW2	ICW1/CW2
E12	ICW	ICW	ICW	ICW	ICW
E13	ICW	ICW	ICW	ICW	ICW
E14	ICW	ICW	ICW	ICW	ICW
E15	ICW	ICW	ICW	ICW	ICW
E16	ICW/IPRES	ICW/IPRES	ICW/IPRES	ICW/IPRES	ICW/IPRES

C. MSc

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Award ILOs / Module No.	xi	xii	xiii
C1	ICW	ICW	ICW
D1	THESIS	THESIS	THESIS

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

12

Title	Modules Covered	Assessment	
		Type	Weight (%)

8. How will the University assure the quality of the provision?

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. What opportunities are graduates likely to have on completing the course?

This course is intended to attract students who are either currently employed in posts relating to Security Cooperation (Defence Attachés, Desk Officers within Ministries of Defence, representatives from the FCO and DfID), members of the Armed Forces or those individuals who generally have an interest in issues pertaining to defence and security. Students may also wish to pursue careers with private security companies, think tanks, within academia or for foreign governments or international governmental or non-governmental organisations.

Applicants to this degree come from a range of backgrounds. While we have a number of candidates who have recently completed their undergraduate degrees, we also have a significant number who are civil servants working within defence, serving and retired military personnel and those who work within the financial services. The aim of this course is therefore to provide all students with a high quality, and transferable, postgraduate qualification.

COURSE SPECIFICATION

Cranfield University: Course Specifications	

Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.

COURSE TITLE:	MSc in Investment Management

Date of first publication/latest revision:	August 2016

1. What is the course?

Course information

Course Title	MSc in Investment Management
Course code	MSIVMFTC, PDIVMFTC, PCIVMFTC
Academic Year	2016/17
Valid entry routes	MSc
Additional exit routes	PgDip, PgCert
Mode of delivery	Full-time
Location of Study	Cranfield Campus
School(s)	School of Management
Theme	Leadership and Management
Centre	Policy, Sustainability and Performance
Course Director	Dr Vineet Agarwal
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	Standard University entry requirements
UK Qualifications Framework Level	QAA FHEQ Level 7 (Masters)
Benchmark Statement(s)	N/A
Registration Period(s) available	Full-time MSc – one year
Course Start Month(s)	September

Institutions delivering the course

This course will primarily be delivered by Finance and Accounting group in School of Management. The course shares 80 credits on the core modules and 15 credits via three electives with the existing MSc Finance and Management programme but will provide a more quantitative and specialist pathway, with 20 credits of specialism in the core modules and potentially additional 20 credits via five electives different from those offered on current MSc in Finance and Management programme.

Cranfield University interacts with the following institutions and in the following ways:

- Teaching/instruction from external academic, industry and other guest speakers.
- Individual thesis or company based project.

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is not formally accredited by any external bodies.

2. What are the aims of the course?

Cranfield University offers this course in order to provide students with an advanced-level conceptual foundation in various functional dimensions of the complex world of investment management. It will impart better understanding of investment issues and develop the necessary skills and knowledge in line with the requirements of the investment industry within the UK and worldwide.

The objectives are six-fold:

1. To prepare students for the world of employment in investment management through a high quality teaching of specialised modules that will focus on developing a strong understanding of theory and its application in practice.
2. To provide a rich student learning experience through hands on teaching techniques that will utilise the application of data analysis using Bloomberg.
3. To enrich student learning experience by offering an opportunity to do independent research linking this through company based projects.
4. To impart advance study and understanding of the investment sector and the changing external context in which it operates.
5. To develop a range of finance knowledge and skills, together with self-awareness and personal development appropriate for successful career in the investment industry.
6. To enhance lifelong learning through the development of transferable intellectual and study skills to enable self-direction and creativity, in order to contribute to business, the economy and society at large.

The proposed programme will be equally attractive to new graduates and those looking to develop a career in the investment industry such as investment specialists, traders, fund managers, risk managers, analysts and brokers.

3. What should students expect to achieve in completing the course?

Award intended learning outcomes (ILOs) (skills and knowledge).

A. **Postgraduate Certificate**

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1.   Be able to appraise key investment and management issues.
ILO 2.   Be able to interpret and apply accounting and financial information effectively.
ILO 3.   Originality in the application of firm valuation and application of financial modeling for practical decision making.
ILO 4.   Apply key investment management skills required for decision making.

B. Postgraduate Diploma

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 5.   Be able to critically assess current research in finance and investment together with the capacity to evaluate its relevance to practice.
ILO 6.   A conceptual understanding that enables the student to evaluate contemporary issues and methods for financial analysis and, where appropriate, adapt them in the context of both advanced scholarship and their selected elective subjects.
ILO 7.   Be able to acquire and use information effectively in any appropriate medium, including the increasing range of analytical tools for investment decision making.
ILO 8.   Be able to advance their knowledge and develop new financial and management skills to a high level.

C. MSc

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 9.   Be confidently able to apply investment management theories, tools and techniques in a variety of contexts including case studies, trading simulations and the individual thesis project.
ILO 10.   Evaluate appropriate theoretical frameworks for an issue or situation under consideration and to apply the technique(s) correctly.
ILO 11.   Display practical capabilities in self-directed research, data gathering, data analysis and interpretation, report writing and presentation skills.
ILO 12.   Carry out research using appropriate techniques and draw justifiable inferences from the data obtained.
ILO 13.   Critically evaluate and synthesis the published literature in finance and investment.
ILO 14.   Produce a high quality thesis and critically evaluate the interpretations of the data.

4. How is the course taught?

Overall the aim is to provide a varied, stimulating and experiential learning environment. All taught modules consist of formal lectures, in-class discussions, group and self-study. Group project work, reflective practice and class exercises are used to develop problem solving skills. The course will be supported by an electronic learning environment (VLE - Blackboard) which will be the central repository for all information relating to the course and available to the students at all times. This will be supplemented by online module case packs. Additional practical expertise will be provided by visiting fellows and guest speakers. Each core module comprises 20 hours of class contact time with a further 80 hours of study time to consolidate learning and carry out assignments, giving 100 notional learning hours per module. Each elective module has 50 notional hours consisting of 15 class contact hours and a further 35 private study hours. The thesis component of the module is a total of 80 credits.

The teaching methods, as laid out in section 2, include:

- Lectures
- Student centred learning/reflection
- Exercises/Case studies

- Trading Simulations
- Individual company based research project/thesis supported by academic supervision

In addition to the teaching methods outlined above, students are supported in their learning and personal development by:

- Personal development lectures delivered by the head of the careers development service
- Help with preparation of CVs
- Help through mock interviews

The MSc in Investment Management will be differentiated from our existing Finance and Management MSc by:

- By targeting students with strong quantitative skills looking for careers in investment industry
- By offering a number of new and unique electives with a global perspective
- By making suitable changes to the existing Finance and Management programme contents and making it more corporate finance oriented MSc
- By orientating career development towards investment industry

Students will be supported in their learning and personal development by:

- Two week orientation program in accounting, finance and statistics aimed at students with quantitative background but have little or no prior background in accounting and finance and statistics
- Library induction, referencing and plagiarism sessions
- PDP specifically supported through SOM careers development sessions
- Organisation Behaviour and Personal Development module
- A Virtual Learning Environment
- Learning teams supported by an academic tutor
- Provision of language classes. Mandatory for those with only one language and optional for those with more

5. **What do students need to achieve in order to graduate?**

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A. **Postgraduate Certificate**
The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
6 modules from 1-10 including 20 credits from modules 7, 8 or 9	60
ELECTIVE MODULES:	
N/A	N/A
TOTAL:	**60**

B.   Postgraduate Diploma

The accumulation of 120 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Modules 1-10	100
ELECTIVE MODULES:	
4 modules must be taken from 8 optional modules 11-18	20
TOTAL:	**120**

C.   MSc

In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
Modules 1-10 Thesis 19	100 80
ELECTIVE MODULES:	
4 modules must be taken from 8 optional modules 11-18	20
TOTAL:	**200**

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria

The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does <u>not</u> have discretion to overrule this limit, but can refer a case to Senate's Education Committee);[1] [2]

---

[1]   For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2]   Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than

- **For Taught Assessments,** the minimum mark for each individual taught assessment <u>on the first attempt</u> for the significant majority of the taught assessments, noting that:
  - o if you fail to attain the minimum mark for **<u>up to 30 learning credits</u>**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
  - o if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **<u>any additional learning credits</u>** over the course of your studies you will be disqualified from the right to re-take the assessments: this will normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);
  - o it is <u>not</u> permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

6. <u>How is the course structured?</u>

The course will be offered on a full-time basis only. Full-time students register for the course in September and are expected to complete the course within 12 calendar months.

The core modules will be taught in a series of 10x2 hour lectures in the first two terms. The elective modules will be taught in 6x2 and 1x3 hours lectures in the third term. The individual company based project/thesis is undertaken during terms 3 and 4.

---

30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

Course modules

The following modules outline all parts of the programme leading to an **MSc**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar Module Start Date (eg Pre-course task)	Calendar 'Residential' Start Date	Calendar 'Residential' End Date	Minimum Mark[5] - 40% or 50%	Assessment — Independent Assessment: Type of Assessment	Assessment — Independent Assessment: Weighting within module6 (%) of Independent assessments	Assessment — Multi-part Assessment: Weighting within module of multi-part assessments[7] (100%)	Assessment — Multi-part Assessment: Type of Assessment	Assessment — Multi-part Assessment: Weighting of individual elements of multi-part assessment[8]	Submission dates: Assessment Submission and/or exam date[9]	Submission dates: Assessment / Exam Retake date
TERM 1																		
1	M-F/COF	Corporate Finance	Prof Huainan Zhao	20		10	Y		03/10/16	16/12/16	40	EX	100				14/12/16	TBC
2	M-F/SAF	Statistical Analysis in Finance	Dr Yacine Belghitar	20		10	Y		03/10/16	16/12/16	40 40	GCW EX	40 60				02/12/16 15/12/16	TBC
3	M-F/ACC	Accounting	Dr Matthias Nnadi	20	6	10	Y		03/10/16	16/12/16	40 40	EX EX	25 75				04/11/16 12/12/16	TBC

---

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module[6] (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
									Calendar			**Assessment**						
												Independent Assessment		**Multi-part Assessment**			**Submission dates**	
4	M-F/ECO	Economics for Financial Markets	Dr Constantinos Alexiou	20		10	Y		03/10/16	16/12/16	40	EX	100				13/12/16	TBC
5	M-F/ORG	Organisational Management	Dr Deidre Anderson	20		10	Y		03/10/16	16/12/16	40	ICW	100				07/12/16	TBC
TERM 2																		
6	M-F/VFM	Valuation and Financial Modelling	Dr Vineet Agarwal	20		10	Y		09/01/17	24/03/17	40 40	GCW EX	50 50				13/03/17 22/03/17	TBC
7	M-F/FMRE	Financial Markets, Regulation and Ethics	Paul Richards/ Steve Wallace	20	14 / 6	10	Y		09/01/17	24/03/17	40 40	ICW ICW	67 33				10/03/17 17/03/17	TBC
8	M-I/IPM	Investment and Portfolio Management	Prof Sunil Poshakwale/ Dr Peter Yallup	20		10	N		09/01/17	24/03/17	40	EX	100				23/03/17	TBC
9	M-I/DFR	Derivatives and Financial Risk Management	Dr Peter Yallup	20		10	N		09/01/17	24/03/17	40	EX	100				24/03/17	TBC
10	M-F/RMF	Research Methods in Finance	Dr Vineet Agarwal	20		10	Y		09/01/17	24/03/17	40 40	GPRES ICW	30 70				08/03/17 15/03/17	TBC
TERM 3																		
11	M-F/FEC	Applied Financial Econometrics	Dr Yacine Belghitar, Dr Peter Yallup	15		5	Y		10/04/17	23/06/17	40	ICW	100				12/06/17	TBC
12	M-I/IVB	Investment Banking	Steve Wallace	15		5	N		24/03/17	23/06/17	40	EX	100				31/05/17	TBC

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
13	M-I/FNM	Fund Management	Jane Vessey	15		5	N		24/03/17	23/06/17	40	EX	100				31/05/17	TBC
14	M-F/MAD	Mergers and Acquisitions	Prof Huainan Zhao	15		5	Y		10/04/17	23/06/17	40	ICW	100				16/06/17	TBC
15	M-I/FIS	Fixed Interest Securities	Dr Vineet Agarwal	15		5	N		24/03/17	23/06/17	40	EX	100				31/05/17	TBC
16	M-F/PEQ	Private Equity	Dr Abdulkadir Mohamed	15		5	Y		10/04/17	23/06/17	40	ICW	100				19/06/17	TBC
17	M-I/TATS	Technical Analysis and Trading Systems	Dr Peter Yallup	15		5	N		24/03/17	23/06/17	40 40	ICW GCW	50 50				23/06/17	TBC
18	M-I/IEM	International Investment and Emerging Markets	Prof Sunil Poshakwale	15		5	N		24/03/17	23/06/17	40 40			100 MULTI	IPRES ICW	25 75	09/06/17	TBC
TERM 4																		
19	M-F/THS	Thesis	Various Supervisors	50	80	Y		26/06/17	08/09/17		THESIS	100				05/09/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

9

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
M-F/COF	Corporate Finance	Finance and Management	Finance and Management
M-F/SAF	Statistical Analysis in Finance	Finance and Management	Finance and Management
M-F/ACC	Accounting	Finance and Management	Finance and Management
M-F/ECO	Economics for Financial Markets	Finance and Management	Finance and Management
M-F/ORG	Organisational Management	Finance and Management	Finance and Management
M-F/VFM	Valuation and Financial Modelling	Finance and Management	Finance and Management
M-F/FMRE	Financial Markets, Regulation and Ethics	Finance and Management	Finance and Management
M-F/RMF	Research Methods in Finance	Finance and Management	Finance and Management
M-F/MAD	Mergers and Acquisitions	Finance and Management	Finance and Management
M-F/FEC	Applied Financial Econometrics	Finance and Management	Finance and Management
M-F/PEQ	Private Equity	Finance and Management	Finance and Management
M-F/THS	Thesis	Finance and Management	Finance and Management

7. How are the ILOs assessed?

The following assessment types are utilised:

This is a full-time course with 10 credits (100 notional learning hours) per core module and 5 credits (50 notional learning hours) per elective module taken over 11 months comprising 200 credits in total. It will be assessed by conventional means: exams, group and individual assignments and an 80 credit company based project / thesis at the end of the programme.

Assessment and ILO Mapping

Complete the grid below by inserting in the boxes which assessments from the modules directly assess the Award ILOs.

Module No.	ILO1	ILO2	ILO3	ILO4	ILO5	ILO6	ILO7	ILO8	ILO9	ILO10	ILO11	ILO12	ILO13	ILO14
	Postgraduate Certificate				Postgraduate Diploma				MSc					
1	✔	✔	✔	✔										
2			✔	✔										
3		✔		✔										
4	✔			✔										
5	✔			✔										
6	✔	✔	✔	✔		✔	✔	✔						
7	✔			✔										
8	✔	✔		✔										

Module No. / Award ILOs	ILO1	ILO2	ILO3	ILO4	ILO5	ILO6	ILO7	ILO8	ILO9	ILO10	ILO11	ILO12	ILO13	ILO14
9	✓	✓		✓										
10	✓	✓		✓										
11							✓	✓						
12					✓			✓						
13					✓		✓	✓						
14					✓	✓	✓	✓						
15						✓	✓	✓						
16					✓	✓		✓						
17					✓		✓	✓						
18					✓		✓	✓						
19									✓	✓	✓	✓	✓	✓

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

Title	Modules Covered	Assessment	
		Type	Weight (%)
N/A	N/A	N/A	N/A
		N/A	N/A

8. How will the University assure the quality of the provision?

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the

University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. **What opportunities are graduates likely to have on completing the course?**

Investment management is one of the fastest growing industries and the potential for recruitment is very promising. The rapid growth and developmental needs of investment expertise, especially in emerging countries, will demand people with necessary knowledge and skills. Therefore, our graduates can expect to work in top investment banks, hedge funds, major consulting firms and other financial and banking sectors around the world.

COURSE SPECIFICATION

Cranfield University: Course Specifications
Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.

COURSE TITLE:	MSc in Knowledge Management for Innovation

Date of first publication/latest revision:	July 2016

1. What is the course?

Course information

Course Title	MSc in Knowledge Management for Innovation
Course code	MSKMIFTC, MSKMIPTC, PDKMIFTC, PDKMIPTC, PCKMIFTC, PCKMIPTC
Academic Year	2016/17
Valid entry routes	MSc, PgDip, PgCert
Additional exit routes	Not Applicable
Mode of delivery	Full-time, Part-time
Location of Study	Cranfield University
School(s)	School of Aerospace, Transport and Manufacturing
Theme	Manufacturing
Centre	Manufacturing Informatics Centre
Course Director	Dr Ahmed Al-Ashaab
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	Standard University entry requirements
UK Qualifications Framework Level	QAA FHEQ Level 7 (Masters)
Benchmark Statement(s)	Not Applicable
Registration Period(s) available	One year full-time, two-five years part-time
Course Start Month(s)	Full-time: October. Part-time: throughout the year

Institutions delivering the course

This course is delivered by the School of Aerospace, Transport and Manufacturing, Manufacturing Theme, Manufacturing Informatics Centre where the research interests include:

- Product Development in Knowledge Environment
- Lean Product Development
- Knowledge Modelling Manufacturing Process Capabilities and Resources
- Knowledge-Based Engineering
- Simulation and Modelling
- Innovation Management

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is accredited formally by Institution of Mechanical Engineers (IMechE) up to and including Academic year 2019-20, Institution of Engineering and Technology (IET) up to and including Academic year 2019-20 and Royal Aeronautical Society (RAeS) up to and including Academic year 2015-16.**

(**Accreditation up to and including Academic year 2019-20 is awaiting review of the output of the accreditation visit).

2. <u>What are the aims of the course?</u>

The aim of the MSc in Knowledge Management for Innovation is to create the next generation of technical and business leaders who can drive strategic innovation and collaboration by effective management of organisational knowledge within their specialised domains. Therefore it develops leadership skills, team working skills, creativity and knowledge, to enable individuals to implement management practice to aid the development of business.

Cranfield University offers this course in order to:

- Create the next generation of technical and business leaders who can drive strategic innovation and collaboration by effective management of organisational knowledge.
- Address growing demands at all levels to impart appropriate knowledge to support the organisational processes that seek the synergistic combination of data and information processing capacity with the innovative capacity of human beings.
- Combine rigorous academic activity, practical work and real-life experience through industry sponsored project work in preparation for careers in engineering extended enterprise.
- Enable students to develop and demonstrate their technical expertise, independent learning ability and critical appraisal skills to a practical industry based knowledge management problem.

Postgraduate Diploma (PgDip and Postgraduate Certificate (PgCert) exit routes are provided for students who wish to access only parts of the course provided.

This programme is intended for the following range of students:

- Those wishing to work nationally or internationally with manufacturing companies that need to address knowledge management problems.
- Those wishing to work and act as a source of professional knowledge management advice and expertise.
- Those wishing to work in the public/government sector on industry competitiveness in order to enhance productivity via strategic knowledge management.

3. What should students expect to achieve in completing the course?

Award intended learning outcomes (ILOs) (skills and knowledge).

A. Postgraduate Certificate

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1. A comprehensive understanding of knowledge management techniques applicable in organisational learning for innovation

ILO 2. Develop a systematic understanding of the scientific, technological and management knowledge in addition to a critical awareness of current contextual issues within industry

ILO 3. Evaluate and apply strategies, techniques and tools for the implementation of knowledge management practice within industry

ILO 4. Demonstrate originality in application of knowledge of the roles and responsibilities of a knowledge management professional practitioner

ILO 5. Contribute independently and as part of a multi-disciplinary team to knowledge management projects within the context of extend enterprise

ILO 6. Engage confidently in informed debate on current issues within the field of knowledge management

B. Postgraduate Diploma

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 7. Undertake independent research involving critical project assessment, efficient acquisition of new skills, knowledge and current information, development of understanding, critical planning analysis and evaluation of results

ILO 8. The exercise of initiative and personal responsibility to act as a source of professional knowledge management advice and expertise

C. MSc

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 9. Maintain and extend sound theoretical approaches in enabling the introduction and exploitation of new and advancing technology through broaden and deepen own knowledge base through research and experimentation

ILO 10. Apply appropriate theoretical and practical methods to review the potential for enhancing engineering products, processes, systems and services through the application of knowledge management and knowledge based engineering

ILO 11. Provide technical and commercial leadership through effective project planning and implementation within the time, budget and resources allocations.

4. How is the course taught?

The MSc course has three components: taught modules (40%), group projects (20%), and an individual research project (40%). The taught modules are typically delivered in one-week block between October and February.

The teaching methods include lectures, case studies, group exercises, field visits, seminar and computer-based demonstrations and exercises. All students attend a week of introductory lectures (given during the first week of the course). Within this induction week, students will be introduced to personal development planning and asked to reflect on their transferable skills and to take ownership of their personal development during the course. Induction is followed by 8 weeks of assessed modules.

All MSc students undertake a Group Project (full time students) or produce a Dissertation (part time students). The Group projects are group-based activities typically undertaken for 12 weeks between February and April. The projects are designed to integrate knowledge, understanding and skills from the taught modules in a real-life situation. The Group Project will typically involve a team of students between 5 and 8, working to investigate an enterprise opportunity or solve an enterprise problem. For part-time students, a Dissertation replaces the Group Project. The topic is to be agreed between the University and the student.

All MSc students will undertake a research projects (thesis project) under the supervision of a member of academic staff. For the individual research project, each student is allocated a supervisor. Guidance sessions are provided as to what is required from the thesis and oral presentation.

5. **What do students need to achieve in order to graduate?**

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A. **Postgraduate Certificate**
The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Modules 2, 5, 6 and 9	40
ELECTIVE MODULES:	
Modules 3, 4, 7 and 8 (Select 2)	20
RECOMMENDED MODULE:	
Induction	0
TOTAL:	60

B. **Postgraduate Diploma**
The accumulation of 120 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Modules 2-9	80
Group Project for full-time students (10a) or Dissertation for part-time students (10b)	40
ELECTIVE MODULES:	
None	
RECOMMENDED MODULE:	
Induction	0
TOTAL:	120

C.   MSc

In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
Modules 2-9	80
Group Project for full-time students (10a) or Dissertation for part-time students (10b)	40
Individual Research Project (11)	80
ELECTIVE MODULES:	
None	
RECOMMENDED MODULE:	
Induction	0
TOTAL:	200

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria

The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does <u>not</u> have discretion to overrule this limit, but can refer a case to Senate's Education Committee);[1] [2]
- **For Taught Assessments,** the minimum mark for each individual taught assessment <u>on the first attempt</u> for the significant majority of the taught assessments, noting that:
  - if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
  - if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will

---

[1]   For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2]   Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);

- o it is <u>not</u> permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

6. <u>How is the course structured?</u>

Full-time students register for the course in October and are expected to complete the course within 12 calendar months.

This course is also offered on a part-time basis. In such a situation, students typically complete the various components of the course over two or three years. Typical case is to complete four taught modules plus a Dissertation in year 1 and the remainder of the modules plus the Thesis in year two and/or year 3.

Course modules

The following modules outline all parts of the programme leading to an **MSc**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment						
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
1	I-MAN-INWK	Induction	Dr Konstantinos Salonitis	22		0	Y		03/10/16	07/10/16	N/A	AO	N/A				N/A	
2	I-MNU-A1031	Enterprise Systems	Dr Essam Shehab	32		10	Y		10/10/16	14/10/16	40	EX	100				02/12/16	Manufacturing resit exams will be during week commencing 18/09/17
3	I-KME-A1076	Knowledge Acquisition and Creation	Dr Ahmed Al-Ashaab	32		10	N		17/10/16	21/10/16	40	GCW	100				11/11/16	Re-assessment date to be set by agreement of Course Director

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	Calendar 'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Independent Assessment Type of Assessment	Weighting within module6 (%) of Independent assessments	Multi-part Assessment Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Submission dates Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
																		and Module Leader as/when required
4	I-KME-A1075	Knowledge System Design	Dr Ahmed Al-Ashaab	32		10	Y		31/10/16	04/11/16	40	GCW	100				09/01/17	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required
5	I-KME-A1022	Design Driven Innovation Processes	Prof Tetsuo Tomiyama	32		10	Y		14/11/16	18/11/16	40			100 MULTI	GCW GPRES ICW	50 25 25	12/12/16	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
6	I-MNU-A1018	General Management	Dr Yuchun Xu	32		10	Y		21/11/16	25/11/16	40	EX	100				06/01/17	Manufacturing resit exams will be during week commencing 18/09/17
7	I-CE-A2012	Information Management	Dr Christos Emmanouilidis	32		10	Y		05/12/16	09/12/16	40	EX	100				13/01/17	Manufacturing resit exams will be during week commencing 18/09/17
8	I-KME-A1037	Enterprise Modelling	Dr John Ahmet Erkoyuncu	32		10	Y		16/01/17	20/01/17	40			100 MULTI	ICW GCW	60 40	27/01/17	Re-assessment date to be set by agreement of

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
																		Course Director and Module Leader as/when required.
9	I-KME-A1077	Strategic Knowledge Management	Dr Yuchun Xu	32		10	N		23/01/17	27/01/17	40	EX	100				10/02/17	Manufacturing resit exams will be during week commencing 18/09/17
10a	I-MNU-GRPP	Group Project for Full Time Students	Dr David Ayre	20		40	Y		06/02/17	28/04/17				80 MULTI 20 MULTI	GPRES GPROJ ICW observed behaviour	16 64 10 10	28/04/17	
10b	I-MNU-DISS	Dissertation for Part Time Students	Dr Konstantinos Salonitis	20		40	Y		01/02/17	31/08/17		ICW	100				31/08/17	
11	I-MNU-THESIS	Individual Research Project	Dr Yuchun Xu	20		80	Y		02/05/17	04/09/17		THESIS OR	90 10				04/09/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

9

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
I-MAN-INWK	Induction	Engineering and Management of Manufacturing Systems	Engineering & Management of Manufacturing Systems, Management and Information Systems, Manufacturing Consultancy, Aerospace Manufacturing, Global Product Development and Management, Cyber-Secure Manufacturing
I-MNU-A1031	Enterprise Systems	Management and Information Systems	Engineering & Management of Manufacturing Systems, Management and Information Systems, Cost Engineering, Manufacturing Consultancy
I-KME-A1075	Knowledge System Design	Knowledge Management for Innovation	Cost Engineering
I-KME-A1022	Design Driven Innovation Processes	Global Product Development and Management	Global Product Development and Management
I-MNU-A1018	General Management	Engineering and Management of Manufacturing Systems	Advanced Materials, Applied Nanotechnology, Manufacturing Technology and Management, Global Product Development and Management, Management and Information Systems, Manufacturing Consultancy, Engineering & Management of Manufacturing Systems
I-CE-A2012	Information Management	Through-life System Sustainment	Cost Engineering, Through-life System Sustainment
I-KME-A1037	Enterprise Modelling	Management and Information Systems	Management and Information Systems, Global Product Development and Management
I-MNU-DISS	Dissertation for Part Time Students	Manufacturing Systems and Management Programme	Engineering & Management of Manufacturing Systems, Manufacturing Consultancy, Management and Information Systems, Aerospace Manufacturing, Global Product Development and Management
I-MNU-GRPP	Group Project for Full Time Students	Manufacturing Systems and Management Programme	Engineering & Management of Manufacturing Systems, Manufacturing Consultancy, Management and Information Systems, Aerospace Manufacturing, Global Product Development and Management, Cyber-Secure Manufacturing
I-MNU-THESIS	Individual Research Project	Manufacturing Systems and Management Programme	Engineering & Management of Manufacturing Systems, Manufacturing Consultancy, Management and Information

				Systems, Aerospace Manufacturing, Global Product Development and Management, Cyber-Secure Manufacturing

7. How are the ILOs assessed?

The following assessment types are utilised:

The course uses a range of assessment types. Students can expect to have four written examinations, four pieces of assessment by submitted work, one piece of group project work (including an assessment of personal contribution to group work), and one element assessed by a thesis and an oral presentation.

This approach has been adopted in order to perform formative and summative assessments of the students to demonstrate their ability in a range of contexts. Part time students will be assessed by dissertation in place of the group project.

Assessment and ILO Mapping

Complete the grid below by inserting in the boxes which assessments from the modules directly assess the Award ILOs.

(Module numbers should correspond with those used in the Course module table above.)

A. Postgraduate Certificate

Award ILOs / Module No.	ILO 1.	LO 2.	ILO 3.	ILO 4.	ILO 5.	ILO 6.
2		EX	EX			
3	GCW	GCW	GCW	GCW	GCW	GCW
4	GCW	GCW	GCW	GCW	GCW	
5	GCW	GCW		GCW		
6	EX	EX		EX		
7		EX	EX		EX	
8	ICW	ICW			ICW	ICW
9	EX	EX	EX	EX	EX	EX

B. Postgraduate Diploma

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Award ILOs / Module No.	ILO 7.	ILO 8.
10a	GPRES GPROJ ICW	GPRES GPROJ ICW
10b	ICW	ICW

C. MSc

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Module No.	Award ILOs ILO 9.	ILO 10.	ILO 11.
11	THESIS OR	THESIS OR	THESIS OR

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

Title	Modules Covered	Assessment	
		Type	Weight (%)

8. How will the University assure the quality of the provision?

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. **What opportunities are graduates likely to have on completing the course?**

The intention of the course is to provide students with knowledge and understanding and associated transferrable skills to make a contribution to industry on graduation. Graduates will typically seek employment in manufacturing and service industry, consultancies or research institutions. Common starting roles are knowledge management personnel, information system engineer, industrial engineer, technical analyst, project manager and PhD researcher. With time (quicker for those with more background experience) graduates progress to senior positions with significant responsibility for people, budgets and projects.

COURSE SPECIFICATION

Cranfield University: Course Specifications

Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.

COURSE TITLE:	MSc in Land Reclamation and Restoration

Date of first publication/latest revision:	21/01/16 – 07/09/16

1. What is the course?

Course information

Course Title	Land Reclamation and Restoration
Course code	MSLREFTC, MSLREPTC, PDLREFTC, PDLREPTC, PCLREFTC, PCLREPTC
Academic Year	2015/16
Valid entry routes	MSc, PgDip, PgCert
Exit routes	MSc, PgDip, PgCert
Mode of delivery	Full-time, Part-time
Location of Study	Cranfield
School(s)	School of Water, Energy and Environment
Theme	Environment & Agrifood
Centre	Cranfield Soil and Agrifood Institute (CSAFI)
Course Director	Dr Ruben Sakrabani
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	1st or 2nd class UK honours degree or equivalent; in a science or engineering subject; Candidates with other qualifications will be considered according to experience Where applicable minimum IELTS score of 6.5 or TOEFL 580
UK Qualifications Framework Level	QAA FHEQ level 7 (Masters)
Benchmark Statement(s)	N/A
Registration Period(s) available	Full-time MSc - one year, Part-time MSc - up to three years, Full-time PgCert - one year, Part-time PgCert - two years, Full-time PgDip - one year, Part-time PgDip - two years
Course Start Month(s)	Full-time: October Part-time: throughout the year

1

Institutions delivering the course
This course is delivered by the School of Water, Energy and Environment primarily though Cranfield Soil and Agri-food Institute (CSAFI)

Our expertise covers basic soil physics, chemistry and biology; pedology and pedometrics; mathematical modelling; spatial data sciences; and systems-level integration. We also have expertise in more applied aspects of soil and land management: soil protection and degradation, soil erosion and sustainable land management including soil policy formulation.

The Institute's research is supported by the UK Research Councils, Defra, the EU and various private sector organizations. We are part of the NERC/BBSRC STARS Centre for Doctoral Training on soil science and we lead the NERC DREAMS Centre for Doctoral Training on environmental data and informatics.

We have some of the best laboratory and field facilities for soils research in Europe, including:
·   laboratories for soil physics, chemistry and biology
·   the Soil Management Facility for soil mechanics and study of soil degradation processes, soil management and conservation, and soil-machine interactions
·   the Wolfson Field Laboratory for whole-soil carbon balances and trace gas emissions, including stable isotope measurements
·   access to field demonstration and trial sites

In addition, Cranfield will be leading the soil health component of the Centre for Crop Health and Protection (CHAP) under the Governments Agri-Tech Initiative. With over £3 million in new capital equipment to complement existing facilities, Cranfield will create the leading soils research facility in Europe. This will complement our agricultural engineering capability as part of the new Agri-EPI centre announced last month.

CSAFI also has extensive soil spatial data holdings. We are the UK National Reference Centre for soil, and a member of the European Environment and Observation Network (EIONET) and of the European Soil Bureau Network. We hold national and international soil reference data and samples, publically-accessible through the Land Information System (LandIS) and the World Soil Survey and Archive Catalogue (WOSSAC).
Cranfield University interacts with the following institutions and in the following ways:

The Course has an Industrial Advisory Panel that formally meets each year. Current members of the Industrial Advisory Panel include: ADAS, IAgrE, FWAG, Waste Recycling Group, Cresswell Associates, RSPB, Atkins, ERM, Natural England, Derbyshire County Council, Shanks, the Environment Agency, Oakdene Hollins, the Landscape Institute and the National Trust.

In addition an Accreditation Review Group of the Landscape Institute reviews the course each year. There are currently three members of the review group: two from landscape companies and one from Sheffield Hallam University.

Representatives from the Landscape Institute, the Institution of Agricultural Engineers, and the British Society of Soil Scientists make presentations to the group during the year.

Students are involved with field trips off-campus. In recent years these have included the following organisations: Peak District National Park, Moors for the Future, Allerton Research and Educational Trust, Roxhill Manor Farm, FWAG, and the Forestry Commission.

Students can undertake their individual research project off campus. In recent years, projects have been undertaken with the Environment Agency, Heineken, Natural England, Yorkshire Water, FWAG, the National Trust, agricultural engineering companies, Unilever, Leverhulme Trust, RSPB, various County Councils, and Shanghai University.

2

The course benefits from links to a significant number of European Universities through the Cranfield University European Partnership Programme.

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is accredited formally by the Institute of Agricultural Engineers (IAgrE) and the Landscape Institute until 2016 and 2017 respectively..

2. <u>What are the aims of the course?</u>

Appropriate land management is vital if individuals, communities, businesses and governments are to balance successfully the competing demands of land use to provide food, fuel, high quality water, timber and fibre with those of environmental regulation, conservation, landscape, recreation and urban development.

The Land Reclamation and Restoration course has the specific aims of:

- To impart knowledge and develop understanding in soil engineering and the soil-plant system with particular regard to land reclamation and ecological restoration.
- To provide the skills to assess, plan, execute and implement strategies needed to restore, reclaim and remediate damaged land in the public and corporate sectors.

This programme is intended for the following range of students:

- Those wishing to work nationally or internationally with agribusiness companies, governments, and government agencies that need to address land reclamation and restoration problems.
- Those wishing to work in land reclamation and restoration research and consultancy.
- Those wishing to work in the NGO sector on international land reclamation and restoration problems.

3. <u>What should students expect to achieve in completing the course?</u>

Award intended learning outcomes (ILOs) (skills and knowledge).

A. **Postgraduate Certificate in Land Reclamation and Restoration**

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1. Develop appropriate and sustainable solutions to the management of land resources in natural and man-made environments, at a range of spatial scales, with due regard to the technical, social and institutional constraints imposed by the environment

ILO 2. Demonstrate effectiveness in communication, numeracy and IT skills, team-working and leadership, thinking and creativity, and project and time management

ILO 3. Display confidence and technical competence in assessing, critically analysing and solving complex problems

B. **Postgraduate Diploma in Land Reclamation and Restoration**

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 4.   Express a systematic understanding of the science and practice of land reclamation and restoration and its application in the management of land restoration schemes

ILO 5.   Evaluate, design and implement (or where appropriate adapt) soil and land remediation programmes

ILO 6.   Propose the restoration of soil systems to acceptable environmental standards for a variety of end-uses, such as forestry, agriculture, amenity, wildlife conservation and infrastructure

ILO 7.   Develop and implement best practice strategies which provide business-viable, environmentally responsible solutions that deliver services to industry and the public sector

ILO 8.   Facilitate a co-operative approach to problem-solving; argue coherently; make effective decisions even under time pressure; and show knowledge of personal strengths and weaknesses

ILO 9   Integrate knowledge, understanding and skills from the taught modules in a real-life situation

ILO 10   Effectively work in a small project team to identify project objectives and select appropriate methodologies to address problems faced by industrial clients; collaborating with other team members to communicate findings in a professional manner in written, oral and visual forms

C. MSc in Land Reclamation and Restoration

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 11.   Develop problem definition, hypothesis setting, analysis and problem solving skills to address challenges faced by the land-based sector. Make informed judgements on potentially incomplete data. Display evidence of independent learning and originality

ILO 12   Define a research question, develop aim(s) and objectives, select and execute a methodology, analyse data, and evaluate findings and draw appropriate conclusions.

ILO 13 To communicate their findings successfully via a thesis, written in an approved School style and in an oral presentation.

4. How is the course taught?

The MSc course is taught in three sections: taught modules (40%), group projects (20%), and an individual research project (40%). The taught modules are typically delivered in one-week blocks between October and February. The course material is delivered within one week with a second week focussed on assimilation and the completion of an assignment. The teaching methods include debates, practical sessions, field visits, lectures, seminars, and presentations. The Group

4

Project is a group-based activity typically undertaken between February and April. The project is designed to integrate knowledge, understanding and skills from the taught modules in a real-life situation. For the individual research project, each student is allocated a supervisor. Guidance sessions are provided as to what is required from the thesis and oral presentation.

Within the induction week, students will be introduced to personal development planning and asked to reflect on their transferable skills and to take ownership of their personal development during the course.   During the group projects students will be given training in group-working and will reflect on their personal development.

5. **What do students need to achieve in order to graduate?**

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A.   **Postgraduate Certificate**
The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Module 1	0
ELECTIVE MODULES:	
Any six chosen from modules 2-9	60
TOTAL:	**60**

B.   **Postgraduate Diploma**
The accumulation of 120 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Module 1	0
Modules 2-9	80
Module 10	40
Module 11 in place of Module 10 (part time students)	40
ELECTIVE MODULES:	
TOTAL:	**120**

C.   **MSc**
In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
Module 1	0
Modules 2-9	80
Module 10 (Group project)	40
Module 11 in place of Module 10 (part time students)	40
Module 12 (Thesis project)	80
ELECTIVE MODULES:	
TOTAL:	**200**

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria

The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does <u>not</u> have discretion to overrule this limit, but can refer a case to Senate's Education Committee);[1][2]
- **For Taught Assessments,** the minimum mark for each individual taught assessment <u>on the first attempt</u> for the significant majority of the taught assessments, noting that:
  - if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
  - if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);
  - it is <u>not</u> permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);

---

[1] For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2] Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

6

- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

6. How is the course structured?

Please see the course structure document for details on the individual elements of the course. Full-time students register for the course in October and are expected to complete the MSc course within 12 calendar months.

This course is also offered on a part-time basis. In such a situation, students typically complete the various components of the course over two or three years. One example is to complete five taught modules in year 1, three taught modules and a work-based project in year 2, and a thesis and oral presentation in year 3. An alternative is to complete the autumn term modules in year 1, to complete a research thesis between January and December, and then to complete the remaining three taught modules and group project between January and May.

Course modules

The following modules outline all parts of the programme leading to an **MSc**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
1	I-ENV-INWK	Induction Week	T Brewer	33		0	Y	N/A	03/10/16	07/10/16	N/A	AO	N/A				N/A	
2	I-EMB-A1122	Principles of Sustainability	P Burgess	26		10	Y	N/A	10/10/16	14/10/16	40	ICW	100				F 22/10/16 P 29/10/16	
3	I-GIM-A1131	GIS Fundamentals	T Brewer	42		10	Y	N/A	24/10/16	28/10/16	40	ICW	100				F 5/11/16 P 12/11/16	
4	I-LAM-A1138	Soil Plant Environmental Science	J Hannam	34		10	Y	N/A	07/11/16	11/11/16	40	ICW	100	N/A	N/A	N/A	F 19/11/16 P 26/11/16	

---

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module[6] (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
5	I-LAM-SECNM	Soil Engineering, contaminant and nutrient management	AMouazen	33		10	N	N/A	21/11/16	25/11/16	40	ICW	100	N/A	N/A	N/A	F 3/12/16 P 10/12/16	
6	I-LAM-A1145	Land Engineering and Water Management	L Deeks	30		10	Y	N/A	05/12/16	09/12/16	40	ICW	100	N/A	N/A	N/A	F 17/12/16 P 3/1/17	
7	I-LAM-A1522	Landscape Ecology	R Corstanje	30		10	Y	N/A	09/01/17	13/01/17	40	ICW	100	N/A	N/A	N/A	F 21/1/17 P 28/1/17	
8	I-LAM-A1523	Soil Erosion Control for Catchment Management	R Simmons	40		10	N	N/A	23/01/17	27/01/17	40	GCW	100	N/A	N/A	N/A	FT/PT 4/2/17	
9	I-LAM-A1148	Ecological Restoration	J Harris	32		10	Y	N/A	06/02/17	10/02/17	40	ICW	100	N/A	N/A	N/A	F 18/2/17 P 25/2/17	
10	I-ENV-GRPP	Group Project	Supervisors	16		40	Y	N/A	20/02/17	05/05/17	50	GPROJ ICW	80 20	N/A	N/A	N/A	GPROJ 2/5/17 ICW 06/05/17	
11	I-ENV-DISS	Dissertation	Supervisors	10		40	Y	N/A	03/10/16	30/09/17	50	IPROJ	100	N/A	N/A	N/A	30/09/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment						
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7](100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
12	I-ENV-THESIS	Individual Research Project	Supervisors	20		80	Y	N/A	08/05/17	08/09/17	50	THESIS OR	90 10	N/A	N/A	N/A	4/9/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
I-EMB-A1122	Principles of Sustainability	Environmental Management for Business	• Environment and Public Policy • Economics for Natural Resource and Environmental Management • Land Reclamation and Restoration • Design and Innovation for Sustainability • Energy Supply for Low Carbon Futures • Renewable Energy Technology
I-GIM-A1131	GIS Fundamentals	Geographical Information Management	• Environmental Data Science • Environmental Risk Management • Integrated Landscape Ecology • Land Reclamation and Restoration
I-LAM-A1522	Landscape Ecology	Integrated Landscape Ecology	• Land Reclamation and Restoration
I-LAM-A1148	Ecological Restoration	Land Reclamation and Restoration	• Integrated Landscape Ecology
I-LAM-A1145	Land Engineering and Water Management	Land Reclamation and Restoration	• Environmental Engineering
I-LAM-A1523	Soil Erosion Control for Catchment Management	Land Reclamation and Restoration	• Environmental Engineering
I-LAM-A1138	Soil Plant Environmental Science	Land Reclamation and Restoration	• Environmental Water Management

7. **How are the ILOs assessed?**

The following assessment types are utilised:

The course uses a range of assessment types. Students on the MSc can typically expect to have one written exam, seven pieces of individual assessment by submitted work, one group project, and one element assessed by a thesis and an oral presentation.

This approach has been adopted in order to assess the ability of the student to demonstrate their ability in a range of environments.

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

Title	Modules Covered	Assessment	
		Type	Weight (%)

8. How will the University assure the quality of the provision?

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by

and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. **What opportunities are graduates likely to have on completing the course?**

Successful students go on to a wide-range of careers such as consulting engineers, conservationists, environmental and design planners/consultants, land and sustainability managers and advisors, researchers, and educationalists.

Employers include statutory agencies and ministries, conservation trusts, environmental companies, international development organisations, land and natural resource management businesses, large agri-food companies, local authorities, non-government organisations (NGOs), and research organisations.
Recent destinations of graduates include

Soil Scientist: Wardell Armstrong, UK
•Soil and Water Engineer: ADAS, UK:
•Project Manager / Reclamation Specialist: SNC-Lavalin Inc., Canada
•PhD Research Cranfield University (x3), UK
•PhD Lancaster University (x2), UK
•Research Assistant, Cranfield University, UK
•Planning Officer: Maryland Department of Planning, Maryland, USA
•Monitoring Officer: Listers Geotech, UK.

COURSE SPECIFICATION

Cranfield
University

> **Cranfield University: Course Specifications**
> Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.

COURSE TITLE:	PgCert in Leadership and Conflict Studies

Date of first publication/latest revision:	16/02/16

1. What is the course?

Course information

Course Title	Leadership and Conflict Studies
Course code	PCLCSPTR
Academic Year	2016-17
Valid entry routes	PgCert
Exit routes	PgCert
Mode of delivery	Part time
Location of Study	Royal Military Academy, Sandhurst
School(s)	Cranfield Defence and Security
Theme	Defence and Security
Centre	Royal Military Academy, Sandhurst
Awarding Body	Cranfield University and Army Officer selection board (part of Sandhurst group)
Teaching Institution	Royal Military Academy, Sandhurst
Admissions body	Cranfield University
Entry requirements	Standard University entry requirements
UK Qualifications Framework Level	QAA FHEQ Level 7 (Masters
Benchmark Statement(s)	N/A
Registration Period(s) available	1 year
Course Start Month(s)	CC161 Registration November 2015, Course Start January 2016 CC162 Registration March 2016, Course Start April 2016 CC163 Registration June 2016, Course Start September 2016

Institutions delivering the course

1

This course is delivered by the Royal Military Academy where the research interests include international affairs, contemporary leadership, warfare in the historical and contemporary context.

The Royal Military Academy remains fully responsible for the quality of delivery of the course. Cranfield University remains fully responsible for ensuring the quality of the provision and the standards of the associated awards

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is not accredited by any external bodies.

2. <u>What are the aims of the course?</u>

RMAS offers the PgCert in order:

- to analyse the nature and conduct of war at the strategic, operational and tactical levels, in order to help officers make educated decisions when facing complex problems encountered on operations
- to analyse key ideas about the nature and conduct of counter-insurgency and 'Hybrid War' at the strategic, operational and tactical levels, in order to help officers make educated decisions when facing complex problems encountered on operations
- to analyse and appraise methods through which a Junior Officer can adopt flexible personal approaches in different contexts to influence others in a professionally empathetic manner
- to introduce the student to social and behavioural science constructs and their application, to enhance understanding of the self in the context of leading others
- to critically evaluate international security challenges shaping the contemporary operational environment and its impact on the United Kingdom's foreign policy interests
- to examine and assess key elements of international security responses and military contributions, to stabilising the international security environment within a wider political, economic and diplomatic context

The modules are targeted at students who will be able to add real value to the examination of leadership and conflict in general and to their subsequent appointments as a platoon/troop commander in the Armed Forces. Additionally the PgCert will provide the foundation for an on-going commitment for the intellectual development of Army Officers.

3. <u>What should students expect to achieve in completing the course?</u>

Award intended learning outcomes (ILOs) (skills and knowledge).

A. **Postgraduate Certificate in Leadership and Conflict Studies**

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1.   Plan, construct and debate, in oral and written form, accurately and fluently within a self-directed learning environment the concept, context and practice of leadership

ILO 2.   Analyse and critically evaluate key drivers, challenges and trends in international and regional security, including the role of state and non-state security actors

ILO 3.   Demonstrate an understanding of key drivers, challenges and trends in international and regional security, including the role of state and non-state security actors

2

ILO 4.   Identify psychological and behavioural concepts relevant for the Junior Officer on first appointment, leading troops

ILO 5.   Demonstrate the capacity of reflective thinking and identify its importance to a personal command style and own leadership development

ILO 6.   Identify and critically analyse/evaluate key leadership themes in the conduct of conventional, counter insurgency and 'Hybrid' operations at the tactical and operational levels

ILO 7.   Demonstrate the ability to critically analyse/evaluate and apply the concepts and theories of contemporary war studies and wider security issues

4. How is the course taught?

The course will be taught using a variety of blended learning approaches, including seminar debates and discussions (45 & 90 minute duration), in groups numbering 12-14. Other methods to stimulate learning will be:

- Cadet-centred presentations involving research & group work
- Case studies (contemporary and historical)
- Simulated work environment exercises (Exercise Agile Influence in term 2 is a daylong event which provides cadets with the opportunity to practice influencing & negotiation skills, problem solving & decision making - learned in the CABS department – in an operational context. It is an exercise designed around unfolding scenarios in a destabilised country with each cadet playing an active 'role' and culminates in many lessons which they readily identify, from decisions that they make and implement. Teaching staff allow for maximised experiential learning by adopting a coaching approach, enabling higher learning domains to be exercised (Bloom).
- On entry to RMAS cadets are provided with an 'avatar' platoon, which changes consistently due to the issues individual soldiers may have and cadets are expected to keep the records updated, using information provided by the Virtual Learning Academy (VLA). The exercise (Sandhurst Rifles platoon), allows for the base of many discussions in CABS around the psychology of leadership including: motivation; leadership styles; influencing; negotiating etc. The exercise, due to its developing nature, allows for the cadets to demonstrate problem solving and interviewing techniques in term 3, where they learn how to conduct 'welfare interviews' with visiting soldiers who adopt roles from the 'Sandhurst Rifles platoon' resource.

In addition to the teaching methods outlined in section 3 above, cadets will be supported in their learning and personal development through the faculty and the military directing staff. The academic faculty is comprised of individuals with relevant expertise in their field and/or teaching experience. The faculty prides itself on its record of continuing professional development, including further academic study, organising staff seminars & conferences, on-going research and secondments; this ensures that academics are teaching from an informed, relevant and current knowledge base. Additionally, there is broad support for academic exercises from military officers whose expertise in military ethics & leadership, supports the wider understanding of applied principles in the operational context. Whilst the military directing staff serve appointments of 2-3 years, the continuity of the programme is guaranteed by the academic faculty whose appointments are not so fluid and therefore provide stability to ensure success.

Further support for cadet personal development is provided through:

3

- one-to-one contact time with their tutors
- action learning groups
- online learning programmes (VLE & internet)
- assessment and support for special learning needs
- Library & Archives
- Welfare officers

5. **What do students need to achieve in order to graduate?**

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A. **Postgraduate Certificate**
The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Modules 1–6	60
ELECTIVE MODULES:	
N/A	
TOTAL:	**60**

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria
The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does <u>not</u> have discretion to overrule this limit, but can refer a case to Senate's Education Committee); [1] [2]

---

[1] For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2] Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40%

4

- **For Taught Assessments,** the minimum mark for each individual taught assessment <u>on the first attempt</u> for the significant majority of the taught assessments, noting that:
  - if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
  - if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);
  - it is <u>not</u> permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

6.   How is the course structured?

Part-time students register for the course in November, March or June and are expected to complete the course within 1 year.

Officer Cadets are assigned a place at RMAS following successful completion of the Army Officer Selection Board although in practise entry to the RMAS may be deferred for some years. They serve for 11 months on a full time basis and receive a salary. The academic strand of the regular commissioning course commences during the Pre Commissioning Course Briefing Course (PCCBC) with an induction and study skills module in effect the PgCert is interleaved with a 13 month course that ends when the cadet commissions.

The academic modules are designed to support the focus of military aspects of the course and exact timings are dependent upon the schedule of the current commissioning course.

(but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

Course modules

The following modules outline all parts of the programme leading to a **PgCert**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Contact hours[3]	Total hours delivered by Visiting Lecturers [4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment						
							Module Start Date; see Registration date on Page1	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
											Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments [7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
1	R-LCS-CABS1	Understanding Self and Context	28	0	10	N	CC161	22/02/16	22/07/16	40	GPRES CW	40 60				18-22/07/16 12/09/16	14/10/16
							CC162	20/06/16	25/11/16		RP	100				21-25/11/16 09/01/17	13/03/17
							CC163	24/10/16	24/03/17		RP	100				20-24/03/17 08/05/17	10/07/17

---

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date; see Registration date on Page1	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
2	R-LCS-CABS2	Understanding Others	28	0	10	N	CC161 CC162 CC163	12/09/16 09/01/17 08/05/17	09/12/16 07/04/17 04/08/17	40	EX	100				11/11/16 10/03/17 07/07/17	09/12/16 10/04/17 11/08/17
3	R-LCS-DIA1	The Nature of the Contemporary International Security Environment	21	0	10	N	CC161 CC162 CC163	22/02/16 20/06/16 24/10/16	20/05/16 16/09/16 13/01/17	40	GPRES	100				30/6/16 03/10/16 30/01/17	26/02/16 06/10/16 02/02/17
4	R-LCS-DIA2	International Security Responses	20	0	10	N	CC161 CC162 CC163	04/07/16 07/11/16 06/03/17	25/11/16 24/03/17 20/03/17	40	ICW	100				07/11/16 06/03/17 03/07/17	16/01/17 15/05/17 11/09/17
5	R-LCS-WS1	War Studies	26	0	10	N	CC161 CC162 CC163	14/03/16 11/07/16 14/11/16	04/11/16 03/03/17 30/06/17	40	ICW	100				31/10/16 27/02/17 26/06/17	09/01/17 08/05/17 04/09/17
6	R-LCS-WS2	Command in a Historical Context	22	0	10	N	CC161 CC162 CC163	13/06/16 17/10/16 13/02/17	08/07/16 11/11/16 10/03/17	40	EX	100				11/07/16 14/11/16 13/03/17/	22/09/16 19/01/17 18/05/17

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module

7. How are the ILOs assessed?

The course uses a range of assessment types. Students can expect to have:

- written examinations
- long essays
- a written self-reflection
- a written brief and presentation

This approach has been adopted in order to ensure that students demonstrate their understanding through a wide range of learning techniques, but are not disadvantaged through any one approach.

Assessment and ILO Mapping

Complete the grid below by inserting in the boxes which assessments from the modules directly assess the Award ILOs.

(Module numbers should correspond with those used in the Course module table above.)

A.   Postgraduate Certificate

Module \ Award ILOs	ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6	ILO 7
CABS 1	ICW GPRES	ICW GPRES		ICW GPRES	ICW		
CABS 2	EX	EX		EX	EX		
DIA 3		GPRES	GPRES				
DIA 4		ICW	ICW				
WS 5	ICW		ICW			ICW	ICW
WS 6		EX	EX			EX	EX

8. How will the University assure the quality of the provision?

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and

Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. **What opportunities are graduates likely to have on completing the course?**

It is planned that students will be offered the opportunity to convert the PgCert into a PgDip and full MSc and that this will be a MOD funded development opportunity offered to all Army Officers. The academic skills and understanding developed by the PgCert will provide the necessary intellectual underpinnings for their professional career. Long term career progress will become dependent on achieving a Masters level qualification.

COURSE SPECIFICATION

Cranfield University: Course Specifications

Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.

COURSE TITLE: MSc in Logistics and Supply Chain Management

Date of first publication/latest revision: August 2016

1. What is the course?

Course information

Course Title	MSc in Logistics and Supply Chain Management
Course code	MSLOSFTC, PDLOSFTC, PCLOSFTC
Academic Year	2016-17
Valid entry routes	MSc
Additional exit routes	PgDip, PgCert
Mode of delivery	Full-time
Location of Study	Cranfield Campus
School(s)	School of Management
Theme	Leadership and Management
Centre	Centre for Demand Chain Management
Course Director	Dr Denyse Julien
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	Standard University entry requirements
UK Qualifications Framework Level	QAA FEHQ Level 7 (Masters)
Benchmark Statement(s)	N/A
Registration Period(s) available	Full-time MSc - one year
Course Start Month(s)	September

Institutions delivering the course

This course is delivered by the School of Management/Centre for Demand Chain Management, where the research interests include procurement, logistics, supply chain management and marketing.

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is accredited formally by The Chartered Institute of Logistics & Transport until 2021 and The Chartered Institute of Purchasing and Supply until August 2017.

2. What are the aims of the course?

Cranfield University offers this course in order to fulfil a market demand for highly capable graduates in the field of Logistics and Supply Chain Management. This is addressed through the aims of the course which are to provide students with:

- An overall appreciation of logistics and supply chain management and their importance to modern business.
- Appropriate technical knowledge in the key areas of logistics and supply chain management.
- Analytical, managerial and critical thinking skills that will enable them to apply this knowledge within a business environment.
- A critical understanding of the need to manage and plan supply chains within an overall business environment in an integrated and co-ordinated manner.
- Development in their ability to manage in complex and uncertain situations by focusing on soft skills such as communication, team-working and negotiation.
- Development in their ability to analyse, synthesise and critically evaluate information to take more effective management decisions.
- An understanding of the ethical and environmental implications of logistics and supply chain management decisions.

3. What should students expect to achieve in completing the course?

Award intended learning outcomes (ILOs) (skills and knowledge).

A. Postgraduate Certificate

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1. Possess a systematic understanding of logistics and supply chain knowledge, and a critical awareness of current supply chain problems and new thinking at the forefront of the discipline.

ILO 2. Be able to identify appropriate techniques to address specific challenges in supply chain management.

ILO 3. Analyse and solve supply chain problems systematically.

ILO 4. Make reasoned judgements in the absence of complete data.

ILO 5. Critically evaluate the application of current logistics and supply chain management research and evaluate its relevance to organisational practice.

ILO 6. Communicate their conclusions clearly to specialist and non-specialist audiences.

ILO 7. Demonstrate transferrable skills, including; time management, general communication, reflection, report writing and presentational and team working.

B. Postgraduate Diploma

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 8. Be able to be original in the application of knowledge, together with a practical understanding of the analytical and managerial skills that will enable them to apply this knowledge within an overall business environment in a logical and coherent manner.

ILO 9. Be able to analyse and solve complex logistics and supply chain problems systematically and creatively.

ILO 10. Demonstrate self-direction and originality in solving supply chain problems and to act professionally in planning and implementing tasks and projects.

ILO 11. Demonstrate additional transferrable skills, including; consultancy, project management, negotiation, cultural awareness and leadership.

C. MSc

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 12. Independently and confidently be able to apply logistics and supply management theories, tools and techniques to a variety of situations.

ILO 13. Demonstrate the ability to adapt appropriate logistics and supply management frameworks and contextualise for a specific organisational issue accurately.

ILO 14. Display practical ability in self-directed research, data gathering, data analysis and interpretation, report writing and presentation skills.

ILO 15. Judge appropriate research methodologies for conducting research, and draw justifiable inferences from the data and analysis generated.

ILO 16. Critically evaluate and synthesise the published literature.

ILO 17. Undertake independent study on a relevant logistics and supply management subject, demonstrating the ability to plan, manage and execute an industrial (private or public sectors) or research based project with specified time scales.

ILO 18. Produce a high quality thesis and critically evaluate the interpretations of the data.

4. How is the course taught?

The aim is to provide a varied, stimulating and experiential learning environment. All taught modules consist of formal lecturers, in-class case discussions, group and self-study. Group project work, reflective practice and class exercises are used to develop problem solving skills. Additional practical expertise will be provided by visiting fellows and guest speakers.

Each assessed module comprises 25 hours of class contact time with a further 75 hours of study time to consolidate learning and carryout assignments, giving a 100 notional learning hours.

The teaching methods are:
- Lectures
- Student centred learning/reflection
- Case studies
- Video and audio materials
- Simulation
- Tutorials
- Problem based learning projects
- Individual research project with academic supervisors

In addition to these methods the programme offers:
- Orientation week

- An international study tour which takes place in Term 3
- A programme of visits and lectures by external speakers
- Learning teams supported by an academic tutor
- Extensive use is made of BlackBoard (VLE) as a means of delivering material to support and augment classroom learning
- Library induction, referencing and plagiarism sessions
- PDP specifically supported through SOM careers development sessions.

5. What do students need to achieve in order to graduate?

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A. Postgraduate Certificate
The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Module 1 plus 50 credits from the taught modules	60
ELECTIVE MODULES:	
N/A	N/A
TOTAL:	**60**

B. Postgraduate Diploma
The accumulation of 120 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
10 Core Modules (1-10)	100
ELECTIVE MODULES:	
4 Electives (11-21)	20
TOTAL:	**120**

C. MSc
In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
10 Core Modules (1-10)	100
Personal Development (22)	0
Research Methods (23)	0

Individual Thesis (24)	80
ELECTIVE MODULES:	
4 Electives (11-21)	20
TOTAL:	**200**

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria
The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does <u>not</u> have discretion to overrule this limit, but can refer a case to Senate's Education Committee);[1] [2]
- **For Taught Assessments,** the minimum mark for each individual taught assessment <u>on the first attempt</u> for the significant majority of the taught assessments, noting that:
  o if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
  o if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);
  o it is <u>not</u> permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

6. How is the course structured?

Full-time students register for the course in September and are expected to complete the course in September in the following year.

---

[1] For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2] Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

The course is structured around four ten week terms. In the first term from September to December the students are given a thorough grounding in logistics and supply chain management through six compulsory core elements, including the participation in a supply chain game, which integrates students' learning from the course and develops their team working skills.

In the second term, from January to March, students study the remaining four core elements, plus four electives. The electives allow the students to start to specialise and to tailor their learning to their own interests within logistics and supply chain management.

The third and fourth terms are effectively merged and during this period the students undertake an individual thesis project. The majority of students undertake this thesis project within an organisation which can be in the profit or not for profit sector. Alternatively, students can undertake a Cranfield led research based thesis project.

Course modules

The following modules outline all parts of the programme leading to an **MSc**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment					
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
1	M-L/SCSS	Supply Chain Strategy and Sustainability	Dr Heather Skipworth	25		10	Y	03/10/16	03/10/16	16/12/16	40 40	GPRES ICW	25 75				07/11/16 24/11/16	
2	M-L/PSP	Principles of Strategic Procurement	Farooq Habib	25		10	Y	03/10/16	03/10/16	16/12/16	40	ICW	100				15/12/16	
3	M-L/ACF	Accounting and Finance	Dr Simon Templar	25		10	Y	03/10/16	03/10/16	16/12/16	40	EX	100				w/c 12/12/16	
4	M-L/ATS	Analytical Techniques for Supply Chain Management	Dr Emel Aktas	25		10	Y	03/10/16	03/10/16	16/12/16	40	EX	100				w/c 12/12/16	

---

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance Only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
5	M-L/FRT	Freight Transport	Melvyn Peters	25		10	Y	03/10/16	03/10/16	16/12/16	40	ICW	100				13/01/17	
6	M-L/IOM	Inventory and Operations Management	Dr Benny Tjahjono	25		10	Y	03/10/16	03/10/16	16/12/16	40			100 MULTI	GCW ICW	80 20	18/01/17	
7	M-L/ISB	Information Systems and e-Business	Dr Vahid Mirza Beiki	25		10	Y	09/01/17	09/01/17	24/03/17	40 40	GCW ICW	80 20				25/03/17 25/03/17	
8	M-M/PMI	Project Management Introduction	John Algar	20		10	Y	30/01/17	30/01/17	03/02/17	40 40	EX	40	60 MULTI	GCW GPRAC GPRES	10 30 20	03/02/17 02/03/17	
9	M-L/PND	Physical Network Design	Dr Nicky Yates	25		10	N	09/01/17	09/01/17	24/03/17	40	ICW	100				01/05/17	
10	M-L/WHS	Warehousing	Dr Hendrick Reefke	25		10	N	09/01/17	09/01/17	24/03/17	40	ICW	100				05/05/17	
11	M-P/BPO	Business Process Outsourcing	Dr Vahid Mirza Beiki	12		5	Y	09/01/17	09/01/17	24/03/17	40			100 MULTI	GCW ICW	75 25	17/02/17	
12	M-P/RSC	Designing and Managing Resilient Supply Chains	Dr Uta Jüttner	12		5	Y	09/01/17	09/01/17	24/03/17	40	GCW	100				03/03/17	

Assessment Types: AO – Attendance Only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
13	M-L/OUT	Logistics Outsourcing	Melvyn Peters	12		5	Y	09/01/17	09/01/17	24/03/17	40	ICW	100				10/02/17	
14	M-L/PRR	Planning and Resourcing Road Freight Transport	Melvyn Peters	12		5	Y	09/01/17	09/01/17	24/03/17	40			100 MULTI	GPRES GCW ICW	10 40 50	10/03/17 10/03/17 17/03/17	
15	M-L/HLR	Humanitarian Logistics	Dr Silvia Rossi Tafuri	12		5	Y	09/01/17	09/01/17	24/03/17	40	ICW	100				28/04/17	
16	M-L/SIM	Simulation	Dr Nicky Yates	12		5	Y	09/01/17	09/01/17	24/03/17	40	ICW	100				17/03/17	
17	M-L/SXS	Six Sigma	Farooq Habib	12		5	Y	09/01/17	09/01/17	24/03/17	40			100 MULTI	GCW ICW	75 25	13/04/17	
18	M-L/PFM	Performance Measurement in the Supply Chain	Dr Andrey Pavlov	12		5	Y	09/01/17	09/01/17	24/03/17	40	ICW	100				24/02/17	
19	M-L/SOP	Sales and Operations Planning	Dr Heather Skipworth	12		5	Y	09/01/17	09/01/17	24/03/17	40	ICW	100				24/04/17	
20	M-L/RLO	Retail Logistics	Prof Michael Bourlakis	12		5	Y	09/01/17	09/01/17	24/03/17	40	ICW	100				24/03/17	
21	M-L/SNCC	Social Network Analysis in a Supply Chain Context	Dr Leila Alinaghian	12		5	Y	22/03/17	22/03/17	24/03/17	40	ICW	100				01/05/17	

Assessment Types: AO – Attendance Only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

9

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment						
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
22	M-L/PDV	Personal Development	Dr Denyse Julien	0		0	Y	03/10/16	03/10/16	24/03/17	N/A	AO	N/A				N/A	
23	M-L/RSM	Research Methods	Dr Denyse Julien	14		0	Y	10/04/17	10/04/17	30/04/17	N/A	AO	N/A				N/A	
24	M-L/THS	Individual Thesis	Supervisor	0		80	Y	01/04/17	01/04/17	04/06/17		THESIS	100				01/09/17	

Assessment Types: AO – Attendance Only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
M-L/SCSS	Supply Chain Strategy and Sustainability	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/PSP	Principles of Strategic Procurement	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/ACF	Accounting and Finance	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/ATS	Analytical Techniques for Supply Chain Management	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/FRT	Freight Transport	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/IOM	Inventory and Operations Management	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/ISB	Information Systems and e-Business	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-M/PMI	Project Management Introduction	MBA	MBA, Procurement and Supply Chain Management
M-P/BPO	Business Process Outsourcing	Procurement and Supply Chain Management	Procurement and Supply Chain Management
M-P/RSC	Designing and Managing Resilient Supply Chains	Procurement and Supply Chain Management	Procurement and Supply Chain Management
M-L/OUT	Logistics Outsourcing	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/PRR	Planning and Resourcing Road Freight Transport	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/HLR	Humanitarian Logistics	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/SIM	Simulation	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/SXS	Six Sigma	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/PFM	Performance Measurement in the Supply Chain	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/SOP	Sales and Operations Planning	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/RLO	Retail Logistics	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/[new code]	Social Network Analysis in a Supply Chain Context	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/PDV	Personal Development	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/RSM	Research Methods	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/THS	Individual Thesis	Logistics and Supply Chain Management	Logistics and Supply Chain Management

7. How are the ILOs assessed?

The course uses a range of assessment types including both individual and group coursework, exams and a thesis.

This approach has been adopted in order to ensure that students demonstrate their understanding through a wide range of learning techniques, but are not disadvantaged through any one approach.

Assessment and ILO Mapping

Complete the grid below by inserting in the boxes which assessments from the modules directly assess the Award ILOs.

Award ILOs / Module No.	ILO1	ILO2	ILO3	ILO4	ILO5	ILO6	ILO7	ILO8	ILO9	ILO10	ILO11	ILO12	ILO13	ILO14	ILO15	ILO16	ILO17	ILO18
	PG Certificate in Supply Chain Management							PG Diploma in Logistics and Supply Chain Management				MSc in Logistics and Supply Chain Management						
1	✔		✔	✔	✔	✔	✔			✔	✔		✔					
2	✔	✔	✔		✔	✔	✔				✔		✔					
3				✔					✔									
4	✔	✔	✔	✔	✔		✔	✔	✔				✔					
5	✔		✔		✔	✔												
6	✔	✔	✔	✔	✔	✔	✔	✔	✔		✔		✔					
7		✔			✔						✔							
8		✔		✔		✔	✔			✔	✔							
9	✔		✔		✔	✔	✔	✔	✔	✔	✔	✔						
10	✔	✔			✔	✔	✔	✔	✔	✔	✔	✔						
11	✔			✔		✔					✔	✔	✔					
12	✔	✔	✔	✔		✔		✔	✔		✔	✔						
13																		
14																		
15	✔	✔				✔	✔				✔	✔						
16																		
17	✔	✔	✔	✔		✔	✔				✔	✔	✔					
18	✔					✔					✔	✔		✔				
19	✔	✔	✔	✔		✔					✔	✔						
20																		
21																		
22				✔		✔	✔			✔			✔	✔			✔	
23					✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
24					✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

Title	Modules Covered	Assessment	
		Type	Weight (%)
N/A	N/A	N/A	N/A

		N/A	N/A

8. **How will the University assure the quality of the provision?**

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. **What opportunities are graduates likely to have on completing the course?**

Graduates of the course are much sought after by employers. They include organisations from the 'not for profit' sector as well as a wide range of companies from the 'for profit' sector. Career progression for many of the graduates is often very rapid and a number have become logistics or supply chain directors for major international organisations.

COURSE SPECIFICATION

> **Cranfield University: Course Specifications**
>
> Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information. Courses are under constant review, however, and the University reserves the right, without notice, to withdraw, update or amend this course specification at any time.

COURSE TITLE: MSc in Exec Logistics and Supply Chain Management

Date of first publication/latest revision: 15/01/16

1. **What is the course?**

Course information

Course Title	Exec Logistics and Supply Chain Management
Course code	MSLOSPTC
Academic Year	2016/17
Valid entry routes	MSc
Additional exit routes	PgDip, PgCert
Mode of delivery	Part-time
Location of Study	Cranfield
School(s)	School of Management
Theme	Leadership and Management
Centre	Demand Chain Management
Course Director	Dr Soroosh Saghiri
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	Standard University entry requirements
UK Qualifications Framework Level	QAA FHEQ Level 7 (Masters)
Benchmark Statement(s)	N/A
Registration Period(s) available	Part-time MSc – up to 3 years
Course Start Month(s)	January

1

Institutions delivering the course

This course is delivered by the Centre for Demand Chain Management where the research interests include logistics, supply chain management and marketing.

Cranfield University interacts with the following institutions and in the following ways:

- students undertake their individual thesis project within their own organisation or field of business, which builds further contacts and opportunities for collaboration with those organisations
- the course contains a number of talks by external speakers from companies such as Accenture, Gartner Research, or from partner academic institutions
- there is an international study tour
- one of the two external examiners for the course is always from the non-academic sector, the other being an academic.
- the course has an Industrial Advisory Board

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is accredited formally by The Chartered Institute of Logistics & Transport until 2021 and The Chartered Institute of Purchasing and Supply until August 2017.

2. What are the aims of the course?

Cranfield University offers this course in order to fulfil a market demand for highly capable graduates in the field of Logistics and Supply Chain Management. The course further aims to offer personal and specialist skills development for candidates with extensive industrial experience. These objectives are addressed through the aims of the course which are to provide students with:

- an overall appreciation of logistics and supply chain management and their importance to modern business
- appropriate technical knowledge in the key areas of Logistics and Supply Chain Management
- an understanding of the analytical and managerial skills that will enable them to apply this knowledge within a business environment
- an understanding of the need to manage and plan supply chains within an overall business environment in an integrated and co-ordinated manner

Postgraduate Diploma (PGDip) exit route is provided for students who wish to access only parts of the course provided.

This programme is intended for the following range of students:

- candidates with minimum of five years business or organisational experience in a supply chain-related role
- candidates with a similar level of experience in a non-supply chain area who are intending to move into the supply chain field, or have recently had a change in career track.

3. What should students expect to achieve in completing the course?

2

Award intended learning outcomes (ILOs) (skills and knowledge).

 A. **Postgraduate Diploma Exec Logistics and Supply Chain Management**

 ILO 1. In completing this course, and achieving the associated award, a diligent student should be able to:
 ILO 2. Possess a systematic understanding of supply chain knowledge, and a critical awareness of current supply chain problems and/or new thinking at the forefront of their discipline
 ILO 3. Possess a comprehensive understanding of the analytical techniques applicable to logistics and supply chain management
 ILO 4. Be able to be original in the application of knowledge, together with a practical understanding of the analytical and managerial skills that will enable them to apply this knowledge within an overall business environment in a logical and coherent manner

 B. **MSc Exec Logistics and Supply Chain Management**

 ILO 5. In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:
 ILO 6. Analyse and solve complex logistics and supply chain problems systematically and creatively, make reasoned judgements in the absence of complete data and communicate their conclusions clearly to specialist and non-specialist audiences
 ILO 7. Demonstrate self-direction and originality in solving supply chain problems and to act professionally in planning and implementing tasks and projects
 ILO 8. Communicate their dissertation project plan, methodology, analysis, findings and conclusions clearly and effectively orally and in writing, which meet the requirements of their academic audience and sponsoring practitioners
 ILO 9. Display the qualities and transferable skills necessary for career development in a complex logistics and supply chain environment and the independent learning required for continued professional development

4. How is the course taught?

Students will be supported in their learning and personal development by:

- An international study tour in year 2
- Lectures by external speakers from industry
- Tutorial support throughout the course, including a meeting with personal tutor during each one week module
- Extensive use is made of BlackBoard as a means of delivering material to support and augment classroom learning.

5. What do students need to achieve in order to graduate?

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A. Postgraduate Diploma

The accumulation of 120 credits through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Elements 1 to 6	90
Elements 7 to 9	30
ELECTIVE MODULES:	
N/A	
TOTAL:	**120**

B. MSc

The accumulation of 120 credits through the assessment of taught modules and, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
Elements 1 to 6	90
Elements 7 to 9	30
Element 10	80
ELECTIVE MODULES:	
N/A	N/A
TOTAL:	**200**

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria
The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout

4

the course of your studies (Please note that the board of examiners does <u>not</u> have discretion to overrule this limit, but can refer a case to Senate's Education Committee);[1] [2]

- **For Taught Assessments,** the minimum mark for each individual taught assessment <u>on the first attempt</u> for the significant majority of the taught assessments, noting that:
  - o if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
  - o if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);
  - o it is <u>not</u> permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

6. How is the course structured?

Executive (Part-time) students register for the course in January and are expected to complete the course within 2 years.

The course is structured over two years as follows:
- In Year 1 there are five mandatory modules
- In Year 2 there are four mandatory modules and the students also undertake an individual thesis project. Students normally undertake this thesis project within their own organisation.

---

[1]   For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2]   Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

Course modules

The following modules outline all parts of the programme leading to **MSc**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment						
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
1	MXL/SCCP	Supply Chain Concepts	Soroosh Saghiri	40	0	15	N	23/01/17	23/01/17	27/01/17	40	ICW	100				06/03/17	
2	MXL/LM	Logistics Management	Hendrick Reefke	40	0	15	N	03/04/17	03/04/17	07/04/17	40 40	ICW ICW	50 50				01/05/17 26/06/17	
3	MXL/SCAMT	SC Analysis and Modelling Tools	Nicky Yates	40	0	15	N	05/06/17	05/06/17	10/06/17	40 40	EX ICW	50 50	50	M/choice EX	25 75	10/06/17 25/07/17	

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

4	MXL/ISOP	Information, Sales and Operation Planning	Benny Tjahjono	40	0	15	N	18/09/17	18/09/17	22/09/17	40 40	ICW ICW	50 50				16/10/17 27/11/17
5	MXL/FPM	Finance and Procurement Management	Soroosh Saghiri	38		15	N	06/11/17	06/11/17	10/11/17	40 40	ICW EX	50 50				15/01/18 11/11/17
6	MXL/SCD	Supply Chain Design	Richard Wilding	40	4	15	N	15/01/18	15/01/18	19/01/18	40 40	ICW ICW	50 50	50	IPRES ICW	20 80	12/02/18 26/02/18
7	MXL/QPRM	Quality and Performance in Supply Chains; Research Methods	Denyse Julien	36	12	10	N	05/03/18	05/03/18	09/03/18	40 40	ICW ICW	50 50				09/04/18 30/04/18
8	MXL/INT	International Logistics - Study Tour	Denyse Julien	36	0	10	N	05/05/18	05/05/18	12/05/18	40	ICW	100				04/06/18
9	MXL/SCF	Supply Chains of the Future	Soroosh Saghiri	36	16	10	N	10/09/18	10/09/18	14/09/18	40 40	ICW ICW	50 50	50	IPRES ICW	40 60	10/09/18 08/10/18
10	MXL/THS	Individual Thesis	Supervisor	0	0	80	N	N/A	05/03/18	14/12/18	50	THESIS	100				14/12/18

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
N/A			

7. How are the ILOs assessed?

The following assessment types are utilised:

The course uses a range of assessment types. Students can expect to have two written examinations, a weekend case exam, sixteen pieces of written assessment, plus an individual thesis for the MSc.

This approach has been adopted in order to ensure that students demonstrate their understanding through a wide range of learning techniques, but are not disadvantaged through any one approach.

Assessment and ILO Mapping

Complete the grid below by inserting in the boxes which assessments from the modules directly assess the Award ILOs.

Award ILOs Module	ILO 1	ILO2	ILO3	ILO4	ILO5	ILO6	ILO7
SCCP	ICW		ICW	ICW			ICW
LM	ICW ICW	ICW	ICW ICW	ICW ICW			ICW ICW
SCAMT	ICW	EX ICW	EX ICW	EX ICW			ICW
ISOP (tbc)	ICW ICW	ICW ICW	ICW ICW	ICW ICW			ICW ICW
FPM (tbc)	EX ICW	EX	EX ICW	EX ICW			EX ICW
SCD	ICW ICW	ICW	ICW ICW	ICW ICW		ICW	
QPRM	ICW ICW	ICW ICW	ICW ICW	ICW ICW			ICW ICW
INT	ICW		ICW	ICW			ICW
SCF	ICW GPRES		ICW GPRES	ICW			ICW GPRES
THS	THESIS	THESIS	THESIS	THESIS	THESIS	THESIS	THESIS

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

Title	Modules Covered	Assessment	
		Type	Weight (%)
N/A			

8. How will the University assure the quality of the provision?

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and

additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. What opportunities are graduates likely to have on completing the course?

The graduates from the Executive course are already in employment and many are sponsored by their employer. However many of those graduates are able to fast-track their careers through the skills and knowledge gained on the course.

Similarly, some graduates choose to use the qualification to move to another employer and there have been many examples of individuals advancing their career by moving into higher-ranked positions in global organizations.

There continues to be a high level of demand for well-qualified Masters graduates in Supply Chain Management and this course is recognised by industry as being at the forefront of meeting that demand.

10

COURSE SPECIFICATION

Cranfield University: Course Specifications	

Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.

COURSE TITLE:	MSc in Management

Date of first publication/latest revision:	July 2016

1. What is the course?

Course information

Course Title	MSc in Management
Course code	MSMGTFTC, PDMGTFTC, PCMGTFTC
Academic Year	2016/17
Valid entry routes	MSc
Additional exit routes	PgDip, PgCert
Mode of delivery	Full-time
Location of Study	Cranfield Campus
School(s)	School of Management
Theme	Leadership and Management
Centre	Centre for Management
Course Director	Professor Michael Dickmann
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	Standard University entry requirements
UK Qualifications Framework Level	QAA FHEQ level 7 (Masters)
Benchmark Statement(s)	N/A
Registration Period(s) available	Full-time MSc - one year
Course Start Month(s)	September

Institutions delivering the course

This course is delivered by the School of Management (SOM), Leadership and Management Theme, Centre for Management across its four Communities where the research interests include a wide range of Management areas. The modules are either existing or combinations of modules already taught on existing MSc courses offered by SOM. Teaching is provided by SOM Faculty and selected lectures and case studies provided by Visiting Fellows/Professors. Company based thesis projects and internships will involve external organisations. However, Cranfield University School of Management remains fully responsible for the quality of delivery of the course and the assessment of the course. It also provides a core set of management modules which can be offered to the University and the opportunity to jointly develop MSc in Management plus programmes with other Schools.

Interactions with outside organisations currently take the form of:

- Teaching/instruction from external academic, industry and other guest speakers.
- Individual thesis and particularly internship projects will be offered to and by various organisations (including not-for-profit and voluntary organisations).

To develop the above internship projects we have outsourced the internship development function to a specialist internship company (e.g. Instant Impact Ltd) and to support this with an administrator to manage the relationship between the university and the students.

The course director has also developed a practice advisory board. Members have been drawn from recommendations made by module convenors and Directors of Community.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is accredited by The Chartered Management Institute (CMI)

2. What are the aims of the course?

Cranfield University offers this course in order to add value to first degrees by developing in individuals a critical awareness of management and organisations, and assist them in taking effective roles within them at managerial career entry level.

The objectives are fivefold:

1. To prepare students for the world of employment in management, partly through a strong balanced focus between theoretical perspectives and simulation in the curriculum and partly through the thesis which is normally linked to the internship.
2. The advanced study of organisations, their management and the changing external context in which they operate.
3. Development of a range of business knowledge and skills, together with self-awareness and personal development appropriate for managerial career entry.
4. Development of the ability to apply concepts and theories to complex management issues, both systematically and creatively, to advance the effectiveness and competitiveness of the employing organisation.
5. Enhancement of lifelong learning through the development of transferable intellectual and study skills, personal development to enable self-direction and creativity, in order to contribute to business, the economy and society at large.

This programme is intended for the following range of students:

This is a pre-work experience programme intended for graduates from a non-business/ management subject looking to develop key managerial skills commensurate with managerial career entry opportunities. We also anticipate that some students who already have a higher

educational degree in a technical area but lack managerial experience and would not meet the relevant work experience qualification for the MBA might also be interested in joining the MSc in Management (MiM) programme.

3. **What should students expect to achieve in completing the course?**

Award intended learning outcomes (ILOs) (skills and knowledge).

A. **Postgraduate Certificate**

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1.   Demonstrate a systematic application and a critical awareness of current management research and to evaluate its relevance to industrial and commercial practice.
ILO 2.   Have a conceptual understanding that enables the student to evaluate critically current research and/or methodologies, develop critiques of them, and where appropriate adapt them.
ILO 3.   Demonstrate the ability to identify the appropriate management frameworks for an issue or situation under consideration, and to apply the tool or technique accurately.
ILO 4.   Make informed judgements in the absence of complete data.
ILO 5.   Undertake and show an ability for independent learning and an interest in advancing their knowledge and understanding and developing new skills to a high level.
ILO 6.   Demonstrate transferrable skills, including; time management, report writing and presentational and team working.

B. **Postgraduate Diploma**

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 7.   Integrate their learning from the PgCert.
ILO 8.   Demonstrate originality in the application of knowledge, including data and information collected by the student.
ILO 9.   Show self-direction and originality in tackling and solving problems.
ILO 10. Possess a comprehensive understanding of the leading management literature.
ILO 11. Demonstrate additional transferrable skills, including; consultancy, effective communication, cultural awareness and interpersonal team working and leadership.

C. **MSc**

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 12. Integrate their learning from the PgCert and PgDip and apply it to a research project.
ILO 13. Understand, have experience with, and confidently be able to apply management theories, tools and techniques and will have practised implementing theories and tools in a variety of situations including case studies, business simulations and the individual project.
ILO 14. Demonstrate the ability to identify the appropriate management frameworks for an issue or situation under consideration, to apply the tool or technique accurately.
ILO 15. Display practical capabilities in self-directed research, data gathering, data analysis and interpretation, report writing and presentation skills.
ILO 16. Carry out research using appropriate techniques and draw justifiable inferences from the data obtained.

ILO 17. Critically evaluate and synthesis the published literature within and across management disciplines.

ILO 18. Produce a high quality thesis and critically evaluate the interpretations of the data.

ILO 19. Undertake independent research on a relevant management subject, demonstrating the ability to plan, manage and execute an industrial, research based or internship project to realistic time scales.

4. How is the course taught?

Overall the aim is to provide a varied, stimulating and experiential learning environment. All taught modules consist of formal lectures, in-class case discussions, group and self-study. A management consultancy simulation will allow students to test their accumulated management understanding in a non-threatening environment. Group project work, reflective practice and class exercises are used to develop problem solving skills. The course will be supported by an electronic learning environment (VLE - Blackboard) which will be the central repository for all information relating to the course and available to the students at all times. This will be supplemented by online module case packs. Additional practical expertise will be provided by visiting fellows and guest speakers. All modules will be taught in block format. Each assessed module comprises 25 hours of class contact time with a further 75 hours of study time to consolidate learning and carry out assignments, giving 100 notional learning hours per module. The thesis component of the module is in total 90 credits to reflect the fact that many students will be undertaking a 3 month internship over the May-September period.

The MSc in Management will be strongly differentiated from our existing MBA programmes. This will be achieved in a number of ways as follows by:

- Targeting the course at pre-work experienced graduates
- Utilising module material principally from, or developed for, existing MSc programmes
- Incorporating a multi-option thesis at the end of the programme
- Orientating career development towards a first line management position.
- Using a greater mix of theoretical input and simulation (for the MiM) as opposed to practical workshops and the case method (for the MBA).

5. What do students need to achieve in order to graduate?

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A. Postgraduate Certificate
The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
6 modules from modules 1-9	60
ELECTIVE MODULES:	
N/A	N/A
TOTAL:	**60**

B. Postgraduate Diploma

The accumulation of 120 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Modules 1-9	90
ELECTIVE MODULES:	
3 modules from modules 10-16	30
TOTAL:	**120**

C. MSc

In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
Modules 1-9	90
Module 17	10
Masters of Management Thesis (Internship) 18 or Masters of Management Thesis (Non-internship) 19	90
ELECTIVE MODULES:	
3 modules from modules 10-16	30
TOTAL:	**220**

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria

The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does <u>not</u> have discretion to overrule this limit, but can refer a case to Senate's Education Committee);[1] [2]

---

[1] For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2] Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a

- **For Taught Assessments,** the minimum mark for each individual taught assessment <u>on the first attempt</u> for the significant majority of the taught assessments, noting that:
  - o if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
  - o if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);
  - o it is <u>not</u> permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

6. <u>How is the course structured?</u>

The course will be offered on a full-time basis only. Full-time students register for the course in September and are expected to complete the course within 13 calendar months.

The course modules will be taught over terms 1, 2 and 3. The individual thesis project is undertaken during terms 3 and 4. In addition to the teaching methods outlined in section 3 above, students will be supported in their learning and personal development by:

- Orientation week
- Library induction, referencing and plagiarism sessions
- PDP specifically supported through SOM careers development sessions and 2 modules specifically
  - Organisation Theory & Behaviour
  - Management Consulting
- A Virtual Learning Environment
- Learning teams supported by an academic tutor
- Provision of language classes. Mandatory for those with only one language and optional for those with more.

---

student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

Course modules

The following modules outline all parts of the programme leading to an **MSc**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment						
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
1	M-T/MST	Marketing Strategy	Dr Emma MacDonald	25		10	Y		03/11/16	28/11/16	40	ICW	100				09/12/16	
2	M-T/MPO	Managing People and Organisations	Dr Richard Kwiatkowski	25		10	Y		24/10/16	16/11/16	40	ICW	100				25/11/16	
3	M-T/MPL	Managing Profitability, Liquidity and Asset Utilisation	Dr Simon Templar	25		10	Y		04/10/16	06/12/16	40	EX	100				12/12/16	
4	M-T/IDQ	Improving Decision Quality with	Dr Benny Tjahjono	25		10	Y		10/10/16	01/12/16	40	EX	100				Dec 16	

---

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
		Management Science																
5	M-T/ECM	Economics for Managers	Dr Catarina Figueira	25		10	Y		03/10/16	22/11/16	40	EX	100				Dec 16	
6	M-T/MNO	Managing Operations	Dr Bob Lillis	25		10	Y		03/10/16	13/10/16	40	ICW	100				13/10/16	
7	M-T/STG	Strategic Management	Dr Richard Schoenberg	25		10	Y		31/01/17	15/02/17	40	EX	100				20/03/17	
8	M-T/MAC	Management Consulting	Dr Monica Franco-Santos	25		10	Y		09/04/17	05/05/17	40 40	GPRES ICW	50 50				18/05/17 18/05/17	
9	M-T/MCS	Managing Corporate Sustainability	Dr Palie Smart	25	5	10	Y		23/01/17	08/02/17	40	ICW	100				20/02/17	
10	M-T/MBT	Managing Business Technology Investments	Dr Donna Champion	25		10	N		10/01/17	19/01/17	40	ICW	100				06/02/17	
11	M-T/ORP	Organisational Performance: Direction Control and Measurement	Prof Mike Bourne	25		10	N		07/03/17	10/03/17	40	ICW	100				14/04/17	
12	M-T/SCM	Supply Chain Management	Dr Vahid Mirza Beiki	25		10	N		28/02/17	06/03/17	40			100 MULTI	ICW GPRAC GCW	50 10 40	24/03/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
13	M-T/DIN	Disruptive Innovation	Dr Clive Savory	25		10	Y		21/02/17	27/02/17	40			100 MULTI	GCW ICW	40 60	14/03/17	
14	M-T/ENT	Entrepreneurship	Dr Maarten Van der Kamp	25		10	Y		09/01/17	20/01/17	40	ICW	100				13/04/17	
15	M-T/MPM	Mastering Project Management	Dr Edward Ochieng	25		10	Y		13/03/17	15/03/17	40			100 MULTI	GCW IPRAC	90 10	17/03/17	
16	M-T/ECC	Effective Cross-Cultural Management	Prof Michael Dickmann	25		10	N		24/04/17	28/04/17	40			100 MULTI	GCW ICW	70 30	26/05/17	
17	M-T/RMS occurrence A16	Research Methods and Statistics	Ian Crawford	25		10	Y		10/04/17	29/05/17	40	ICW	100				31/05/17	
18	M-T/THS	Masters of Management Thesis (Internship)	Various - Supervisors	10		90	N		10/04/17	2710/17				100 MULTI	THESIS ICW	70 30	27/10/17	
19	M-T-THSNI	Masters of Management Thesis (Non-internship)	Various - Supervisors	10		90	N		10/04/17	2710/17		THESIS	100				27/10/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
M-T/MST	Marketing Strategy	Management	Management and Corporate Sustainability, Management and Entrepreneurship, Management and Economics (not currently running)
M-T/MPO	Managing People and Organisations	Management	Management and Corporate Sustainability, Management and Entrepreneurship, Management and Economics (not currently running)
M-T/MPL	Managing Profitability, Liquidity and Asset Utilisation	Management	Management and Corporate Sustainability, Management and Entrepreneurship, Management and Economics (not currently running)
M-T/IDQ	Improving Decision Quality with Management Science	Management	Management and Corporate Sustainability
M-T/ECM	Economics for Managers	Management	Management and Corporate Sustainability
M-T/MNO	Managing Operations	Management	Management and Corporate Sustainability, Management and Entrepreneurship
M-T/STG	Strategic Management	Management	Management and Corporate Sustainability, Management and Entrepreneurship, Management and Economics (not currently running)
M-T/MAC	Management Consulting	Management	Management and Corporate Sustainability, Management and Economics (not currently running)
M-T-MCS	Managing Corporate Sustainability	Management	Management and Corporate Sustainability, Management and Economics (not currently running)
M-T/DIN	Disruptive Innovation	Management	Management and Entrepreneurship
M-T/ENT	Entrepreneurship	Management	Management and Entrepreneurship, Management and Economics (not currently running)
M-T/MPM	Mastering Project Management	Management	Management and Economics (not currently running)
M-T/RMS	Research Methods and Statistics	Management	Management and Corporate Sustainability, Management and Entrepreneurship, Management and Economics (not currently running)

7. How are the ILOs assessed?

The following assessment types are utilised:

This is a full-time course conforming to the University's system of 10 credits (100 NLH) per module taken over 13 months comprising 220 credits in total. It will be assessed by conventional means: written assessment of cases (WACs), exams and group and individual assignments and a thesis project at the end of the programme. This thesis project will comprise 90 credits in total and will normally be linked to the 3 month internship. In the event that a student is unable to secure an internship or the internship is curtailed, for whatever reasons, there is an option to direct a student towards an empirical or systematic literature review similar to existing MSc students but the length of the thesis should reflect the additional credits and time available for the thesis.

This approach has been adopted because it is impossible to preclude the risk of companies curtailing an internship or that some students are not able to gain an internship.

Assessment and ILO Mapping

Complete the grid below by inserting in the boxes which assessments from the modules directly assess the Award ILOs.

Module No.	ILO1	ILO2	ILO3	ILO4	ILO5	ILO6	ILO7	ILO8	ILO9	ILO10	ILO11	ILO12	ILO13	ILO14	ILO15	ILO16	ILO17	ILO18	ILO19
	Postgraduate Certificate						Postgraduate Diploma					MSc							
1	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔								
2	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔								
3	✔	✔	✔	✔	✔		✔	✔	✔	✔	✔								
4	✔	✔	✔	✔	✔		✔	✔	✔	✔	✔								
5	✔	✔	✔	✔	✔		✔	✔	✔	✔	✔								
6	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔								
7	✔	✔	✔	✔	✔		✔	✔	✔	✔	✔								
8	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔								
9	✔	✔		✔	✔	✔	✔	✔	✔	✔	✔								
10							✔	✔	✔	✔	✔								
11							✔	✔	✔	✔	✔								
12							✔	✔	✔	✔	✔								
13							✔	✔	✔	✔	✔								
14							✔	✔	✔	✔	✔								
15							✔	✔	✔	✔	✔								
16							✔	✔	✔	✔	✔								
17													✔	✔	✔	✔			
18				ICW	ICW	ICW		ICW		ICW		THESIS	THESIS	THESIS	THESIS ICW	THESIS	THESIS ICW	THESIS	THESIS
19				ICW	ICW	ICW		ICW		ICW		THESIS	THESIS	THESIS	THESIS ICW	THESIS	THESIS ICW	THESIS	THESIS

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

Title	Modules Covered	Assessment	
		Type	Weight (%)
N/A	N/A	N/A	N/A
		N/A	N/A

8. How will the University assure the quality of the provision?

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. What opportunities are graduates likely to have on completing the course?

The course will provide a comprehensive understanding/knowledge of management with the practical skill set commensurate with entry to a first line managerial post. As such, many of the students will go into large organisations' graduate entry schemes but will equally be attractive to SMEs where the managerial component will add value to the student's technology or single discipline first degree. Evidence form current recruitment patterns for our young MSc students (on specialist MSc) already shows the trend toward graduate entry schemes and many companies are transferring their search to post-graduates rather than fresh graduates. Students are therefore

typically recruited for early-career roles and graduate schemes in industry, banks, consultancies and other large organisations. However, this Masters programme is also ideal for recent graduates seeking a conversion path into business management in order to give them an edge in today's job market. For example, employers want an engineer who can grasp marketing or an arts graduate with an ability to devise business plans. Finally, some students will want to develop their own businesses and the flexibility of the programme is that it can provide pathways for such students who want to move in this direction, e.g. by taking the entrepreneurship elective and opting to do an entrepreneurship internship or company-based project.

COURSE SPECIFICATION

Cranfield University: Course Specifications

Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.

COURSE TITLE: MSc in Management and Entrepreneurship

Date of first publication/latest revision: May 2016

1. What is the course?

Course information

Course Title	MSc in Management and Entrepreneurship
Course code	MSMERFTC, PDMERFTC, PCMERFTC
Academic Year	2016-17
Valid entry routes	MSc
Additional exit routes	PgDip, PgCert
Mode of delivery	Full-time
Location of Study	Cranfield Campus
School(s)	School of Management
Theme	Leadership and Management
Centre	Bettany Centre for Entrepreneurship
Course Director	Dr Maarten van der Kamp
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	Standard University entry requirements
UK Qualifications Framework Level	QAA FHEQ level 7 (Masters)
Benchmark Statement(s)	N/A
Registration Period(s) available	Full-time MSc – one year
Course Start Month(s)	October

Institutions delivering the course
This course is delivered by the Bettany Centre for Entrepreneurship at the School of Management (SOM) where the research interests include:

- Growth of entrepreneurial ventures
- Forecasting the entrepreneurial sector
- Entrepreneurial finance and de-risking ventures
- Intellectual property rights and market performance
- The impact of business planning on new venture performance
- Entrepreneurial Strategy
- Family business management
- Corporate entrepreneurship
- Women's entrepreneurship

Teaching and/or assessment is provided by SOM Faculty as well as selected visiting fellows (already teaching on the MSc in Management (MiM) programme or working in other renowned universities in the field of Entrepreneurship and Enterprise Development). Thesis projects will be mainly supervised by Entrepreneurship faculty and will have an option either to write a research project or to create a business plan for a new entrepreneurial venture or to conduct a growth audit for an existing entrepreneurial venture.

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is accredited by The Chartered Management Institute (CMI).

2. What are the aims of the course?

In this world of downsizing, restructuring and technological change, notions of traditional careers have been challenged. More and more individuals are aspiring to create their own world of unlimited opportunities. Not only individuals, but governments have recognised the positive impact of entrepreneurship on the economic development. There's no single Government (in either the developed or the developing world), which is not paying at least lip service to entrepreneurship promotion and enterprise development. Because they have realised that entrepreneurs are empowering change through new business models and bringing hope to millions of people world-wide. The research shows that majority of entrepreneurial ventures fail in the first few years of their existence. The most of the failures are because their owner-managers lack basic management skills.

They do things on hit and trial basis, by learning these skills in the wild - and that's where Cranfield's MSc Management and Entrepreneurship Course makes a difference – by equipping our students with both the entrepreneurial characteristics and traits as well as management skills so that they can start and run their businesses in an effective and efficient manner.

Cranfield University offers this course in order to add value to first degrees in Business and Management, Economics, Applied Science fields, Humanities and Social Sciences. It seeks to develop candidates from different academic disciplines and backgrounds, with perhaps some relevant although limited experience, who want to either start their own business or grow their family business entrepreneurially, or manage a large organisation in an entrepreneurial manner.

The aim of the MSc in Management and Entrepreneurship is to add value to applicants' first degrees by providing individuals with an integrated and critical awareness of management and organisations (e.g. private, public and third sector) and subsequently develop a specialised focus in entrepreneurship, and assisting them in pursing an entrepreneurial career. More specifically it seeks to ensure the:

- Provision of a comprehensive and advanced understanding of the impact of entrepreneurship and entrepreneurial processes at international, regional and national levels, the community level and the level of firm and individual.
- Integration and application of in-depth knowledge and understanding of management sub-disciplines to support the start-up and growth of entrepreneurial ventures.
- Provision of opportunities for students to develop critical perspectives on theories and to review and evaluate the appropriateness and potential value of concepts, models and techniques that underpin the constituent entrepreneurship and management subjects.
- Development of student capabilities to critically analyse the current issues in the field of management and entrepreneurship.
- Enhancement of lifelong learning through the development of management and entrepreneurship knowledge, communication, team working, negotiation, project planning capabilities and self-direction, so students acquire the necessary high-level skills employers favour for making contributions to their own and/or family businesses, social enterprises, or large organisations interested to introduce entrepreneurial culture as a tool for business growth.

This is a predominantly pre-work experience programme intended for graduates from a wide range of backgrounds including science, engineering and technology who are interested in developing a career in entrepreneurship and enterprise development. This course may also appeal to candidates with first degrees that are not in a business academic discipline but that would benefit from obtaining a post-graduate qualification that combines management and entrepreneurship as a developmental step in their career.

The unique selling point of this course is primarily the design of specialist modules, which will rely on consultations with leading entrepreneurs and intrapreneurs who have attended Cranfield's 'Business Growth Programme'. Cranfield has been working with ambitious entrepreneurs for nearly 30 years. The students will be able to take advantage of Cranfield's extensive network to develop their business ideas both during the programme and after they have completed their studies.

This course has been designed not only to teach 'about' theory of entrepreneurship. We aim to prepare our student 'for' spotting opportunities, generating ideas and being creative and innovative enough to raise resources to implement those ideas successfully. We will achieve this goal 'through' a range of inclusive and interactive teaching pedagogies and learning methods – delivered by a team of entrepreneurial faculty members, who have either started and managed their own businesses or have been engaged with real life entrepreneurs, either through conducting research, or by providing consultancy, coaching, and mentoring.

3. <u>What should students expect to achieve in completing the course?</u>

Award intended learning outcomes (ILOs) (skills and knowledge).

A. **Postgraduate Certificate**

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1. Demonstrate a systematic application and a critical awareness of current management and entrepreneurship research and to evaluate its relevance to industrial and commercial practice.

ILO 2. Show a conceptual understanding that enables the student to evaluate critically current research and/or methodologies, develop critiques of them, and where appropriate adapt them.

ILO 3. Demonstrate the ability to identify the appropriate management and entrepreneurship frameworks for an issue or situation under consideration, and to apply the tool or technique accurately.

ILO 4. Undertake and show an ability for independent learning and an interest in advancing their knowledge and understanding and developing new skills to a high level.

ILO 5. Justify and defend the ability for independent learning and an interest in advancing knowledge and understanding and developing new skills to a high level demonstrated through critical thinking, strategic comparison and review.

ILO 6. Evaluate the entrepreneurial characteristics, entrepreneurial processes, and the entrepreneurial event in different social, economic, political and legal environments.

B.Postgraduate Diploma

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 7. Select and apply different tools available for creating new business opportunities, and of different forms of support available to entrepreneurs and how to utilise that support in an effective manner.

ILO 8. Independently apply entrepreneurship theories, concepts, models, tools and techniques to a variety of situations including case studies, business simulations and the individual project.

ILO 9. Adapt appropriate management and entrepreneurship frameworks and contextualise them for specific issues accurately in start-up and growth stages of entrepreneurial ventures.

ILO 10. Exhibit originality in the application of knowledge, together with a practical understanding of how established techniques of research and inquiry in entrepreneurship are used to create and interpret knowledge in the discipline.

ILO 11. Show self-direction and originality in tackling and solving problems both in the start-up and growth stages of entrepreneurial ventures.

C. MSc

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 12. Integrate their learning from the PgCert and PgDip and apply it to a research project or to prepare a business plan.

ILO 13. Critically evaluate and synthesise the published literature within and across the entrepreneurship and management disciplines either for their research project or for preparing a business plan.

ILO 14. Conduct independent study on a relevant entrepreneurship/management domain, demonstrating the ability to plan, manage and execute a research-based project with specified time scales, or prepare a detailed business plan for a new entrepreneurial venture demonstrating an ability to plan, access and mobilise resources for new venture.

ILO 15. Produce a high quality thesis or a business plan and critically evaluate the interpretations of the data available.

4. How is the course taught?

Overall the aim is to provide a varied, stimulating and experiential learning environment. All taught modules consist of formal lecturers, in-class case discussions, group and self-study. Group project work, reflective practice and class exercises are used to develop problem solving skills. Additional practical expertise will be provided by guest speakers.

Each assessed module comprises 25 hours of class contact time with a further 75 hours of study time to consolidate learning and carry out assignments, giving a 100 notional learning hours.

The teaching methods are:

- Lectures
- Student centred learning/reflection
- Case studies
- Video and audio materials
- Simulation
- Tutorials
- Problem-based learning projects
- Individual research project with academic supervisors

In addition to the teaching methods outlined above, students will be supported in their learning and personal development by:
- Orientation week
- Library induction, referencing and plagiarism sessions
- Virtual Learning Environment
- Learning teams supported by an academic tutor

5. **What do students need to achieve in order to graduate?**

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A. Postgraduate Certificate
The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Modules 1-6	60
ELECTIVE MODULES:	
N/A	N/A
TOTAL:	**60**

B. Postgraduate Diploma
The accumulation of 120 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Modules 1-12	120
ELECTIVE MODULES:	
N/A	N/A
TOTAL:	**120**

C.   MSc

In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
Modules 1–12	120
Thesis	80
ELECTIVE MODULES:	
N/A	N/A
TOTAL:	**200**

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria

The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does not have discretion to overrule this limit, but can refer a case to Senate's Education Committee); [1] [2]
- **For Taught Assessments,** the minimum mark for each individual taught assessment on the first attempt for the significant majority of the taught assessments, noting that:
  - if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
  - if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);
  - it is not permissible for you to fail an elective module and then proceed to take a different elective module in its place.

---

[1]   For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2]   Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

6. How is the course structured?

Full-time students register for the course in September and are expected to complete the course within 12 calendar months.

Each assessed module is based on 100 notional learning hours, comprising 25 class contact hours with a further 75 hours of private study to consolidate learning and to carry our assessments.

The course modules will be taught as a series of lectures within the first two terms of the four-term framework, with the exception of the *Research Methods* courses which will be taught in term 3. The individual thesis project is undertaken during terms 3 and 4.

Course Structure MSc in Management and Entrepreneurship				
Orientation Week Starts 24/09/2015	**Term 1** Starts 5/10/2015	**Term 2** Starts 11/01/2016	**Term 3** Starts 4/04/2016	**Term 4** Starts 20/06/2016
	Core modules: Marketing Strategy and Planning (MiM) Managing People and Organisations (MiM) Managing Profitability, Liquidity and Asset Utilisation (MiM) Managing Operations (MiM) Entrepreneurship (MiM) Family Business Management (new)	**Core modules:** Strategic Management (MiM) Disruptive Innovation (MiM) Corporate Entrepreneurship (new) Managing Business Growth (new) Entrepreneurial Finance (new) Social Enterprise and Intrapreneurism (new)	**Core modules:** Research Methods (MiM) **Thesis**	**Thesis** **(Research Project/Business Plan)**

Course modules

The following modules outline all parts of the programme leading to an **MSc**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module[6] (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
1	M-T/MST	Marketing Strategy	Dr Emma MacDonald	25		10	Y		03/11/16	28/11/16	40	ICW	100				09/12/16	
2	M-T/MPO	Managing People and Organisations	Dr Richard Kwiatkowski	25		10	Y		24/10/16	16/11/16	40	ICW	100				25/11/16	
3	M-T/MPL	Managing Profitability, Liquidity and Asset Utilisation	Dr Simon Templar	25		10	Y		04/10/16	06/12/16	40	EX	100				12/12/16	
4	M-T/MNO	Managing Operations	Dr Bob Lillis	25		10	Y		03/10/16	13/10/16	40	ICW	100				13/10/16	

---

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
5	M-T/ENT	Entrepreneurship	Dr Maarten Van der Kamp	25		10	Y		09/01/17	20/01/17	40	ICW	100				13/04/17	
6	M-E/FBM	Family Business Management	Dr Muhammad Azam Roomi	25		10	N		09/01/17	13/01/17	40	GCW	100				27/01/17	
7	M-T/STG	Strategic Management	Dr Richard Schoenberg	25		10	Y		31/01/17	15/02/17	40	EX	100				20/03/17	
8	M-T/DIN	Disruptive Innovation	Dr Clive Savory	25		10	Y		21/02/17	27/02/17	40 40			100 MULTI	GCW ICW	40 60	14/03/17	
9	M-E/MBG	Managing Business Growth	Dr Shailendra Vyakarnam	25		10	N		19/01/17	26/01/17	40	EX	100				20/03/17	
10	M-E/ENF	Entrepreneurial Finance	Dr Stephanie Hussels	25		10	N		21/11/16	25/11/16	40 40	EX GCW	50 50				12/12/16	
11	M-E/CEN	Corporate Entrepreneurship	Dr Muhammad Azam Roomi	25		10	N		06/03/17	10/03/17	40			100 MULTI	GCW GCW	70 30	10/04/17 10/04/17	
12	M-E/SEM	Social Enterprise and Intrapreneurism	Dr Maarten Van der Kamp	25		10	N		11/04/17	15/04/17	40 40			100 MULTI	GPRES RP	50 50	09/05/17	
13	M-T/RMS occurrence B16	Research Methods and Statistics	Ian Crawford	25		0	Y		10/04/17	29/05/17	N/A	AO	N/A				N/A	
14	M-E/THS	Thesis (Business Plan)	Supervisors drawn from	10	80		N		May 17	01/09/17		THESIS	100				01/09/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers [4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment						
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments [7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
			faculty and visiting fellows/ registered teachers															

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

10

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
M-T/MST	Marketing Strategy	Management	Management and Corporate Sustainability, Management, Management and Economics (not currently running)
M-T/MPO	Managing People and Organisations	Management	Management and Corporate Sustainability, Management, Management and Economics (not currently running)
M-T/MPL	Managing Profitability, Liquidity and Asset Utilisation	Management	Management and Corporate Sustainability, Management, Management and Economics (not currently running)
M-T/MNO	Managing Operations	Management	Management and Corporate Sustainability, Management
M-T/ENT	Entrepreneurship	Management	Management, Management and Economics (not currently running)
M-T/STG	Strategic Management	Management	Management and Corporate Sustainability, Management, Management and Economics (not currently running)
M-T/DIN	Disruptive Innovation	Management	Management
M-T/RMS	Research Methods and Statistics	Management	Management and Corporate Sustainability, Management, Management and Economics (not currently running)

7. How are the ILOs assessed?

The course uses a range of assessment types. Students can expect to have 4 written examinations and 11 assignments, of which one is the thesis. No elements of assessment are done by presentation (although there are formative assessments by presentation and debate) or by viva.

Assessment and ILO Mapping

Complete the grid below by inserting in the boxes which assessments from the modules directly assess the Award ILOs.

A. Postgraduate Certificate

Award ILOs Module No.	ILO 1.	ILO 2.	ILO 3.	ILO 4.	ILO 5.	ILO 6.	ILO 7.	ILO 8.	ILO 9.	ILO 10.	ILO 11.	ILO 12.	ILO 13.	ILO 14.	ILO 15.
1	√	√	√	√	√										
2	√	√	√	√	√										
3	√	√	√	√	√										
4	√	√	√	√	√										

Module No.	ILO 1.	ILO 2.	ILO 3.	ILO 4.	ILO 5.	ILO 6.	ILO 7.	ILO 8.	ILO 9.	ILO 10.	ILO 11.	ILO 12.	ILO 13.	ILO 14.	ILO 15.
5	√		√	√	√	√		√	√		√				
6	√	√	√	√	√	√		√	√		√				

B. Postgraduate Diploma

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Module No.	ILO 1.	ILO 2.	ILO 3.	ILO 4.	ILO 5.	ILO 6.	ILO 7.	ILO 8.	ILO 9.	ILO 10.	ILO 11.	ILO 12.	ILO 13.	ILO 14.	ILO 15.
7					√		√	√		√	√				
8						√	√	√	√	√					
9			√	√			√	√	√	√	√				
10							√	√	√	√					
11							√	√	√	√	√				
12			√	√			√	√	√	√	√				

C. MSc

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Module No.	ILO 1.	ILO 2.	ILO 3.	ILO 4.	ILO 5.	ILO 6.	ILO 7.	ILO 8.	ILO 9.	ILO 10.	ILO 11.	ILO 12.	ILO 13.	ILO 14.	ILO 15.
13	NOT ASSESSED														
14	√				√	√	√	√	√		√	√	√	√	√

8. <u>How will the University assure the quality of the provision?</u>

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to

the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. **What opportunities are graduates likely to have on completing the course?**

The course will provide a comprehensive and integrated understanding/knowledge of entrepreneurship and management with the practical skill set suitable for either business start-up/growth or working in a large organisation as an intrapreneur. Once graduate, many of the students may be able to launch and grow their own businesses or may become actively involved in the management of their family's business. In addition, there is even a possibility to pursue a career as a social entrepreneur or a corporate entrepreneur/intrapreneur to lead and mange a larger organisation in an executive/employee capacity.

COURSE SPECIFICATION

Cranfield University: Course Specifications

Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.

COURSE TITLE:	MSc in Management and Information Systems

Date of first publication/latest revision: June 2016

1. What is the course?

Course information

Course Title	MSc in Management and Information Systems
Course code	MSMGIFTC, MSMGIPTC, PDMGIFTC, PDMGIPTC, PCMGIFTC, PCMGIPTC
Academic Year	2016/17
Valid entry routes	MSc, PgDip, PgCert
Additional exit routes	Not Applicable
Mode of delivery	Full-time, Part-time
Location of Study	Cranfield University
School(s)	School of Aerospace, Transport and Manufacturing
Theme	Manufacturing
Centre	Sustainable Manufacturing Systems Centre
Course Director	Dr Ip-Shing Fan
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	Standard University entry requirements
UK Qualifications Framework Level	QAA FHEQ Level 7 (Masters)
Benchmark Statement(s)	Not Applicable
Registration Period(s) available	Full-time MSc - one year, Part-time MSc - up to three years, Full-time PgDip - one year, Part-time PgDip - two years, Full-time PgCert - one year, Part-time PgCert - two years
Course Start Month(s)	Full-time: October. Part-time: throughout the year

Institutions delivering the course

This course is delivered by The School of Aerospace, Transport and Manufacturing, Manufacturing Theme, Sustainable Manufacturing Systems Centre where the research interests include:

- Manufacturing Systems Engineering
- Product-Service Systems
- Supply Chain Management
- Enterprise Scale IT Systems
- Simulation and Modelling
- Innovation Management

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is accredited formally by Institution of Mechanical Engineers (IMechE) up to and including Academic year 2019-20, Institution of Engineering and Technology (IET) up to and including Academic year 2019-20, Royal Aeronautical Society (RAeS) up to and including Academic year 2019-20.

2. <u>What are the aims of the course?</u>

The aim of this course is:

- To provide graduates with knowledge and skills required to enable them to apply management and information systems in an effective way to solve management problems in industrial, commercial and governmental organisations.
- To further develop suitably trained and qualified individuals, and enable them to make an immediate contribution to a company's performance and operation, and to progress into senior management positions.

Cranfield University offers this course in order to:

- Provide graduates with the knowledge and skills necessary to enable them to understand the theories behind the major tools and techniques available for problem solving within Management and Information Systems.
- Equip students to understand the needs addressed by the above tools and techniques.
- Expose students to tools and techniques to identify and analyse management problems, propose solutions and to select and implement a solution to support the business need.
- Develop students' ability to demonstrate, through group project and individual thesis, expertise in solving management problems.

Postgraduate Diploma (PgDip) and Postgraduate Certificate (PgCert) exit routes are provided for students who wish to access only parts of the course provided.

This programme is intended for the following range of students:

- Those wishing to work nationally or internationally to practice effective technology enabled management.
- Those wishing to work in information technology solution vendors and implementation consultancy.
- Those wishing to work in the public/government sector on industry competitiveness and productivity issues.

3. What should students expect to achieve in completing the course?

Award intended learning outcomes (ILOs) (skills and knowledge).

A. Postgraduate Certificate

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1.   Demonstrate an awareness of the principles and theories behind the major techniques and tools available for problem solving in the areas of Management and Information Systems.

ILO 2.   Critically evaluate the theory behind; and the selection of appropriate analysis, design and development tools and apply them to solve business problems in terms of Information Systems and/or organisations.

ILO 3.   Critically evaluate previous and current research and methodologies, and determine their relevance to a given manufacturing, industrial, business or commercial problem.

ILO 4.   Acquire and use Data, Information and Knowledge effectively, and apply appropriate techniques and tools to identify and analyse management problems and to propose solutions.

ILO 5.   Use independent learning skills to continuously advance their knowledge and understanding of Management and Information Systems.

B. Postgraduate Diploma

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 6.   Demonstrate key management and personal management skills needed to influence and implement change.

ILO 7.   Demonstrate team based project skills to develop IT enabled management solutions (Group project participants only).

C. MSc

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 8.   Undertake independent research on a subject relevant to management and information systems involving project planning, development of new skills, critical evaluation of literature, evaluation of results, and discussion of findings and writing a thesis

4. How is the course taught?

The MSc course has three components: taught modules (40%), group projects (20%), and an individual research project (40%). The taught modules are typically delivered in one-week blocks between October and February.

The teaching methods include lectures, case studies, group exercises, field visits, seminars and computer-based demonstrations and exercises. All students attend a week of introductory lectures (given during the first week of the course). Within this induction week, students will be introduced to personal development planning and asked to reflect on their transferable skills and to take ownership of their personal development during the course. Induction is followed by 8 assessed modules, each module has a one week residential component plus pre-work and post-study.

All MSc students undertake a Group Project (full time students) or produce a Dissertation (part time students). The Group projects are group-based activities typically undertaken for 12 weeks

between February and April. The projects are designed to integrate knowledge, understanding and skills from the taught modules in a real-life situation. The Group Project will typically involve a team of between 5 and 8 students, working to investigate a business opportunity or solve a business problem. For part-time students, a Dissertation replaces the Group Project. The topic is to be agreed between the University and the student.

All MSc students will undertake an individual research project (thesis project) under the supervision of a member of academic staff. For the individual research project, each student is allocated a supervisor. Guidance sessions are provided as to what is required from the thesis and oral presentation.

5. **What do students need to achieve in order to graduate?**

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A.   **Postgraduate Certificate**
The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Modules 2, 3, 4 and 6	40
ELECTIVE MODULES:	
Modules 5, 7, 8 and 9 (Select 2)	20
RECOMMENDED MODULE:	
Induction	0
TOTAL:	60

B.   **Postgraduate Diploma**
The accumulation of 120 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Modules 2-9	80
Group Project for full-time students (10a) or Dissertation for part-time students (10b)	40
ELECTIVE MODULES:	
None	
RECOMMENDED MODULE:	
Induction	0
TOTAL:	120

C. MSc

In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
Modules 2-9	80
Group Project for full-time students (10a) or Dissertation for part-time students (10b)	40
Individual Research Project (11)	80
ELECTIVE MODULES:	
None	
RECOMMENDED MODULE:	
Induction	0
TOTAL:	200

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria

The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does <u>not</u> have discretion to overrule this limit, but can refer a case to Senate's Education Committee);[1][2]
- **For Taught Assessments,** the minimum mark for each individual taught assessment <u>on the first attempt</u> for the significant majority of the taught assessments, noting that:
  - if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
  - if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will

---

[1] For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2] Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);

- o it is <u>not</u> permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

6. <u>How is the course structured?</u>

Full-time students register for the course in October and are expected to complete the course within 12 calendar months.

This course is also offered on a part-time basis. In such a situation, students typically complete the various components of the course over two or three years. The typical case is to complete four taught modules plus a Dissertation in year 1 and the remainder of the modules plus the Thesis in year two and/or year 3.

Course modules

The following modules outline all parts of the programme leading to an **MSc**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
									Calendar			**Assessment**						
												Independent Assessment		Multi-part Assessment			Submission dates	
1	I-MAN-INWK	Induction	Dr Konstantinos Salonitis	22		0	Y		03/10/16	07/10/16	N/A	AO	N/A				N/A	
2	I-MNU-A1031	Enterprise Systems	Dr Essam Shehab	32		10	Y		10/10/16	14/10/16	40	EX	100				02/12/16	Manufacturing resit exams will be during week commencing 18/09/17
3	I-MNU-A1034	Operations Management	Prof Charalampos (Harris)	32		10	Y		17/10/16	21/10/16	40	EX	100				11/11/16	Manufacturing resit exams will be during week

---

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
			Makatsoris															commencing 18/09/17
4	I-MNU-A1074	Business Process Analysis and Engineering	Dr Ip-Shing Fan	32		10	Y		31/10/16	04/11/16	40	ICW	100				16/12/16	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
5	I-MNU-A1018	General Management	Dr Yuchun Xu	32		10	Y		14/11/16	18/11/16	40	EX	100				06/01/17	Manufacturing resit exams will be during week commencing 18/09/17
6	I-MNU-A1035	Business Change Management	Dr Ip-Shing Fan	32		10	N		21/11/16	25/11/16	40	ICW	100				09/01/17	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
7	I-MNU-A1007	Business Data Analytics	Dr Ip-Shing Fan	32		10	N		05/12/16	09/12/16	40	ICW	100				11/01/17	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
8	I-KME-	Enterprise	Dr John Ahmet	32		10	Y		16/01/17	20/01/17	40			100	ICW	60	27/01/17	Re-assessment

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
	A1037	Modelling	Erkoyuncu											MULTI	GCW	40		date to be set by agreement of Course Director and Module Leader as/when required.
9	I-MNU-A1037	Project and Programme Management	Dr Ip-Shing Fan	32		10	Y		23/01/17	27/01/17	40	ICW	100				03/02/17	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
10a	I-MNU-GRPP	Group Project for Full Time Students	Dr David Ayre	20		40	Y		06/02/17	28/04/17				80 MULTI 20 MULTI	GPRES GPROJ ICW observed behaviour	16 64 10 10	28/04/17	
10b	I-MNU-DISS	Dissertation for Part Time Students	Dr Konstantinos Salonitis	20		40	Y		01/02/17	31/08/17		ICW	100				31/08/17	
11	I-MNU-THESIS	Individual Research Project	Dr Yuchun Xu	20		80	Y		02/05/17	04/09/17		THESIS OR	90 10				04/09/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

9

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
I-MAN-INWK	Induction	Engineering and Management of Manufacturing Systems	Engineering & Management of Manufacturing Systems, Manufacturing Consultancy, Knowledge Management for Innovation, Aerospace Manufacturing, Global Product Development and Management, Cyber-Secure Manufacturing
I-MNU-A1031	Enterprise Systems	Management and Information Systems	Engineering & Management of Manufacturing Systems, Knowledge Management for Innovation, Cost Engineering, Manufacturing Consultancy
I-MNU-A1034	Operations Management	Engineering and Management of Manufacturing Systems	Manufacturing Technology and Management, Engineering & Management of Manufacturing Systems, Global Product Development and Management, Manufacturing Consultancy, Cost Engineering, Aerospace Manufacturing, Cyber-Secure Manufacturing
I-MNU-A1074	Business Process Analysis and Engineering	Management and Information Systems	Cost Engineering
I-MNU-A1018	General Management	Engineering and Management of Manufacturing Systems	Advanced Materials, Applied Nanotechnology, Manufacturing Technology and Management, Global Product Development and Management, Manufacturing Consultancy, Knowledge Management for Innovation, Engineering & Management of Manufacturing Systems
I-KME-A1037	Enterprise Modelling	Management and Information Systems	Knowledge Management for Innovation, Global Product Development and Management
I-MNU-A1037	Project and Programme Management	Management and Information Systems	Cost Engineering
I-MNU-DISS	Dissertation for Part Time Students	Manufacturing Systems and Management Programme	Engineering & Management of Manufacturing Systems, Manufacturing Consultancy, Knowledge Management for Innovation, Aerospace Manufacturing, Global Product Development and Management
I-MNU-GRPP	Group Project for Full Time Students	Manufacturing Systems and Management Programme	Engineering & Management of Manufacturing Systems, Manufacturing Consultancy, Knowledge Management for Innovation, Aerospace

I-MNU-THESIS	Individual Research Project	Manufacturing Systems and Management Programme	Manufacturing, Global Product Development and Management, Cyber-Secure Manufacturing
			Engineering & Management of Manufacturing Systems, Manufacturing Consultancy, Knowledge Management for Innovation, Aerospace Manufacturing, Global Product Development and Management, Cyber-Secure Manufacturing

7. How are the ILOs assessed?

The following assessment types are utilised:

The course uses a range of assessment types. Students can expect to have three written examinations, five pieces of assessment by submitted work, one piece of group project work (including an assessment of personal contribution to group work), and one element assessed by a thesis and an oral presentation.

This approach has been adopted in order to perform formative and summative assessments of the students to demonstrate their ability in a range of contexts. Part time students will be assessed by dissertation in place of the group project.

Assessment and ILO Mapping

Complete the grid below by inserting in the boxes which assessments from the modules directly assess the Award ILOs.

(Module numbers should correspond with those used in the Course module table above.)

A. Postgraduate Certificate

Award ILOs / Module No.	ILO 1.	ILO 2.	ILO 3.	ILO 4.	ILO 5.
2	EX	EX		EX	EX
3	EX	EX		EX	
4	ICW	ICW		ICW	ICW
5	EX	EX		EX	
6	ICW	ICW	ICW	ICW	ICW
7	ICW	ICW	ICW	ICW	
8	ICW	ICW	ICW	ICW	ICW
9	ICW	ICW	ICW	ICW	ICW

B. Postgraduate Diploma

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Award ILOs / Module No.	ILO 1.	ILO 2.	ILO 3.	ILO 4.	ILO 5.	ILO 6.	ILO 7.
2	EX	EX		EX	EX	EX	
3	EX	EX		EX		EX	
4	ICW	ICW		ICW	ICW	ICW	ICW
5	EX	EX		EX		EX	
6	ICW	ICW	ICW	ICW	ICW	ICW	ICW
7	ICW	ICW	ICW	ICW		ICW	ICW
8	ICW	ICW	ICW	ICW	ICW	ICW	ICW
9	ICW	ICW	ICW	ICW	ICW	ICW	ICW
10a	GPRES GPROJ ICW	GPRES GPROJ ICW	GPRES GPROJ ICW	GPRES GPROJ ICW	GPRES GPROJ ICW	GPRES GPROJ ICW	GPRES GPROJ ICW
10b	ICW	ICW	ICW	ICW	ICW	ICW	ICW

C. MSc

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Award ILOs / Module No.	ILO 1.	ILO 2.	ILO 3.	ILO 4.	ILO 5.	ILO 6.	ILO 7.	ILO.8
2	EX	EX		EX	EX	EX		
3	EX	EX		EX		EX		
4	ICW	ICW		ICW	ICW	ICW	ICW	ICW
5	EX	EX		EX		EX		
6	ICW	ICW	ICW	ICW	ICW	ICW	ICW	ICW
7	ICW	ICW	ICW	ICW		ICW	ICW	ICW
8	ICW	ICW	ICW	ICW	ICW	ICW	ICW	ICW
9	ICW	ICW	ICW	ICW	ICW	ICW	ICW	ICW
10a	GPRES GPROJ ICW	GPRES GPROJ ICW	GPRES GPROJ ICW	GPRES GPROJ ICW	GPRES GPROJ ICW	GPRES GPROJ ICW	GPRES GPROJ ICW	GPRES GPROJ ICW
10b	ICW	ICW	ICW	ICW	ICW	ICW	ICW	ICW
11	THESIS OR	THESIS OR	THESIS OR	THESIS OR	THESIS OR	THESIS OR	THESIS OR	THESIS OR

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

Title	Modules Covered	Assessment	
		Type	Weight (%)

8. **How will the University assure the quality of the provision?**

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. **What opportunities are graduates likely to have on completing the course?**

The intention of the course is to provide students with knowledge and understanding and associated transferrable skills to make a contribution to industry on graduation. Graduates will typically seek employment in IT users and vendors industries, consultancies or research institutions. Common starting roles are junior managers, business analyst, implementation consultant, project manager and PhD researcher. With time (quicker for those with more background experience) graduates progress to senior positions with significant responsibility for people, budgets and projects.

COURSE SPECIFICATION

Cranfield University: Course Specifications

Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.

COURSE TITLE:	MSc in Manufacturing Consultancy

Date of first publication/latest revision:	July 2016

1. What is the course?

Course information

Course Title	MSc in Manufacturing Consultancy
Course code	MSMFCFTC, MSMFCPTC, PDMFCFTC, PDMFCPTC, PCMFCFTC, PCMFCPTC
Academic Year	2016/17
Valid entry routes	MSc, PgDip, PgCert
Additional exit routes	Not Applicable
Mode of delivery	Full-time, Part-time
Location of Study	Cranfield University
School(s)	School of Aerospace, Transport and Manufacturing
Theme	Manufacturing
Centre	Sustainable Manufacturing Systems Centre
Course Director	Dr Konstantinos Salonitis
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	Standard University entry requirements
UK Qualifications Framework Level	QAA FHEQ Level 7 (Masters)
Benchmark Statement(s)	Not Applicable
Registration Period(s) available	One year full-time, two-three years part-time
Course Start Month(s)	Full-time: October. Part-time: throughout the year

Institutions delivering the course

This course is delivered by The School of Aerospace, Transport and Manufacturing, Manufacturing Theme, Sustainable Manufacturing Systems Centre where the research interests include:

- Manufacturing Systems Engineering
- Product-Service Systems
- Supply Chain Management
- Simulation and Modelling
- Innovation Management

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is accredited formally by Institution of Mechanical Engineers (IMechE) up to and including Academic year 2019-20, Institution of Engineering and Technology (IET) up to and including Academic year 2019-20 and Royal Aeronautical Society (RAeS) up to and including Academic year 2019-20.

2. What are the aims of the course?

The aim of this course is to provide graduates with the knowledge and skills necessary for them to pursue a successful career in manufacturing consultancy.

Cranfield University offers this course in order to:

- To prepare graduates for a role where they act as a consultant to improve the overall performance of the organisations manufacturing operations.
- To engage students in independent and critical evaluation in the application of different tools and techniques to identify areas for improvement and manage the subsequent change initiative.
- To provide students with an appreciation of manufacturing technologies and concepts
- To equip students in transferable skills such as analytical, management and interpersonal skills needed for the creative and effective application of knowledge to address operations management problems in industry.
- To develop general and personal management skills needed to implement and influence change.
- To enhance a student's career in consultancy, manufacturing and other related sectors.

Postgraduate Diploma (PgDip) and Postgraduate Certificate (PgCert) exit routes are provided for students who wish to access only parts of the course provided.

This programme is intended for the following range of students:

- Those wishing to work nationally or internationally with manufacturing companies that need to address manufacturing systems problems.
- Those wishing to work in manufacturing and operations management consultancy.
- Those wishing to work in the public/government sector on industry competitiveness and productivity issues.

3. What should students expect to achieve in completing the course?

Award intended learning outcomes (ILOs) (skills and knowledge).

A. **Postgraduate Certificate**

In completing this course, and achieving the associated award, a diligent student should be able to:

- ILO 1.   Develop and demonstrate an understanding of a company's business and manufacturing content.
- ILO 2.   Apply appropriate analysis and design tools to (a) solve manufacturing problems in terms of technology and/or organisations and (b) increase the effectiveness of manufacturing operations.
- ILO 3.   Demonstrate an understanding of manufacturing strategy development and manufacturing systems design methodologies.
- ILO 4.   Present proposals and results in written and verbal format to a variety of audiences.
- ILO 5.   Demonstrate transferable skills including, personal responsibility, complex decision making and independence for further learning.
- ILO 6.   Develop a sound theoretical approach to critically evaluate data and information, undertaking a critical appraisal of technical and/or commercial literature.
- ILO 7.   Demonstrate the ability to apply practical and rigorous approaches to identify projects, develop engineering solutions and evaluate their effectiveness.
- ILO 8.   Demonstrate the breadth and depth of knowledge needed to be credible when undertaking manufacturing consultancy projects.
- ILO 9.   Undertake consultancy style projects with demanding clients and to realistic commercial timescales.

B. Postgraduate Diploma

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

- ILO 10.   Deal with complex problems and communicate effectively the results of group project/dissertation to specialist and non-specialist audiences, both orally and in writing.
- ILO 11.   Demonstrate ability to provide technical and commercial leadership through planning industrial/research projects (budgets, people, tasks) and contributing to teams delivering under time pressures individually and as a team member.

C. MSc

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

- ILO 12.   Undertake independent research on a subject relevant to manufacturing consultancy involving project planning, development of new skills, evaluation of results, discussion of findings and writing a thesis.
- ILO 13.   Demonstrate independent and original research on a subject relevant to manufacturing system development and management involving project planning, development of new skills, critical evaluation of results and discussion of findings using methodologies that show further knowledge and understanding in future work.

4. How is the course taught?

The MSc course has three components: taught modules (40%), group projects (20%), and an individual research project (40%). The taught modules are typically delivered in one-week block between October and February.

The teaching methods include lectures, case studies, group exercises, field visits, seminar and computer-based demonstrations and exercises. All students attend a week of introductory lectures (given during the first week of the course). Within this induction week, students will be introduced to personal development planning and asked to reflect on their transferable skills and to take ownership of their personal development during the course. Induction is followed by 8 weeks of assessed modules over a 4 month period.

All MSc students undertake a Group Project (full time students) or produce a Dissertation (part time students). The Group projects are group-based activities typically undertaken for 12 weeks between February and April. The projects are designed to integrate knowledge, understanding and skills from the taught modules in a real-life situation. The Group Project will typically involve a team of students between 5 and 8, working to investigate a manufacturing opportunity or solve a manufacturing problem. For part-time students, a Dissertation replaces the Group Project. The topic is to be agreed between the University and the student.

All MSc students will undertake a research project (thesis project) under the supervision of a member of academic staff. For the individual research project, each student is allocated a supervisor. Guidance sessions are provided as to what is required from the thesis and oral presentation.

5. **What do students need to achieve in order to graduate?**

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A.   Postgraduate Certificate
The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Modules 2, 5, 6 and 7	40
ELECTIVE MODULES:	
Modules 3, 4 and 8 (Select 2)	20
RECOMMENDED MODULE:	
Induction	0
TOTAL:	60

B.   Postgraduate Diploma
The accumulation of 120 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Modules 2-9	80
Group Project for full-time students (10a) or Dissertation for part-time students (10b)	40
ELECTIVE MODULES:	
None	
RECOMMENDED MODULE:	
Induction	0
TOTAL:	120

C.   MSc

In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
Modules 2-9	80
Group Project for full-time students (10a) or Dissertation for part-time students (10b)	40
Individual Research Project (11)	80
ELECTIVE MODULES:	
None	
RECOMMENDED MODULE:	
Induction	0
TOTAL:	200

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria

The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does <u>not</u> have discretion to overrule this limit, but can refer a case to Senate's Education Committee);[1][2]
- **For Taught Assessments,** the minimum mark for each individual taught assessment <u>on the first attempt</u> for the significant majority of the taught assessments, noting that:
  - o if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
  - o if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);

---

[1]   For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2]   Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

- o it is <u>not</u> permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

6. <u>How is the course structured?</u>

Full-time students register for the course in October and are expected to complete the course within 12 calendar months.

This course is also offered on a part-time basis. In such a situation, students typically complete the various components of the course over two or three years. Typical case is to complete four taught modules plus a Dissertation in year 1 and the remainder of the modules plus the Thesis in year two and/or year 3.

Course modules

The following modules outline all parts of the programme leading to an **MSc**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment						
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
1	I-MAN-INWK	Induction	Dr Konstantinos Salonitis	22		0	Y		03/10/16	07/10/16	N/A	AO	N/A				N/A	
2	I-MNU-A1034	Operations Management	Prof Charalampos (Harris) Makatsoris	32		10	Y		10/10/16	14/10/16	40	EX	100				11/11/16	Manufacturing resit exams will be during week commencing 18/09/17
3	I-MNU-A1031	Enterprise Systems	Dr Essam Shehab	32		10	Y		17/10/16	21/10/16	40	EX	100				02/12/16	Manufacturing resit exams will be during week commencing 18/09/17

---

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice
[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)
[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.
[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.
[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.
[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.
[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module[6] (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
												Independent Assessment		Multi-part Assessment			Submission dates	
4	I-MNU-A1029	Operations Analysis	Dr Konstantinos Salonitis	32	8	10	Y		31/10/16	04/11/16	40	EX	100				12/12/16	Manufacturing resit exams will be during week commencing 18/09/17
5	I-MNU-A1018	General Management	Dr Yuchun Xu	32		10	Y		14/11/16	18/11/16	40	EX	100				06/01/17	Manufacturing resit exams will be during week commencing 18/09/17
6	I-MNU-A1027	Manufacturing Systems Engineering	Prof Charalampos (Harris) Makatsoris	32		10	Y		21/11/16	25/11/16	40	ICW	100				09/01/17	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
7	I-MNU-A1046	Consultancy Skills	Dr Konstantinos Salonitis	32	30	10	N		05/12/16	09/12/16	40	ICW	100				16/01/17	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
8	I-MNU-A1038	Supply Chain Management	Dr Chris Turner	32		10	Y		16/01/17	20/01/17	40	ICW	100				03/02/17	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

8

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
9	I-MNU-A1019	Manufacturing Strategy	Dr Patrick McLaughlin	35		10	Y		23/01/17	27/01/17	40			100 MULTI	GPRES GCW ICW	30 50 20	10/02/17	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
10a	I-MNU-GRPP	Group Project for Full Time Students	Dr David Ayre	20		40	Y		06/02/17	28/04/17				80 MULTI 20 MULTI	GPRES GPROJ ICW observed behaviour	16 64 10 10	28/04/17	
10b	I-MNU-DISS	Dissertation for Part Time Students	Dr Konstantinos Salonitis	20		40	Y		01/02/17	31/08/17		ICW	100				31/08/17	
11	I-MNU-THESIS	Individual Research Project	Dr Yuchun Xu	20		80	Y		02/05/17	04/09/17		THESIS OR	90 10				04/09/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
I-MAN-INWK	Induction	Engineering and Management of Manufacturing Systems	Engineering & Management of Manufacturing Systems, Management and Information Systems, Knowledge Management for Innovation, Aerospace Manufacturing, Global Product Development and Management, Cyber-Secure Manufacturing
I-MNU-A1034	Operations Management	Engineering and Management of Manufacturing Systems	Manufacturing Technology and Management, Engineering & Management of Manufacturing Systems, Global Product Development and Management, Management and Information Systems, Cost Engineering, Aerospace Manufacturing, Cyber-Secure Manufacturing
I-MNU-A1031	Enterprise Systems	Management and Information Systems	Engineering & Management of Manufacturing Systems, Management and Information Systems, Knowledge Management for Innovation, Cost Engineering
I-MNU-A1029	Operations Analysis	Engineering and Management of Manufacturing Systems	Engineering & Management of Manufacturing Systems, Aerospace Manufacturing
I-MNU-A1018	General Management	Engineering and Management of Manufacturing Systems	Advanced Materials, Applied Nanotechnology, Manufacturing Technology and Management, Global Product Development and Management, Management and Information Systems, Knowledge Management for Innovation, Engineering & Management of Manufacturing Systems
I-MNU-A1027	Manufacturing Systems Engineering	Engineering and Management of Manufacturing Systems	Engineering & Management of Manufacturing Systems, Aerospace Manufacturing, Cyber-Secure Manufacturing
I-MNU-A1038	Supply Chain Management	Engineering and Management of Manufacturing Systems	Engineering & Management of Manufacturing Systems, Aerospace Manufacturing
I-MNU-A1019	Manufacturing Strategy	Engineering and Management of Manufacturing Systems	Engineering & Management of Manufacturing Systems, Aerospace Manufacturing
I-MNU-DISS	Dissertation for Part Time Students	Manufacturing Systems and Management	Engineering & Management of Manufacturing Systems, Management and Information

		Programme	Systems, Knowledge Management for Innovation, Aerospace Manufacturing, Global Product Development and Management
I-MNU-GRPP	Group Project for Full Time Students	Manufacturing Systems and Management Programme	Engineering & Management of Manufacturing Systems, Management and Information Systems, Knowledge Management for Innovation, Aerospace Manufacturing, Global Product Development and Management, Cyber-Secure Manufacturing
I-MNU-THESIS	Individual Research Project	Manufacturing Systems and Management Programme	Engineering & Management of Manufacturing Systems, Management and Information Systems, Knowledge Management for Innovation, Aerospace Manufacturing, Global Product Development and Management, Cyber-Secure Manufacturing

7. **How are the ILOs assessed?**

The following assessment types are utilised:

The course uses a range of assessment types. Students can expect to have three written examinations, five pieces of assessment by submitted work, one piece of group project work (including an assessment of personal contribution to group work), and one element assessed by a thesis and oral presentation.

This approach has been adopted in order to perform formative and summative assessments of the students to demonstrate their ability in a range of contexts. Part-time students will be assessed by dissertation in place of the group project.

Assessment and ILO Mapping

Complete the grid below by inserting in the boxes which assessments from the modules directly assess the Award ILOs.

(Module numbers should correspond with those used in the Course module table above.)

A. **Postgraduate Certificate**

Award ILOs / Module No.	ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6	ILO 7	ILO 8	ILO 9
2	EX				EX				
3	EX	EX							
4	EX	EX			EX		EX		
5					EX				
6	ICW	ICW	ICW	ICW			ICW		
7	ICW	ICW		ICW	ICW	ICW	ICW	ICW	ICW

Award ILOs / Module No.	ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6	ILO 7	ILO 8	ILO 9
8	ICW			ICW	ICW	ICW			

B. Postgraduate Diploma

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Award ILOs / Module No.	ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6	ILO 7	ILO 8	ILO 9	ILO 10	ILO 11
9		MULTI		MULTI	MULTI	MULTI	MULTI				
10a										GPRES GPROJ ICW	GPRES GPROJ ICW
10b										ICW	ICW

C. MSc

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Award ILOs / Module No.	ILO 12	ILO13
11	THESIS OR	THESIS OR

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

Title	Modules Covered	Assessment	
		Type	Weight (%)

8. How will the University assure the quality of the provision?

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. <u>What opportunities are graduates likely to have on completing the course?</u>

The intention of the course is to provide students with knowledge and understanding and associated transferrable skills to make a contribution to industry on graduation. Graduates will typically seek employment in consultancies, manufacturing organisations or research institutions. Common starting roles are consultant, industrial engineer, technical analyst, project manager and PhD researcher. With time (quicker for those with more background experience) graduates progress to senior positions with significant responsibility for people, budgets and projects.

COURSE SPECIFICATION

Cranfield University: Course Specifications

Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.

COURSE TITLE:	MSc in Manufacturing Technology and Management

Date of first publication/latest revision:	June 2016

1. What is the course?

Course information

Course Title	MSc in Manufacturing Technology and Management
Course code	MSMTMFTC, MSMTMPTC, PDMTMFTC, PDMTMPTC, PCMTMFTC, PCMTMPTC
Academic Year	2016/17
Valid entry routes	MSc, PgDip, PgCert
Additional exit routes	Not Applicable
Mode of delivery	Full-time, Part-time
Location of Study	Cranfield University
School(s)	School of Aerospace, Transport and Manufacturing
Theme	Manufacturing
Centre	Surface Engineering and Nanotechnology Institute
Course Director	Dr Jeff Rao
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	Standard University entry requirements
UK Qualifications Framework Level	QAA FHEQ Level 7 (Masters)
Benchmark Statement(s)	N/A
Registration Period(s) available	One year full-time, two-five years part-time
Course Start Month(s)	Full-time: October. Part-time: throughout the year

Institutions delivering the course

This course is delivered by the School of Aerospace, Transport and Manufacturing, Manufacturing Theme, Surface Engineering and Nanotechnology Institute where the research interests include Manufacturing Technology and Materials Engineering. The research capability within the Department forms the core of the manufacturing technology theme within the EPSRC Innovative Manufacturing Research Centre and EPSRC Integrated Knowledge Centre. Specific areas of expertise include composites manufacturing, surface engineering, welding and laser processing, precision engineering and microsystems and nano-manufacture. This capability is complemented by the manufacturing management research undertaken through the Manufacturing Theme and the School of Management.

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is accredited formally by Institution of Mechanical Engineers (IMechE) up to and including Academic year 2015-16**, Institution of Engineering and Technology (IET) up to and including Academic year 2015-16**, Royal Aeronautical Society (RAeS) up to and including Academic year 2015-16**, Institute of Materials, Minerals and Mining (IOM3) up to and including Academic year 2017-18***

(** Accreditation up to and including Academic year 2019-20 is awaiting review of the output of the accreditation visit.
*** Accreditation up to and including Academic year 2018-19 is awaiting review of the output of the accreditation visit).

2. **What are the aims of the course?**

Cranfield University offers this course in order to:

* Prepare science and engineering graduates to meet the increasing demand of industry, consultancies and the public sector for manufacturing engineers in the aerospace, automotive, health technologies, energy, defense and consumer products sectors.
* Ensure manufacturing engineers acquire an advanced theoretical and specialist understanding of manufacturing technologies, the role of materials and the management of technology in these sectors.
* Enable manufacturing engineers to select and use appropriate technologies in different manufacturing sectors to minimise operational risks and maximise process reliability and capability based on the application of appropriate scientific, technical and engineering principles.
* Ensure manufacturing engineers develop the capacity to undertake successful research and innovation projects using appropriate methods of critical analysis.

Postgraduate Diploma (PgDip) and Postgraduate Certificate (PgCert) exit routes are provided for students who wish to access only parts of the course provided.

This programme is intended for the following range of students:

* Graduates with science or related engineering degrees keen to pursue careers in manufacturing.
* Graduates currently in employment keen to extend their qualifications or to pursue a career change.
* Individuals with other qualifications but who possess considerable relevant experience.

3. What should students expect to achieve in completing the course?

Award intended learning outcomes (ILOs) (skills and knowledge).

A. Postgraduate Certificate

In completing this course, and achieving the associated award, a diligent student should be able to:

- ILO 1. Describe the key concepts and issues relating to manufacturing processes, the enabling technologies, together with the engineering principles that underpin the design and operation of manufacturing systems.
- ILO 2. Describe of the influence of materials in manufacturing processes in terms of process reliability, operational risks and system efficiencies
- ILO 3. Analyse manufacturing technology challenges and design appropriate solutions taking account of environmental, technical, regulatory and commercial constraints
- ILO 4. Communicate effectively their work via oral and written presentations and reports.

B. Postgraduate Diploma

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

- ILO 5. Demonstrate skills in team working and project management.
- ILO 6. Define, analyse and solve problems faced by manufacturing engineers.
- ILO 7. Apply knowledge to address future manufacturing technology challenges.
- ILO 8. Demonstrate practical skills required within the manufacturing sector.

C. MSc

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

- ILO 9. Identify research problems relevant to appropriate public and private sector organisations, implement a programme of relevant research and collect, analyse and interpret the resultant data to draw appropriate conclusions.

4. How is the course taught?

Students will be supported in their learning and personal development by:
- Comprehensive course materials are provided, as well as a web-site using the Blackboard Victual Learning Environment (VLE). Students are guided through the use of exercises, group and individual discussion.
- Students engage in class activities to practice the techniques taught.
- Group working is encouraged with the core modules.

5. What do students need to achieve in order to graduate?

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A.   Postgraduate Certificate

The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Modules 3 and 4	20
ELECTIVE MODULES:	
Four modules from modules 1, 2, 5-17	40
TOTAL:	60

B.   Postgraduate Diploma
The accumulation of 120 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Modules 1-4	40
Group Project for full-time students (18a) or Dissertation for part-time students (18b)	40
ELECTIVE MODULES:	
Four modules from modules 5-17	40
TOTAL:	120

C.   MSc
In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
Modules 1-4	40
Group Project for full-time students (18a) or Dissertation for part-time students (18b)	40
Individual Research Project (19)	80
ELECTIVE MODULES:	
Four modules from modules 5-17	40
TOTAL:	200

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria
The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;

- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does <u>not</u> have discretion to overrule this limit, but can refer a case to Senate's Education Committee);[1] [2]
- **For Taught Assessments,** the minimum mark for each individual taught assessment <u>on the first attempt</u> for the significant majority of the taught assessments, noting that:
    - o if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
    - o if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);
    - o it is <u>not</u> permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

6. <u>How is the course structured?</u>

Full-time students register for the course in October and are expected to complete the course within 12 calendar months.

The course also targets part-time candidates and such students are expected to complete the course within 2 to 3 years. Part-time students are not restricted to starting in October. Instead they are offered individual guidance on the best sequence of study based on their prior knowledge and availability to attend.

---

[1] For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2] Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

Course modules

The following modules outline all parts of the programme leading to an **MSc**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Independent Assessment — Type of Assessment	Independent Assessment — Weighting within module6 (%) of Independent assessments	Multi-part Assessment — Weighting within module of multi-part assessments[7] (100%)	Multi-part Assessment — Type of Assessment	Multi-part Assessment — Weighting of individual elements of multi-part assessment[8]	Submission dates — Assessment Submission and/or exam date[9]	Submission dates — Assessment / Exam Retake date
1	I-MTM-A2028	Introduction to Manufacturing, Materials and Research Techniques	Dr Sue Impey	25		10	N		03/10/16	06/10/16	40	ICW	100				21/10/16	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
2	I-MAT-A1009	Introduction to Materials Engineering	Dr David Ayre	30		10	Y		07/10/16	14/10/16	40	EX	100				04/01/17	Manufacturing resit exams will be during week commencing 18/09/17

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice
[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)
[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.
[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.
[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.
[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.
[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

6

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
3	I-ICI-A1020	Managing Innovation and New Product Development	Dr Clive Savory	35		10	Y		31/10/16	04/11/16	40	GCW	100				26/11/16	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
4	I-MNU-A1018	General Management	Dr Yuchun Xu	32		10	Y		21/11/16	25/11/16	40	EX	100				06/01/17	Manufacturing resit exams will be during week commencing 18/09/17
5	I-MAT-A1013	Composites Manufacturing for High Performance	Andrew Mills	35		10	Y		14/11/16	18/11/16	40	ICW	100				02/12/16	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
6	I-MSN-A1049	Nano and Microscale Rapid Prototyping Manufacture	Dr Paul Jones	28		10	Y		09/01/17	13/01/17	40	ICW	100				23/01/17	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
7	I-MSN-A1047	Nano and Micro Technologies for Energy	Dr Qi Zhang	27		10	Y		21/11/16	25/11/16	40	ICW	100				05/12/16	Re-assessment date to be set by agreement of Course Director and Module Leader as/when

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
																		required.
8	I-MSN-A1068	Nanotechnology	Dr Zhaorong Huang	28		10	Y		24/10/16	28/10/16	40	ICW	100				11/11/16	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
9	I-WEE-A1110	Advanced Welding Processes	Dr Wojciech Suder	32		10	Y		28/11/16	02/12/16	40	EX	100				06/02/17	Manufacturing resit exams will be during week commencing 18/09/17
10	I-MSN-A1048	Engineering Microdevices	Dr Paul Kirby	32		10	Y		31/10/16	04/11/16	40	ICW	100				14/12/16	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
11	I-MAT-A1011	Machining, Moulding and Metrology	Dr Isidro Durazo-Cardenas	30		10	Y		24/10/16	28/10/16	40			100 MULTI	ICW GPRES	70 30	11/11/16	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
12	I-MAT-A1016	Surface Science and Engineering	Prof John Nicholls	30		10	Y		23/01/17	27/01/17	40	ICW	100				06/02/17	Re-assessment date to be set by agreement of Course Director and

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

8

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
												Independent Assessment		**Multi-part Assessment**			**Submission dates**	
																		Module Leader as/when required.
13	I-UPT-A1186	Functional Coatings and Thin Films	Dr Jose Endrino Armenteros	32		10	Y		23/01/17	27/01/17	40	ICW	100				06/02/17	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
14	I-MAT-A1014	Finite Element Analysis	Dr Glenn Leighton/ Dr Renaud Jourdain	35		10	Y		05/12/16	09/12/16	40			100 MULTI	ICW ICW	40 60	20/01/17	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
15	I-UPT-A1181	Precision Engineering	Paul Morantz	30		10	Y		17/10/16	21/10/16	40	ICW	100				18/11/16	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
16	I-MNU-A1034	Operations Management	Prof Charalampos (Harris) Makatsoris	32		10	Y		17/10/16	21/10/16	40	EX	100				11/11/16	Manufacturing resit exams will be during week commencing 18/09/17
17	I-UPT-A1182	Metrology and Optical Testing	Dr Saurav Goel/ Paul	30		10	N		07/11/16	11/11/16	40	ICW	100				09/12/16	Re-assessment date to be set by

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
			Morantz															agreement of Course Director and Module Leader as/when required.
18a	I-MAT-GRPP	Group Project for Full Time Students	Dr David Ayre	20		40	Y		06/02/17	28/04/17				80 MULTI 20 MULTI	GPRES GPROJ ICW observed behaviour	16 64 10 10	28/04/17	
18b	I-MAT-DISS	Dissertation for Part Time Students	Dr Sue Impey/ Dr David Ayre	20		40	Y		01/02/17	31/08/17		ICW	100				31/08/17	
19	I-MAT-THESIS	Individual Research Project	Dr Yuchun Xu	20		80	Y		02/05/17 †	04/09/17 †		THESIS OR	90 10				04/09/17 †	

† Dates for Full time students only. Part time students have flexibility with dates in these components

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
I-MAT-A1009	Introduction to Materials Engineering	Advanced Materials	Aerospace Materials, Advanced Materials
I-ICI-A1020	Managing Innovation and New Product Development	Innovation and Creativity in Industry	Design and Innovation for Sustainability, Design Strategy and Leadership, Global Product Development and Management, Innovation and Creativity in Industry, Digital Design and Strategic Communication
I-MNU-A1018	General Management	Engineering and Management of Manufacturing Systems	Applied Nanotechnology, Global Product Development and Management, Management and Information Systems, Manufacturing Consultancy, Knowledge Management for Innovation, Engineering & Management of Manufacturing Systems, Advanced Materials
I-MAT-A1013	Composites Manufacturing for High Performance	Advanced Materials	Aerospace Manufacturing, Aerospace Materials, Advanced Materials, Renewable Energy Marine Structures EngD
I-MSN-A1049	Nano and Microscale Rapid Prototyping Manufacture	Applied Nanotechnology	Applied Nanotechnology
I-MSN-A1047	Nano and Micro Technologies for Energy	Applied Nanotechnology	Applied Nanotechnology
I-MSN-A1068	Nanotechnology	Applied Nanotechnology	Applied Nanotechnology
I-WEE-A1110	Advanced Welding Processing	Welding Engineering	Welding Engineering, Aerospace Manufacturing, , Renewable Energy Marine Structures EngD
I-MSN-A1048	Engineering Microdevices	Applied Nanotechnology	Applied Nanotechnology
I-MAT-A1011	Machining, Moulding and Metrology	Advanced Materials	Advance Materials, Aerospace Manufacturing
I-MAT-A1016	Surface Science and Engineering	Advanced Materials	Aerospace Materials, Advanced Materials
I-UPT-A1186	Functional Coatings and Thin Films	Applied Nanotechnology	Applied Nanotechnology
I-MAT-A1014	Finite Element Analysis	Advanced Materials	Advanced Materials, Aerospace Materials, Applied Nanotechnology
I-UPT-A1181	Precision Engineering	Manufacturing Technology and Management	Aerospace Manufacturing

Module No.	Module Title	Programme	Courses
I-MNU-A1034	Operations Management	Engineering and Management of Manufacturing Systems	Engineering and Management of Manufacturing Systems, Aerospace Manufacturing, Cost Engineering, Global Product Development and Management, Management and Information Systems, Manufacturing Consultancy, Cyber-Secure Manufacturing
I-MAT-GRPP	Group Project for Full Time Students	Manufacturing Technology and Materials Programme	Aerospace Materials, Applied Nanotechnology, Advanced Materials
I-MAT-DISS	Dissertation for Part Time Students	Manufacturing Technology and Materials Programme	Aerospace Materials, Applied Nanotechnology, Advanced Materials
I-MAT-THESIS	Individual Research Project	Manufacturing Technology and Materials Programme	Aerospace Materials, Applied Nanotechnology, Advanced Materials

7. **How are the ILOs assessed?**

The following assessment types are utilised:

The course uses a range of assessment types. Students can expect to have typically 3 written examinations, 5 pieces of assessment by submitted work and several elements of assessment by presentation or viva.

This approach has been adopted in order to ensure that both the fundamental and applied aspects of the course are considered and that the important multi-disciplinary aspects of the subject can be assessed.

Assessment and ILO Mapping

Complete the grid below by inserting in the boxes which assessments from the modules directly assess the Award ILOs.

(Module numbers should correspond with those used in the Course module table above.)

For Example:

Award ILOs / Module No.	ILO 1.	ILO 2.	ILO 3.	ILO 4.	ILO 5.	ILO 6.	ILO 7.	ILO 8.	
98	ICW				EX	EX	ICW		
99	ICW1		ICW1	ICW2					

A. Postgraduate Certificate

Award ILOs / Module No.									

Award ILOs / Module No.									

B. Postgraduate Diploma

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Award ILOs / Module No.									

C. MSc

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Award ILOs / Module No.									

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

Title	Modules Covered	Assessment	
		Type	Weight (%)

8. How will the University assure the quality of the provision?

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. **What opportunities are graduates likely to have on completing the course?**

The Government's manufacturing strategy is focused on high value manufacturing and central to this agenda is the development and application of disruptive technologies that will drive forward the dramatic changes in manufacturing that will take place over the next 15-20 years. This relies on a significant number of highly trained manufacturing engineers who will be essential to provide the leadership necessary to drive UK high value manufacturing forward and provide the vision for future prosperity. The MSc in Manufacturing Technology and Management is designed to educate manufacturing engineers to ensure they possess the skills needed for the high value manufacturing agenda. SEMTA, the Sector Skills Council for science, engineering and technologies estimates that by 2014 another 33,000 engineers will be required to replace those retiring or leaving the profession and most of these new recruits will be from full time education. The rapid developments in manufacturing technology also dictate that sections of the current workforce will require re-skilling and therefore a significant number of part time students should be attracted to this course whilst remaining in employment.

COURSE SPECIFICATION

<div style="border:1px solid">

Cranfield University: Course Specifications

Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.

</div>

COURSE TITLE: MSc in Materials for Energy Systems

Date of first publication/latest revision: 13/01/16 – 13/09/16

1. What is the course?

Course information

Course Title	Materials for Energy Systems
Course code	MSMESFTC, MSMESPTC, PDMESFTC, PDMESPTC, PCMESFTC, PCMESPTC
Academic Year	2016/17
Valid entry routes	MSc, PgDip, PgCert
Exit routes	MSc, PgDip, PgCert
Mode of delivery	Full-time, Part-time
Location of Study	Cranfield
School(s)	School of Water, Energy & Environment
Theme	Energy & Power
Centre	Centre for Power Engineering
Course Director	Dr A. Encinas-Oropesa
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	Standard University entry requirements
UK Qualifications Framework Level	QAA FHEQ Level 7 (Masters)
Benchmark Statement(s)	N/A
Registration Period(s) available	Full-time MSc - one year, Part-time MSc - up to three years, Full-time PgCert - one year, Part-time PgCert - two years, Full-time PgDip - one year, Part-time PgDip - two years
Course Start Month(s)	Full-time: October Part-time: throughout the year

1

Institutions delivering the course

This course is delivered by Centre for Power Engineering within the School of Water, Energy and Environment (SWEE) where the research interests include specialist research in fossil fuel power generation, energy conversion technologies, gas cleaning, CO_2 capture and transport, wet and dry renewable energy, biomass conversion and energy from waste, materials for energy systems, amenity impacts, contaminated land landfill science, life cycle engineering, policy appraisal and implementation, sustainable resource recovery, process simulation, pipeline engineering, offshore materials engineering, subsea engineering, risk management and reliability engineering.

Cranfield University interacts with the following institutions and in the following ways:

The course is part of the suite of the MSc courses currently provided within SWEE. Current members of the Industrial Advisory Panel (chosen from among E.ON, EDF, RWE npower, BP, Environ, WRG, Shanks, CIWEM, CIWH, Doosan Energy Systems, Alstom Power, Siemens, Rolls Royce, Caterpillar, BOC/Linde, Air Products, Shell, AMEC, Mott MacDonald) will also help in steering and updating the course content.

Cranfield University also actively seeks sponsorship and support for individual thesis projects from the energy sector employers to provide professional experience and development opportunities for students through group study project and thesis sponsorships

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is not accredited by any external bodies.*

Course accreditation will be sought from the Energy Institute and/or Institute of Materials, Minerals and Mining (IoM^3).

2. <u>What are the aims of the course?</u>

Cranfield University offers this course in order to:

- Prepare science and engineering graduates to meet the increasing demand of industry, consultancies and the public sector for materials scientists and engineers in the energy production and conversion sectors
- Acquire an advanced theoretical and specialist understanding of energy production and conversion processes and the role of materials in these sectors
- Select and use appropriate materials in different energy production and conversion technologies to minimise operational risks and maximise process reliability based on the application of appropriate scientific, technical and engineering principles,
- Develop the capacity to undertake successful technical research projects using appropriate methods of critical analysis.

This programme is intended for the following range of students:

- Graduates with science or related engineering degrees keen to pursue careers in materials for energy systems
- Graduates currently in employment keen to extend their qualifications or to pursue a career change
- Individuals with other qualifications but who possess considerable relevant experience

3. What should students expect to achieve in completing the course?

Award intended learning outcomes (ILOs) (skills and knowledge).

A. **Postgraduate Certificate in Materials for Energy Systems**

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1.   Explain in broad terms the key concepts and issues appertaining to the use of materials in energy production and conversion systems, together with the engineering principles and technologies that underpin the production, distribution and use of energy.

ILO 2.   Discuss the principles of maintaining the reliability of energy production and distribution systems and their asset management.

ILO 3.   Analyse potential component failure routes in energy production and conversion systems

ILO 4.   Appraise the influence of materials in energy systems in terms of process reliability, operational risks and system efficiencies

ILO 5.   Analyse relevant energy engineering problems and design appropriate solutions taking account of environmental, technical, regulatory and commercial constraints

ILO 6.   Communicate effectively their work via oral and written presentations and reports.

B. **Postgraduate Diploma in Materials for Energy Systems**

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 7.   Develop problem definition, hypothesis setting, analysis and problem solving skills to address challenges faced by materials engineers

ILO 8   Integrate knowledge, understanding and skills from the taught modules in a real-life situation.

ILO 9   Effectively work in a small project team to identify project objectives and select appropriate methodologies to address problems faced by industrial clients; collaborating with other team members to communicate findings in a professional manner in written, oral and visual forms

C. **MSc in Materials for Energy Systems**

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 10.   Develop and deliver successful independent research projects relevant to appropriate public and private sector organisations.

ILO 11.   Define a research question, develop aim(s) and objectives, select and execute a methodology, analyse data, and evaluate findings and draw appropriate conclusions.

ILO 12.   To communicate their findings successfully via a thesis, written in an approved School style and in an oral presentation.

4. How is the course taught?

The MSc course will be taught in three sections: taught modules (40%), group projects (20%), and an individual research project (40%).

The taught programme, typically delivered between October and February, comprises a structured sequence of eight modules, each containing a series of lectures and other classroom-based teaching, supplemented by practical work. The taught modules are assessed by assignments and formal written examinations.

The Group Projects are founded on group-based research programmes typically undertaken between February and April. The projects are designed to integrate knowledge, understanding and skills from the taught modules in a real-life situation.

The Thesis Project, typically delivered between May and September, further develops research and project management skills that: provide the ability to think and work in an original way; contribute to knowledge; overcome genuine problems; and communicate through a thesis and oral exam. Each student is allocated a supervisor, who will guide and assess the student work. Guidance sessions are provided as to what is required from thesis and oral presentation.

Within induction week, students will be introduced to personal development planning and asked to reflect on their transferable skills and to take ownership of their personal development during the course.

5. What do students need to achieve in order to graduate?

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A.   Postgraduate Certificate
The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Induction Module Modules 2, 5, 6	30
ELECTIVE MODULES:	
Three modules selected from modules 3, 4, 7, 8 and 9	30
TOTAL:	**60**

4

**B.	Postgraduate Diploma**

The accumulation of 120 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Induction Module	0
Modules 2-9	80
Group Project or Dissertation (PT)	40
ELECTIVE MODULES:	
N/A	
TOTAL:	**120**

**C.	MSc**

In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
Induction Module	0
Modules 2-9	80
Group Project or Dissertation (PT)	40
Individual Thesis Project	80
ELECTIVE MODULES:	
N/A	
TOTAL:	**200**

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria

The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does <u>not</u> have discretion to overrule this limit, but can refer a case to Senate's Education Committee);[1] [2]

---

[1]	For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

- **For Taught Assessments,** the minimum mark for each individual taught assessment <u>on the first attempt</u> for the significant majority of the taught assessments, noting that:
  - if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
  - if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);
  - it is <u>not</u> permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

6. <u>How is the course structured?</u>

Full-time students register for the course in October and are expected to complete the course within 12 calendar months.

All options are also offered on a part-time basis and such students are expected to complete the course within 2 to 3 years. Part-time students are not restricted to starting in October. Instead they are offered individual guidance on the best sequence of study based on their prior knowledge and availability to attend.

---

2   Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

Course modules

The following modules outline all parts of the programme leading to an **MSc**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment					Submission dates	
								Module Start Date (e.g. Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
1	I-ENE-INWK	Induction	G Drew	24		0	Y		03/10/16	07/10/16	N/A	AO	N/A				N/A	
2	I-MES-A2020	Introduction to Materials Engineering for Energy Systems	J Sumner	32		10	Y		17/10/16	21/10/16	40	EX	100				W/C 03/01/17	
3	I-MES-RETF	Renewable Energy Technologies: Fundamentals	S Wagland	30		10	Y		14/11/16	18/11/16	40	ICW	100				26/11/16 FT 03/12/16 PT	

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (e.g. Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
8	N-AME-SI	Structural Integrity	A Mehmanparast	38.5		10	Y		30/01/17	03/02/17	40	Open Book EX	100				W/C 20/02/17	
4	I-MES-A2032	Fuels and Energy Conversion	B Fidalgo Fernandez	27		10	Y		28/11/16	02/12/16	40	EX	100				W/C 12/12/16	
5	I-ESL-A2038	Materials and Reliability in Energy Systems	A Encinas-Oropesa	30		10	N		05/12/16	09/12/16	40	EX	100				W/C 03/01/17	
7	I-MES-RETS	Renewable Energy Technologies: Systems	G Di Lorenzo	21		10	Y		16/01/17	20/01/17	40	ICW	100				11/02/17 FT 18/02/17 PT	
6	I-MES-A2033	Energy Production, Emission Control, Carbon Capture and Transport	K Patchigolla	25		10	Y		09/01/17	13/01/17	40			100	ICW OR	50 50	28/01/17 FT 11/02/17 PT	
9	G-MTI	Management for Technology	S Carver	50		10	Y		13/02/17	17/02/17	40	EX GCW	50 50				20/03/17 25/03/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (e.g. Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7](100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
												Independent Assessment		Multi-part Assessment			Submission dates	
10	I-ENE-GRPP	Group Project	Supervisor	16		40	Y		27/02/16	05/05/17	50	GPROJ ICW	80 20				02/05/17 06/05/17	
11	I-ENE-DISS	Dissertation (for part-time student)	Supervisor	10		40	Y		03/10/16	30/09/17	50	IPROJ	100				30/09/17	
12	I-ENE-THESIS	Energy Individual Research Project	Supervisor	0		80	Y		08/05/17	08/09/17	50	THESIS OR	90 10				04/09/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
I-MES-A2032	Fuels and Energy Conversion	Materials for Energy Systems	• Energy Supply for Low Carbon Futures • Renewable Energy Technology • Gas Energy • Materials for Energy Systems
I-MES-A2033	Energy Production, Emission Control, Carbon Capture and Transport	Materials for Energy Systems	• Energy Supply for Low Carbon Futures • Gas Energy • Energy from Waste • Renewable Energy Technology • Atmospheric Emission Technology • Materials for Energy Systems
I-MES-RETF	Renewable Energy Technologies: Fundamentals	Materials for Energy Systems	• Energy Supply for Low Carbon Futures • Renewable Energy Technology • Materials for Energy Systems
I-MES-RETS	Renewable Energy Technologies: Systems	Materials for Energy Systems	• Energy Supply for Low Carbon Futures • Energy Systems and Thermal Processes • Renewable Energy Technology • Materials for Energy Systems
I-MES-2020	Introduction to Materials Engineering for Energy Systems	Materials for Energy Systems	• Energy Supply for Low Carbon Futures • Gas Energy • Materials for Energy Systems
N-AME-SI	Structural Integrity	Advanced Mechanical Engineering	• Flow Assurance for Oil and Gas Production • Advanced Mechanical Engineering • Design of Rotating Machines • Offshore and Ocean Technology With Offshore Materials Engineering • Offshore and Ocean Technology With Pipeline Engineering

10

			• Offshore and Ocean Technology With Offshore Renewable Energy • Offshore and Ocean Technology With Risk Management • Ocean and Offshore Technology With Subsea Engineering • Renewable Energy Engineering • Safety & Accident Investigation • Materials for Energy Systems
G-MTI	Management for Technology	School of Management	• Advanced Mechanical Engineering • Biofuels Process Engineering • Design of Rotating Machines • Energy Supply for Low Carbon Futures Gas Energy • Offshore and Ocean Technology With Offshore Materials Engineering • Offshore and Ocean Technology With Pipeline Engineering • Offshore and Ocean Technology With Offshore Renewable Energy • Offshore and Ocean Technology With Risk Management • Offshore and Ocean Technology With Subsea Engineering • Renewable Energy Engineering • Renewable Energy Technology • Flow Assurance for Oil and Gas Production • Carbon Capture and Storage • Energy Systems and Thermal Processes • Process Systems Engineering • Materials for Energy Systems

7. **How are the ILOs assessed?**

The following assessment types are utilised:

- the taught modules (40%) are assessed by in-module assessment (including coursework, which focuses on application of principles studied and class tests, which support underpinning knowledge) or examination in December and January.
- the group project (20%) is assessed by means of a written group report and an oral presentation.
- the research project (40%), is assessed by a thesis and an oral examination

This approach has been adopted because:

Different types of assessments enable the evaluation of a range of M-level skills. A mixture of both individual and group assessments is important in helping students to develop both individual skill and team work related skills. Group and thesis projects follow the completion of the taught part of the course and at this stage more emphasis is on enquiry based learning and problem solving

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

Title	Modules Covered	Assessment	
		Type	Weight (%)

8. **How will the University assure the quality of the provision?**

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

12

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. **What opportunities are graduates likely to have on completing the course?**

On completion, graduates will have a broad network of global contacts and increased opportunities for individual specialism in their chosen career in the materials, energy production and energy conversion industries.

COURSE SPECIFICATION

Cranfield University: Course Specifications

Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information. Courses are under constant review, however, and the University reserves the right, without notice, to withdraw, update or amend this course specification at any time.

COURSE TITLE: MBA Programme

Date of first publication/latest revision: 28/07/16

1. What is the course?

Course information

Course Title	Master of Business Administration
Course code	MBFTMFTC
Academic Year	2016-17
Valid entry routes	MBA
Additional exit routes	Not Applicable
Mode of delivery	Full-time
Location of Study	Cranfield University
School(s)	School of Management
Theme	Leadership and Management
Centre	Centre for Management
Course Director	Stephanie Hussels
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	• A minimum of three years' post-qualification work experience. • A good degree and / or professional qualification. • Applicants who do not have a degree are welcomed provided they can demonstrate high levels of achievement, exceptional career progression or evidence of leadership potential. If you are an international student you will need to provide evidence that you have achieved a satisfactory test result in an English qualification. The minimum standard expected from a number of accepted courses are as follows: IELTS – 7, TOEFL – 100, Pearson PTE Academic- 68, Cambridge English Scale – 190, Cambridge English: Advanced – A, Cambridge English: Proficiency – B.
UK Qualifications Framework Level	QAA FHEQ Level 7 (Masters)

Benchmark Statement(s)	N/A
Registration Period(s) available	1 year
Course Start Month(s)	September

Institutions delivering the course

This course is delivered by the School of Management, where the research interests consist of a wide range of management functions.

Cranfield University interacts with the following institutions and in the following ways:

- All students will undertake a group consulting project in an external organisation, presenting findings to senior managers from the organisation involved
- Each module will incorporate input from senior managers/practitioners where appropriate
- Some of the modules require learning teams to visit an organisation to audit their approach
- some students undertake research and/or project work off campus, within organisations. In some cases this will take the form of a short term internship, again assessed by project submission;

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is accredited formally by AMBA and AACSB and re-accreditation is due in 2017.

2. What are the aims of the course?

The Cranfield MBA aims to provide a distinctive and collaborative learning experience centred on a process of intense, interactive classroom sessions where the combination of the professional experience of a diverse student cohort and the faculty's direct involvement with global businesses ensures graduates have a deep understanding of contemporary business issues and the capacity to assume active leadership roles. This experience is founded on the integration of four aims:

- To develop a group of influential leaders who will make a significant impact on their organisations and the wider community.
- To deliver a contemporary and comprehensive knowledge of core business functions enabling students to talk knowledgeably to experts in these areas.
- To create a strategic mind set capable of viewing organisations as consisting of functions and groups whose actions must be motivated and aligned to meet objectives.
- To generate the self-awareness and confidence to operate effectively as a member of and/or leader of a team drawn from a variety of cultures, business experience and personalities.
- To create an understanding as to how to develop leadership capabilities in self and others in order to meet the increasing challenge of change.

This programme is intended for the following range of students:

Experienced professionals who want a "real-world" business education which they can apply directly back to the workplace. Self-motivated managers both from profit and non-for profit organisations who are keen to improve themselves, enhance their skills, knowledge and abilities,

and become more effective leaders. Energetic entrepreneurs who want support to start a new business or grow their existing business.

3. What should students expect to achieve in completing the course?

Award intended learning outcomes (ILOs) (skills and knowledge).

A. **MBA**

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1. Demonstrate robust yet flexible qualities of leadership and an understanding of a wide range of management techniques.
ILO 2. Exhibit a conceptual understanding of the main functional areas of management and a systematic knowledge of the relevant literature.
ILO 3. How a thorough understanding of the importance of strategy, cross-function working and managing core business processes.
ILO 4. Articulate a critical awareness of the global environment within which organisations operate and the cultural, political and ethical ambiguities that this gives rise to.
ILO 5. Display the capability to identify, analyse and implement appropriate conclusions for complex problems in the context of uncertainty and change.
ILO 6. Critically evaluate their personal strengths, weaknesses and preferences.
ILO 7. Present confidence in working with others and an ability to argue and present coherently and persuasively influence.
ILO 8. Develop an ability to work with peers in order to create and implement effective strategies.
ILO 9. Demonstrate robust qualities of leadership.
ILO 10. Deal with challenging individuals and situations effectively.
ILO 11. Understand how to manage their career development.

4. How is the course taught?

The programme is delivered through classroom interaction combined with a high proportion of team work, group projects and private study.

Students will be supported in their learning and personal development by:

- being placed in a diverse leaning team and supervised by a learning team tutor;
- being exposed to a range of psychometric tests and an assessment centre exercise;
- One to one coaching from professionals.

5. What do students need to achieve in order to graduate?

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A. MBA

An MBA will be awarded on successful completion of 260 credits as outlined below:

Description	Credits

3

COMPULSORY MODULES:	
Module 1, 15	40
Modules 2-13	120
Modules 14, 16	20
ELECTIVE MODULES:	
80 credits from Modules 17-37	80
TOTAL:	**260**

B.   MBA (Chilean Collaboration)

Description	Credits
COMPULSORY MODULES:	
Credits awarded for University of Chile (APL)	80
Modules 8 to 14, 15a-16, 34	100
ELECTIVE MODULES:	
80 credits from Modules 17-33, 35-37	80
TOTAL:	**260**

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria
Each assessment is awarded a mark out of 100 per cent. Where a module is assessed with more than one assessment e.g., a group project and an examination, marks are awarded separately for each assessment and then weighted together to determine the mark for the module. A student will be deemed to have passed a module if he/she achieves a mark of 50 per cent or more. Each module carries a number of credits which are used as the weightings to calculate an overall weighted average mark for each part of the Programme. Part I and Part II of the Programme are assessed separately and a student will be regarded as having failed either if he/she:

    (1) achieve an overall weighted average of less than 50 per cent;
or   (2) achieve a mark of less than 50 per cent on more than 30 credits
or   (3) achieve a mark of less than 30 per cent on more than 10 credits.

These conditions apply separately to Part I and Part II of the Programme.

In any compulsory module a mark of less than 40 per cent for the individual assessment – it may be an exam or a project – will result in the module receiving a maximum mark of 49 per cent irrespective of the marks gained in any assessed group work. In short you will be deemed to have failed the module

MBA (Chilean Collaboration) The pass criteria is the same as for the MBA; however in Part I a student will be regarded as having failed if he/she achieves a mark of less than 50 per cent on more than 20 credits. The Chilean students join at the start of Term 2 and are awarded 60 credits for prior learning providing they pass their Masters in Global Management programme at the University of Chile (UoC). In order to meet these criteria the students must return to the UoC, when they finish their Cranfield MBA studies.

Resit Policy
If the mark for Part I indicates failure students you will have the opportunity to resit examinations or individual assessments up to a maximum of 30 credits (Chilean students resit up to 20 credits) in Part I. If the individual element of the module failed was an examination the resit will be an

4

examination and if it was an individual written project, the student will be required to resubmit a project. However, in both cases the module leader can (with the permission of the Academic Programme Director) change the nature of the resit. Resits will be scheduled early in Term 3. The main purpose of resits is to give students who would otherwise fail Part I a final opportunity to pass it but in a manner that does not create an unfair opportunity for students to increase their overall module average. Therefore:

- students will only be allowed to take resits if they are deemed to have failed Part I due to one of the three criteria set above; and
- all resit marks will be capped at 50 per cent; and
- students can only resit an examination once.

In determining whether or not having taken resits a student is deemed to have passed Part I, the highest of the following will stand, subject to a maximum mark of 50 per cent:

- the resit exam mark;
- the overall module mark with the resit exam mark substituted for, and given the same weighting as, the original individual assessment mark;
- the original overall module mark.

6. **How is the course structured?**

Full-time students register for the programme at the end of September and are expected to complete the course within thirteen calendar months.

The MBA programme is in two parts. Part I lasts for six months on the full-time programme and consists of compulsory modules designed to provide students with a contemporary understanding of basic business functions e.g., accounting and marketing. Part I is spread over terms 1 and 2. In Part II, which is spread over terms 3 and 4, students gain discretion over their learning by choosing from a range of electives, the subjects they believe will be most beneficial to their learning and future careers.

Throughout the whole programme i.e., Part I and II, the Developing Leadership theme is emphasised through four compulsory modules dealing with self-awareness, leadership skills and contemporary leadership challenges. In term 3, students are also completing their Decision Making and Data Analytics module, which runs throughout the Part I and II and includes classes on qualitative and quantitative research methods before they have to apply this to a real world consulting project. Moreover, at the end of term 3 students on both the Full Time and Executive Programme join together for the International Business Assignment. During this period students choose a traditional "study tour" consisting of a visit to a business school and companies in a country chosen from a short-list, or field trips where small groups of students work with small companies or charities in a different culture.

Course modules

The following modules outline all parts of the programme leading to an **MBA**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Module Leader	Contact hours[1]	Total hours delivered by Visiting Lecturers[2]	Credits	Is the module shared? Y/N	Calendar Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[3] - 40% or 50%	Assessment Independent Assessment Type of Assessment	Weighting within module[4] (%) of Independent assessments	Multi-part Assessment Weighting within module of multi-part assessments[5] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[6]	Submission dates Assessment Submission and/or exam date[7]	Assessment / Exam Retake date
PART ONE																		
1	M-M/OBL	Organisational Behaviour: Developing Leadership	Dr Richard Kwiatkowski	40		20	Y		03/10/16	03/12/16		IPROJ	100				08/12/16	
2	M-M/ACC	Accounting	Dr Matthias Nnadi	20		10	Y		10/10/16	04/12/16		ICW EX	30 70				19/11/16 14/12/16 EW1	

---

[1] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[2] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[3] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[4] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[5] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[6] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[7] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[1]	Total hours delivered by Visiting Lecturers[2]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[3] - 40% or 50%	Assessment						
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module4 (%) of Independent assessments	Weighting within module of multi-part assessments[5] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[6]	Assessment Submission and/or exam date[7]	Assessment / Exam Retake date
3	M-M/OPS	Strategic Operations Management	Dr Bob Lillis	20		10	Y		10/10/16	16/11/16		EX	60	40 MULTI	GPRES GCW	30 10	06/12/16 15/12/16	
4	M-M/MKT	Strategic Marketing	Dr Stan Maklan	20		10	N		10/10/16	01/12/16		ICW	50	50 MULTI	GCW GPRES	30 20	09/12/16 02/11/16	
5	M-M/EOS	Economics of Organisations and Strategy	Dr Catarina Figeuira	20		10	Y		10/10/16	01/12/16		ICW EX	50 50				05/11/16 12/12/16 EW1	
6	M-M/ENT	Entrepreneurship and New Venture Creation	Dr Stephanie Hussels	20		10	Y		10/10/16	10/11/16		GCW	100				01/12/16	
7	M-M/VCC	Venture Capital Investment Competition	Dr Stephanie Hussels	20		10	Y		28/11/16	02/12/16				100 MULTI	GPRES GPRES GCW GPRES	30 10 30 30	05/12/16	
8	M-M/FIN	Financial Management	Dr Andrea Moro	20		10	Y		18/01/17	25/02/17		ICW EX	30 70				25/02/17 22/03/17	
9	M-M/STG	Strategic Management	Dr Richard Schoenberg	20		10	Y		18/01/17	02/03/17		GPRES ICW	50 50				01/03/17 14/03/17	
10	M-M/PMI	Project Management Introduction	John Algar	20		10	Y		01/02/17	05/02/17		EX	40	60 MULTI	GCW GPRAC GPRES	10 30 20	02/03/17 03/02/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

7

Module Number	Module code	Title	Module Leader	Contact hours[1]	Total hours delivered by Visiting Lecturers[2]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[3] - 40% or 50%	Type of Assessment	Weighting within module4 (%) of Independent assessments	Weighting within module of multi-part assessments[5] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[6]	Assessment Submission and/or exam date[7]	Assessment / Exam Retake date
11	M-M/GME	Global Macroeconomics and Business Environment	Prof Joe Nellis	20		10	Y		19/01/17	19/02/17		ICW EX	50 50				04/03/17 23/03/17	
12	M-M/CFL1	Challenges for Leaders I: Managing People and Leading Change	Prof Michael Dickmann	20		10	Y		19/01/17	19/02/17		EX	100				20/03/17	
13	M-M/CFL2	Challenges for Leaders II: Change and Corporate Responsibility	Prof David Grayson	20		10	Y		24/02/17	11/03/17		ICW	100				13/03/17	
PART 2																		
14	M-M/IBA	International Business Assignment	David Simmons	20		10	Y		10/06/17	24/06/17		ICW GCW	20 80				20/07/17 20/07/17	
15	M-M/DMDA	Decision Making and Data Analytics	Dr Catarina Figueira	40		20	Y		16/10/16	10/03/17		EX GPROJ	30 70				13/12/16 03/07/17	
15a	M-M/DMDAC	Decision Making and Data Analytics (Chilean students only) – supplemented by APL	Dr Catarina Figueira	20		10	N	NOT RUNNING IN 2016/17				ICW	100				N/A	
16	M-M/LIA	Leadership in Action	Dr Anne Laure Humber	20		10	Y		11/04/17	24/06/17		ICW	100				25/08/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

8

Module Number	Module code	Title	Module Leader	Contact hours[1]	Total hours delivered by Visiting Lecturers[2]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[3] - 40% or 50%	Type of Assessment	Weighting within module4 (%) of Independent assessments	Weighting within module of multi-part assessments[5] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[6]	Assessment Submission and/or exam date[7]	Assessment / Exam Retake date
ELECTIVES																		
17	M-M/EFI	Entrepreneurial Finance	Chris Ansell	20		10	Y		27/06/17	09/09/17		ICW ICW	60 40				08/06/17 05/07/17	
18	M-M/IST	International Strategy	Prof Patrick Reinmoeller	20		10	Y		11/04/17	24/06/17		GCW ICW	80 20				30/06/17 30/06/17	
19	M-M/MMA	Managing International Mergers and Acquisitions	Dr Richard Schoenberg	20		10	Y		11/04/17	24/06/17		GCW GPRES ICW	50 30 20				12/07/17 26/07/17 21/08/17	
20	M-M/CFS	Corporate Financial Strategy	Abdul Mohammed	20		10	Y		11/04/17	24/06/17		EX	100				19/05/17	
21	M-M/CFT	Corporate Finance Transactions	Prof Ruth Bender	20		10	Y		11/04/17	24/06/17		ICW GCW	10 90				26/06/17 26/06/17	
22	M-M/SCC	Strategizing in Challenging Contexts	Dr Richard Schoenberg	20		10	Y		11/04/17	24/06/17		GPRES GCW	20 80				02/05/17 30/05/17	
23	M-M/SHR	Strategic Human Resource Management in the 21st Century	Prof Frank Horwitz	20		10	Y		27/06/17	09/09/17		ICW	100				07/08/17	
24	M-M/ DVSC	Driving Value Through the Supply Chain	Dr Heather Skipworth	20		10	Y		27/06/17	04/08/17		ICW	100				29/08/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[1]	Total hours delivered by Visiting Lecturers[2]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[3] - 40% or 50%	Type of Assessment	Weighting within module4 (%) of Independent assessments	Weighting within module of multi-part assessments[5] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[6]	Assessment Submission and/or exam date[7]	Assessment / Exam Retake date
									Calendar			Independent Assessment		Multi-part Assessment			Submission dates	
25	M-M/NBO	Negotiating in Business and Organisations	Dr Ian Speakman	20		10	Y		11/04/17	24/06/17		GPRAC ICW	60 40				07/08/17 28/07/17	
26	M-M/MSI	Managing Strategic Innovation	Prof Keith Goffin	20		10	Y		11/04/17	24/06/17		GCW	100				09/09/17	
27	M-M/BL	Business Law	Prof Joe Nellis	20		10	Y		27/06/17	09/09/17		ICW	100				18/08/17	
28	M-M/IHN	Identifying (Customers') Hidden Needs	Prof Keith Goffin	20		10	Y		11/04/17	24/06/17		GCW	100				09/09/17	
29	M-M/IRM	Investment and Risk Management	Dr Peter Yallup	20		10	Y		11/04/17	24/06/17		EX	100				01/06/17	
30	M-M/LSO	Leading Sales and Customer Management Organisations	Dr Javier Marcos	20		10	Y	NOT RUNNING 2016/17				ICW	100				N/A	
31	M-M/CPPM	Major Critical Projects and Programme Management – a Sectoral Approach	Dr Edward Ochieng	20		10	Y		11/04/17	24/06/17				100 MULTI	GPRES GCW	30 70	04/08/17	
32	M-M/LMF	Leading and Managing the Family Enterprise	Dr Stephanie Hussels	20		10	Y		11/04/17	24/06/17		GCW	100				09/09/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[1]	Total hours delivered by Visiting Lecturers[2]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[3] - 40% or 50%	Type of Assessment	Weighting within module4 (%) of Independent assessments	Weighting within module of multi-part assessments[5] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[6]	Assessment Submission and/or exam date[7]	Assessment / Exam Retake date
33	M-M/SQM	Strategic Quality Management	Dr Abdelkader Aouf	20		10	Y		11/04/17	24/06/17				100 MULTI	GPRES GCW	60 40	11/08/17	
34	M-M/IP	Independent Project	Various			10	Y		27/06/17	25/08/17		ICW	100				25/08/17	
34a	M-M/IP1	Independent Project	Various			10	Y		27/06/17	25/08/17		ICW	100				25/08/17	
35	M-M/IP2	Independent Project	Various			20	Y		27/06/17	25/08/17		ICW	100				25/08/17	
36	M-M/GP1	Group Project	Various			10	Y		27/06/17	25/08/17		GCW	100				25/08/17	
37	M-M/GP2	Group Project	Various			20	Y		27/06/17	25/08/17		GCW	100				25/08/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
M-M/OBL	Organisational Behaviour: Developing Leadership	Master of Business Administration	Master of Business Administration (Executive)
M-M/ACC	Accounting	Master of Business Administration	Master of Business Administration (Executive)
M-M/OPS	Strategic Operations Management	Master of Business Administration	Master of Business Administration (Executive)
M-M/EOS	Economics of Organisations and Strategy	Master of Business Administration	Master of Business Administration (Executive)
M-M/ENT	Entrepreneurship and New Venture Creation	Master of Business Administration	Master of Business Administration (Executive)
M-M/VCC	Venture Capital Investment Competition	Master of Business Administration	Master of Business Administration (Executive)
M-M/FIN	Financial Management	Master of Business Administration	Master of Business Administration (Executive)
M-M/STG	Strategic Management	Master of Business Administration	Master of Business Administration (Executive)
M-M/PMI	Project Management Introduction	Master of Business Administration	Master of Business Administration (Executive), Logistics and Supply Chain Management, Procurement and Supply Chain Management
M-M/GME	Global Macroeconomics and Business Environment	Master of Business Administration	Master of Business Administration (Executive)
M-M/CFL1	Challenges for Leaders I: Managing People and Leading Change	Master of Business Administration	Master of Business Administration (Executive)
M-M/CFL2	Challenges for Leaders II: Change and Corporate Responsibility	Master of Business Administration	Master of Business Administration (Executive)
M-M/IBA	International Business Assignment	Master of Business Administration	Master of Business Administration (Executive)
M-M/DMDA	Decision Making and Data Analytics	Master of Business Administration	Master of Business Administration (Executive)
M-M/LIA	Leadership in Action	Master of Business Administration	Master of Business Administration (Executive)
M-M/EFI	Entrepreneurial Finance	Master of Business Administration	Master of Business Administration (Executive)
M-M/IST	International Strategy	Master of Business Administration	Master of Business Administration (Executive)
M-M/MMA	Managing International Mergers and Acquisitions	Master of Business Administration	Master of Business Administration (Executive)
M-M/CFS	Corporate Financial Strategy	Master of Business Administration	Master of Business Administration (Executive)
M-M/CFT	Corporate Finance Transactions	Master of Business Administration	Master of Business Administration (Executive)
M-M/SCC	Strategizing in Challenging Contexts	Master of Business Administration	Master of Business Administration (Executive)
M-M/SHR	Strategic Human Resource Management in the 21st Century	Master of Business Administration	Master of Business Administration (Executive)

M-M/DVSC	Driving Value Through the Supply Chain	Master of Business Administration	Master of Business Administration (Executive)
M-M/NBO	Negotiating in Business and Organisations	Master of Business Administration	Master of Business Administration (Executive)
M-M/MSI	Managing Strategic Innovation	Master of Business Administration	Master of Business Administration (Executive)
M-M/BL	Business Law	Master of Business Administration	Master of Business Administration (Executive)
M-M/IHN	Identifying (Customers') Hidden Needs	Master of Business Administration	Master of Business Administration (Executive)
M-M/IRM	Investment and Risk Management	Master of Business Administration	Master of Business Administration (Executive)
M-M/LSO	Leading Sales and Customer Management Organisations	Master of Business Administration	Master of Business Administration (Executive)
M-M/CPPM	Major Critical Projects and Programme Management – a Sectoral Approach	Master of Business Administration	Master of Business Administration (Executive)
M-M/LMF	Leading and Managing the Family Enterprise	Master of Business Administration	Master of Business Administration (Executive)
M-M/SQM	Strategic Quality Management	Master of Business Administration	Master of Business Administration (Executive)
M-M/IP M-M/IP1 M-M/IP2	Independent Project	Master of Business Administration	Master of Business Administration (Executive)
M-M/GP1 M-M/GP2	Group Project	Master of Business Administration	Master of Business Administration (Executive)

7. **How are the ILOs assessed?**

The following assessment types are utilised:

The programme uses a range of assessment types. In addition to closed book and open book written examinations, students undertake a wide range of projects. Written Assessments of Case Study (WACs) are very valuable learning whereby students working with their teams determine the answer to a question posed around a case study, but then each member of the team must write up an individual report consisting of no more than 1,500 words. The assessment is excellent training for writing business reports under time pressure. A more unusual type of assessment is the simulation. Here students – again working in teams – might be required to build a warehouse or an electrical product – within a limited period of time, where information may be given and/or changed at intervals. Many projects involve working with a company on a live project. Towards the end of the programme there will be the opportunity for some students to work on company based projects or short term internships, assessed through a written report.

Assessment and ILO Mapping

Complete the grid below by inserting in the boxes which assessments from the modules directly assess the Award ILOs.

(Module numbers should correspond with those used in the Course module table above.)

A. MBA

Award ILOs / Module No.	ILO1.	ILO2.	ILO3.	ILO4.	ILO5.	ILO6.	ILO7.	ILO8.	ILO9.	ILO10.	ILO11.
01	IPROJ		IPROJ	IPROJ	IPROJ	IPROJ			IPROJ		
02	EX	EX			ICW						
03	EX	EX	EX	MULTI			MULTI	MULTI			
04	MULTI	ICW	ICW		ICW		MULTI	MULTI			
05		EX		EX	ICW			ICW			
06		GCW	GCW	GCW			GCW	GCW	GCW		GCW
07				MULTI	MULTI		MULTI	MULTI			MULTI
08	ICW				EX			ICW		ICW	
09	GPRES		ICW	GPRES	ICW		GPRES	GPRES		GPRES	
10	EX	MULTI		EX	EX		MULTI	MULTI			
11	ICW			ICW	EX	EX					
12	EX				EX		EX				EX
13	ICW					ICW			ICW		ICW
14	GCW		ICW	GCW	ICW / GCW		GCW	GCW		GCW	
15					EX/ GPROJ		GPROJ				
15a	ICW	ICW				ICW				ICW	
16	ICW							ICW	ICW		ICW
17					ICW / ICW		ICW	ICW			ICW
18			ICW / GCW	ICW			GCW	GCW			
19			GPRES	GPRES /ICW	ICW			GPRES			
20	EX		EX		EX						
21	ICW / GCW	ICW			GCW		GCW	GCW			
22			GPRES /GWC	GWC	GWC		GPRES /GWC	GWC			
23	ICW	ICW								ICW	ICW
24	ICW	ICW			ICW						ICW
25	GPRAC				ICW		ICW				
26				GWC	GWC		GWC	GWC			
27	ICW				ICW					ICW	
28				GWC			GWC	GWC		GWC	

Module No.	ILO1.	ILO2.	ILO3.	ILO4.	ILO5.	ILO6.	ILO7.	ILO8.	ILO9.	ILO10.	ILO11.
29				EX	EX						EX
30	NOT RUNNING IN 2016/17										
31		GPRES GCW	GPRES GCW	GPRES GCW	GPRES GCW		GCW	GPRES GCW			
32		GWC	GWC	GWC	GWC			GWC	GWC		
33		GWC	GWC		GWC			GWC			
34/34a		ICW	ICW	ICW	ICW	ICW			ICW		ICW
35		ICW	ICW	ICW	ICW	ICW			ICW		ICW
36		GCW	GCW	GCW	GCW	GCW			GCW		GCW
37		GCW	GCW	GCW	GCW	GCW			GCW		GCW

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

Title	Modules Covered	Assessment	
		Type	Weight (%)
N/A			

8. How will the University assure the quality of the provision?

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the

University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. **What opportunities are graduates likely to have on completing the course?**

The list of opportunities available to our MBAs after graduating is extremely wide. Drawing on recent surveys of our graduates the most popular functions were as follows:

General Management
Engineering and R & D Management
Consultancy
Business Development
Strategy
Sales/Marketing
Finance/Accounting
Operations
IT Project Management

In addition a small but growing number of students set-up their own businesses, though this number increases after two to three years post graduation

COURSE SPECIFICATION

Cranfield University: Course Specifications

Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information. Courses are under constant review, however, and the University reserves the right, without notice, to withdraw, update or amend this course specification at any time.

COURSE TITLE: Executive MBA Programme

Date of first publication/latest revision: 02/06/16

---

1. What is the course?

Course information

Course Title	Executive Master of Business Administration Executive Master of Business Administration (Defence)
Course code	MBEXMPTC, MBCMDPTR (Defence)
Academic Year	2016/17
Valid entry routes	MBA
Additional exit routes	Not Applicable
Mode of delivery	Part-time
Location of Study	Cranfield University
School(s)	School of Management
Theme	Leadership and Management
Centre	Centre for Management
Course Director	Professor Paul Baines
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	• A minimum of three years' post-qualification work experience. • A good degree and / or professional qualification. • Applicants who do not have a degree are welcomed provided they can demonstrate high levels of achievement, exceptional career progression or evidence of leadership potential. If you are an international student you will need to provide evidence that you have achieved a satisfactory test result in an English qualification. The minimum standard expected from a number of accepted courses are as follows: IELTS – 7, TOEFL – 100, Pearson PTE Academic- 68, Cambridge English Scale – 190, Cambridge English: Advanced – A, Cambridge English: Proficiency – B.
UK Qualifications Framework Level	QAA FHEQ Level 7 (Masters)
Benchmark Statement(s)	Not Applicable

Registration Period(s) available	3 years
Course Start Month(s)	January

Institutions delivering the course

This course is delivered by the School of Management where the research interests consist of a wide range of management functions.

All teaching and assessment is provided by the School of Management.

Cranfield University interacts with the following institutions and in the following ways:

- All students will undertake a group consulting project in an external organisation, presenting findings to senior managers from the organisation involved
- Each module will incorporate input from senior managers/practitioners where appropriate
- Some of the modules require learning teams to visit an organisation to audit their approach
- Some students undertake research and/or project work off campus, within organisations. In some cases this will take the form of a short term internship, again assessed by project submission

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is accredited formally by the Association to Advance Collegiate Schools of Business (AACSB) and the Association of MBAs (AMBA) until 2016. It is also accredited by the European Quality Improvement System (EQUIS) until 2019.

2. What are the aims of the course?

The Cranfield MBA aims to provide a distinctive and collaborative learning experience centred on a process of intense, interactive classroom sessions where the combination of the professional experience of a diverse student cohort and the faculty's direct involvement with global businesses ensures graduates have a deep understanding of contemporary business issues and the capacity to assume active leadership roles. This experience is founded on the integration of four aims:

- To develop a group of influential leaders who will make a significant impact on their organisations and the wider community.
- To deliver a contemporary and comprehensive knowledge of core business functions enabling students to talk knowledgeably to experts in these areas.
- To create a strategic mindset capable of viewing organisations as consisting of functions and groups whose actions must be motivated and aligned to meet objectives.
- To generate the self-awareness and confidence to operate effectively as a member of and/or leader of a team drawn from a variety of cultures, business experience and personalities.
- To create an understanding as to how to develop leadership capabilities in self and others in order to meet the increasing challenge of change.

This programme is intended for the following range of students:

- Experienced professionals who want a "real-world" business education which they can apply directly back to their workplace.
- Self-motivated managers who are keen to improve themselves, enhance their skills, knowledge and abilities, and become more effective leaders.
- Energetic entrepreneurs who want support to start a new business or grow their existing business.

3. What should students expect to achieve in completing the course?

Award intended learning outcomes (ILOs) (skills and knowledge).

A. MBA

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1. Demonstrate robust yet flexible qualities of leadership and an understanding of a wide range of management techniques.

ILO 2. Exhibit a conceptual understanding of the main functional areas of management and a systematic knowledge of the relevant literature.

ILO 3. How a thorough understanding of the importance of strategy, cross-function working and managing core business processes.

ILO 4. Articulate a critical awareness of the global environment within which organisations operate and the cultural, political and ethical ambiguities that this gives rise to.

ILO 5. Display the capability to identify, analyse and implement appropriate conclusions for complex problems, in the context of uncertainty and change.

ILO 6. Critically evaluate their personal strengths, weaknesses and preferences.

ILO 7. Present confidence in working with others and an ability to argue and present coherently and persuasively influence.

ILO 8. Develop an ability to work with peers in order to create and implement effective strategies.

ILO 9. Demonstrate robust qualities of leadership.

ILO 10. Deal with challenging individuals and situations effectively.

ILO 11. Understand how to manage their career development.

4. How is the course taught?

Students will be supported in their learning and personal development by:

- The programme is delivered through classroom interaction combined with a high proportion of team work, group projects and private study.

In addition to the teaching methods outlined above, students will be supported in their learning and personal development by:

- being placed in a diverse leaning team and supervised by a learning team tutor;
- being exposed to a range of psychometric tests and an assessment centre exercise;
- one-to-one coaching from professionals.

5. What do students need to achieve in order to graduate?

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A. MBA

The accumulation of 260 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Module 1, 14 Modules 2-13, 15-16	40 140
ELECTIVE MODULES:	
80 credits from Modules 17-37	80
TOTAL:	**260**

B. MBA (Defence)

The accumulation of 260 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Module 1, 14, Modules 2-13, 15-16, 24-25, 38-42	40 210
ELECTIVE MODULES:	
10 credits from Modules 17-23, 26-33	10
TOTAL:	**260**

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria

In order to achieve your award, you are required to achieve:

Each assessment is awarded a mark out of 100 per cent. Where a module is assessed with more than one assessment e.g., a group project and an examination, marks are awarded separately for each assessment and then weighted together to determine the mark for the module. A student will be deemed to have passed a module if he/she achieves a mark of 50 per cent or more. Each module carries a number of credits which are used as the weightings to calculate an overall weighted average mark for each part of the Programme. Part I and Part II of the Programme are assessed separately and a student will be regarded as having failed either if he/she:

(1) achieve an overall weighted average of less than 50 per cent;
or (2) achieve a mark of less than 50 per cent on more than 30 credits
or (3) achieve a mark of less than 30 per cent on more than 10 credits.

These conditions apply separately to Part I and Part II of the Programme.
In any **compulsory** module a mark of less than 40 per cent for the individual assessment – it may be an exam or a project – will result in the module receiving a maximum mark of 49 per cent

4

irrespective of the marks gained in any assessed group work.   In short you will be deemed to have failed the module.

MBA (Defence) The pass criterion for the MBA(D) is the same as MBA above except that MBA(D) students have to select modules 24, 25, 38 to 42.

Resit Policy
If the mark for Part I indicates failure students you will have the opportunity to resit examinations or individual assessments up to a maximum of 30 credits in Part I. If the individual element of the module failed was an examination the resit will be an examination and if it was an individual written project, the student will be required to resubmit a project. However, in both cases the module leader can (with the permission of the Academic Programme Director) change the nature of the resit. Resits will be scheduled early in Term 3.   The main purpose of resits is to give students who would otherwise fail Part I a final opportunity to pass it but in a manner that does not create an unfair opportunity for students to increase their overall module average. Therefore:
- students will only be allowed to take resits if they are deemed to have failed Part I due to one of the three criteria set above; and
- all resit marks will be capped at 50 per cent; and
- students can only resit an examination once.

In determining whether or not having taken resits a student is deemed to have passed Part I, the highest of the following will stand, subject to a **maximum** mark of 50 per cent:
- the resit exam mark;
- the overall module mark with the resit exam mark substituted for, and given the same weighting as, the **original** individual assessment mark;
- the **original overall module mark**.

6. How is the course structured?

Part-time students register for the course in January and are expected to complete the course within 2 years.

The MBA programme is in two parts. Part I lasts for six months on the full-time programme consists of compulsory modules designed to provide students with a contemporary understanding of basic business functions e.g. accounting, and marketing. Part I is spread over terms 1 and 2. In Part II – which is spread over terms 3 and 4 - students gain discretion over their learning by choosing from a range of electives, the subjects they believe will be most beneficial to their learning and future careers. Throughout the whole programme i.e. Part I and II, the Developing Leadership theme is emphasised through four compulsory modules dealing with self-awareness, leadership skills and contemporary leadership challenges. In term 3, students on both the Full Time and Executive Programme join together for the International Business Assignment. During this period students choose a traditional "study tour" consisting of a visit to a business school and companies in a country chosen from a short-list, or field trips where small groups of students work with small companies or charities in a different culture.

Course modules

The following modules outline all parts of the programme leading to an **MBA**. Other awards associated with the course include some or all of these modules.

								Calendar				Assessment						
												Independent Assessment		Multi-part Assessment			Submission dates	
Module Number	Module code	Title	Module Leader	Contact hours[1]	Total hours delivered by Visiting Lecturers[2]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[3] - 40% or 50%	Type of Assessment	Weighting within module[4] (%) of Independent assessments	Weighting within module of multi-part assessments[5] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[6]	Assessment Submission and/or exam date[7]	Assessment / Exam Retake date
PART ONE																		
1	M-M/OBL Occ B	Organisational Behaviour: Developing Leadership	Dr Richard Kwiatkowski	40		20	Y		23/01/17	10/07/17		IPROJ	100				24/07/17	
2	M-M/ACC Occ B	Accounting	Dr Matthias Nnadi	20		10	Y		25/01/17	06/05/17		ICW EX	30 70				19/06/17 07/07/17	
3	M-M/OPS Occ B	Strategic Operations Management	Dr Bob Lillis	20		10	Y		23/01/17	20/05/17		EX	60	40 MULTI	GPRES GCW	30 10	08/07/17 08/04/17	

---

[1] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[2] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[3] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[4] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[5] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[6] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[7] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[1]	Total hours delivered by Visiting Lecturers[2]	Credits	Is the module shared? Y/N	Calendar			Assessment						
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[3] - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module4 (%) of Independent assessments	Weighting within module of multi-part assessments[5] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[6]	Assessment Submission and/or exam date[7]	Assessment / Exam Retake date
4	MXM/MKT	Strategic Marketing	Prof Emma Macdonald	20		10	N		23/01/17	25/05/17		ICW	50	50 MULTI	GCW GPRES	30 20	30/05/17 22/02/17	
5	M-M/EOS Occ B	Economics of Organisations and Strategy	Dr Catarina Figueira	20		10	Y		27/01/17	19/05/17		ICW EX	50 50				08/04/17 07/07/17	
6	M-M/ENT Occ B	Entrepreneurship and New Venture Creation	Dr Shailendra Vyakarnum	20		10	Y		11/02/17	20/05/17		GCW	100				02/06/17	
7	M-M/FIN Occ B	Financial Management	Dr Andrea Moro	20		10	Y		14/07/17	25/11/17		ICW EX	30 70				11/11/17 08/12/17	
8	M-M/STG Occ B	Strategic Management	Prof Mark Jenkins	20		10	Y		01/09/17	24/11/17		GPRES ICW	50 50				07/10/17 10/11/17	
9	M-M/PMI Occ B	Project Management Introduction	John Algar	20		10	Y		10/07/17	14/07/17		EX	40	60 MULTI	GCW GPRAC GPRES	10 30 20	15/09/17 14/07/17	
10	M-M/GME Occ B	Global Macroeconomics and Business Environment	Prof Joe Nellis	20		10	Y		01/09/17	25/11/17		ICW EX	50 50				05/12/17 09/12/17	
11	M-M/CFL1 Occ B	Challenges for Leaders I: Managing People and Leading Change	Prof Clare Kelliher	20		10	Y		11/07/17	16/09/17		EX	100				08/12/17	
12	M-M/CFL2 Occ B	Challenges for Leaders II: Change and Corporate Responsibility	Prof David Grayson	20		10	Y		06/10/17	24/11/17		ICW	100				10/01/18	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

					Calendar			Assessment						
									Independent Assessment		Multi-part Assessment			Submission dates
Module Number	Module code	Title	Module Leader	Contact hours[1]	Total hours delivered by Visiting Lecturers[2]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[3] - 40% or 50%	Type of Assessment	Weighting within module4 (%) of Independent assessments	Weighting within module of multi-part assessments[5] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[6]	Assessment Submission and/or exam date[7]	Assessment / Exam Retake date

PART 2

13	M-M/IBA Occ B	International Business Assignment	David Simmons	20		10	Y		08/01/18	01/12/18		ICW GCW	20 80				01/12/18 01/12/18	
14	M-M/DMDA Occ B	Decision Making and Data Analytics	Dr Catarina Figueira	40		20	Y		24/01/17	01/12/18		EX GPROJ	30 70				06/10/17 01/12/18	
15	M-M/LIA Occ B	Leadership in Action	Prof Elisabeth Kelan	20		10	Y		08/01/18	01/12/18		ICW	100				01/12/18	
16	M-M/VCC Occ B	Venture Capital Investment Competition	Dr Stephanie Hussels	20		10	Y		08/01/18	01/12/18				100 MULTI	GPRES GPRES GCW GPRES	30 10 30 30	01/12/18	

ELECTIVES

17	M-M/EFI Occ B	Entrepreneurial Finance	Chris Ansell	20		10	Y		08/01/18	01/12/18		ICW ICW	60 40				01/12/18 01/12/18	
18	M-M/IST Occ B	International Strategy	Prof Patrick Reinmoeller	20		10	Y		08/01/18	01/12/18		GCW ICW	80 20				01/12/18 01/12/18	
19	M-M/MMA Occ B	Managing International Mergers and Acquisitions	Dr Richard Schoenberg	20		10	Y		08/01/18	01/12/18		GCW GPRES ICW	50 30 20				01/12/18 01/12/18 01/12/18	
20	M-M/CFS Occ B	Corporate Financial Strategy	Abdul Mohammed	20		10	Y		08/01/18	01/12/18		EX	100				01/12/18	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[1]	Total hours delivered by Visiting Lecturers[2]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[3] - 40% or 50%	Assessment						
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module4 (%) of Independent assessments	Weighting within module of multi-part assessments [5] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[6]	Assessment Submission and/or exam date[7]	Assessment / Exam Retake date
21	M-M/CFT Occ B	Corporate Finance Transactions	Prof Ruth Bender	20		10	Y		08/01/18	01/12/18		ICW GCW	10 90				01/12/18 01/12/18	
22	M-M/SCC Occ B	Strategizing in Challenging Contexts	Dr Richard Schoenberg	20		10	Y		08/01/18	01/12/18		GPRES GCW	20 80				01/12/18 01/12/18	
23	M-M/SHR Occ B	Strategic Human Resource Management in the 21st Century	Prof Frank Horwitz	20		10	Y		08/01/18	01/12/18		ICW	100				01/12/18	
24	M-M/DVSC Occ B	Driving Value Through the Supply Chain	Michael Bernon	20		10	Y		08/01/18	01/12/18		ICW	100				01/12/18	
25	M-M/NBO Occ B	Negotiating in Business and Organisations	Dr Ian Speakman	20		10	Y		08/01/18	01/12/18		GPRAC ICW	60 40				01/12/18 01/12/18	
26	M-M/MSI Occ B	Managing Strategic Innovation	Dr Clive Savory	20		10	Y		08/01/18	01/12/18		GCW	100				01/12/18	
27	M-M/BL Occ B	Business Law	Prof Joe Nellis	20		10	Y		08/01/18	01/12/18		ICW	100				01/12/18	
28	M-M/IHN Occ B	Identifying (Customers') Hidden Needs	Prof Keith Goffin	20		10	Y		08/01/18	01/12/18		GCW	100				01/12/18	
29	M-M/IRM Occ B	Investment and Risk Management	Dr Peter Yallup	20		10	Y		08/01/18	01/12/18		EX	100				01/12/18	
30	M-M/LSO Occ B	Leading Sales and Customer Management Organisations	Dr Javier Marcos	20		10	Y	NOT RUNNING IN 2016/17				ICW	100				N/A	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[1]	Total hours delivered by Visiting Lecturers[2]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[3] - 40% or 50%	Independent Assessment Type of Assessment	Weighting within module4 (%) of Independent assessments	Weighting within module of multi-part assessments[5] (100%)	Multi-part Assessment Type of Assessment	Weighting of individual elements of multi-part assessment[6]	Assessment Submission and/or exam date[7]	Assessment / Exam Retake date
31	M-M/CPPM Occ B	Major Critical Projects and Programme Management – a Sectoral Approach	Dr Edward Ochieng	20		10	Y		07/04/18	08/11/18				100 MULTI	GPRES GCW	30 70	01/12/18	
32	M-M/LMF Occ B	Leading and Managing the Family Enterprise	Dr Stephanie Hussels	20		10	Y		07/04/18	08/11/18		GCW	100				01/12/18	
33	M-M/SQM Occ B	Strategic Quality Management	Dr Abdelkader Aouf	20		10	Y		07/04/18	08/11/18				100 MULTI	GPRES GCW	60 40	01/12/18	
34	M-M/IP Occ B	Independent Project	Various			10	Y		08/01/17	01/12/18		ICW	100				30/01/18	
34a	M-M/IP1 Occ B	Independent Project	Various			10	Y		08/01/17	01/12/18		ICW	100				30/01/18	
35	M-M/IP2 Occ B	Independent Project	Various			20	Y		08/01/17	01/12/18		ICW	100				30/01/18	
36	M-M/GP1 Occ B	Group Project	Various			10	Y		08/01/17	01/12/18		GCW	100				30/01/18	
37	M-M/GP2 Occ B	Group Project	Various			20	Y		08/01/17	01/12/18		GCW	100				30/01/18	
MBA (Defence Modules)																		
38	MXM/LCM	Leading Change Management in Defence	Dr Ifti Zaidi	20		10	N		08/01/18	01/12/18		GPRES ICW	50 50				30/06/17	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

10

Module Number	Module code	Title	Module Leader	Contact hours[1]	Total hours delivered by Visiting Lecturers[2]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[3] - 40% or 50%	Assessment						
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module4 (%) of Independent assessments	Weighting within module of multi-part assessments[5] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[6]	Assessment Submission and/or exam date[7]	Assessment / Exam Retake date
39	MXM/DPPM	Defence Portfolio and Programme Management	Dr Bill Egginton	20		10	N		08/01/18	01/12/18		ICW	100				31/05/17	
40	MXM/DE	Defence Economics and Finance	Prof Ron Matthews	20		10	N		08/01/18	01/12/18				100 MULTI	ICW ICW	70 30	29/07/17	
41	MXM/RDM	Risk and Defence Management	Prof Trevor Taylor	20		10	N		08/01/18	01/12/18		ICW	100				28/10/17	
42	MXM/IRP	Independent Research Project	Prof Ron Matthews	0		10	N		08/01/18	01/12/18		ICW	100				30/01/18	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
M-M/OBL	Organisational Behaviour: Developing Leadership	Master of Business Administration	Master of Business Administration
M-M/ACC	Accounting	Master of Business Administration	Master of Business Administration
M-M/OPS	Strategic Operations Management	Master of Business Administration	Master of Business Administration
M-M/EOS	Economics of Organisations and Strategy	Master of Business Administration	Master of Business Administration
M-M/ENT	Entrepreneurship and New Venture Creation	Master of Business Administration	Master of Business Administration
M-M/FIN	Financial Management	Master of Business Administration	Master of Business Administration
M-M/STG	Strategic Management	Master of Business Administration	Master of Business Administration
M-M/PMI	Project Management Introduction	Master of Business Administration	Master of Business Administration, Logistics and Supply Chain Management, Procurement and Supply Chain Management
M-M/GME	Global Macroeconomics and Business Environment	Master of Business Administration	Master of Business Administration
M-M/CFL1	Challenges for Leaders I: Managing People and Leading Change	Master of Business Administration	Master of Business Administration
M-M/CFL2	Challenges for Leaders II: Change and Corporate Responsibility	Master of Business Administration	Master of Business Administration
M-M/IBA	International Business Assignment	Master of Business Administration	Master of Business Administration
M-M/DMDA	Decision Making and Data Analytics	Master of Business Administration	Master of Business Administration
M-M/LIA	Leadership in Action	Master of Business Administration	Master of Business Administration
M-M/VCC	Venture Capital Investment Competition	Master of Business Administration	Master of Business Administration
M-M/EFI	Entrepreneurial Finance	Master of Business Administration	Master of Business Administration
M-M/IST	International Strategy	Master of Business Administration	Master of Business Administration
M-M/MMA	Managing International Mergers and Acquisitions	Master of Business Administration	Master of Business Administration
M-M/CFS	Corporate Financial Strategy	Master of Business Administration	Master of Business Administration
M-M/CFT	Corporate Finance Transactions	Master of Business Administration	Master of Business Administration
M-M/SCC	Strategizing in Challenging Contexts	Master of Business Administration	Master of Business Administration
M-M/SHR	Strategic Human Resource Management in the 21st Century	Master of Business Administration	Master of Business Administration

12

M-M/DVSC	Driving Value Through the Supply Chain	Master of Business Administration	Master of Business Administration
M-M/NBO	Negotiating in Business and Organisations	Master of Business Administration	Master of Business Administration
M-M/MSI	Managing Strategic Innovation	Master of Business Administration	Master of Business Administration
M-M/BL	Business Law	Master of Business Administration	Master of Business Administration
M-M/IHN	Identifying (Customers') Hidden Needs	Master of Business Administration	Master of Business Administration
M-M/IRM	Investment and Risk Management	Master of Business Administration	Master of Business Administration
M-M/LSO	Leading Sales and Customer Management Organisations	Master of Business Administration	Master of Business Administration
M-M/CPPM	Major Critical Projects and Programme Management – a Sectoral Approach	Master of Business Administration	Master of Business Administration
M-M/LMF	Leading and Managing the Family Enterprise	Master of Business Administration	Master of Business Administration
M-M/SQM	Strategic Quality Management	Master of Business Administration	Master of Business Administration
M-M/IP M-M/IP1 M-M/IP2	Independent Project	Master of Business Administration	Master of Business Administration
M-M/GP1 M-M/GP2	Group Project	Master of Business Administration	Master of Business Administration

7. **How are the ILOs assessed?**

The programme uses a range of assessment types. In addition to closed book and open book written examinations, students undertake a wide range of projects. Written Assessments of Case Study (WACs) are very valuable learning whereby students working with their teams determine the answer to a question posed around a case study, but then each member of the team must write up an individual report consisting of no more than 1,500 words. The assessment is excellent training for writing business reports under time pressure. A more unusual type of assessment is the simulation. Here students – again working in teams – might be required to build a warehouse or an electrical product – within a limited period of time, where information may be given and/or changed at intervals. Many projects involve working with a company on a live project. Towards the end of the programme there will be the opportunity for some students to work on company based projects or short term internships, assessed through a written report.

Assessment and ILO Mapping

Complete the grid below by inserting in the boxes which assessments from the modules directly assess the Award ILOs.

(Module numbers should correspond with those used in the Course module table above.)

A. MBA

Award ILOs / Module No.	ILO1.	ILO2.	ILO3.	ILO4.	ILO5.	ILO6.	ILO7.	ILO8.	ILO9.	ILO10.	ILO11.
01	IPROJ		IPROJ	IPROJ	IPROJ	IPROJ			IPROJ		
02	EX	EX			ICW						
03	EX	EX	EX	MULTI			MULTI	MULTI			
04	MULTI	ICW	ICW		ICW		MULTI	MULTI			
05		EX		EX	ICW			ICW			
06		GCW	GCW	GCW			GCW	GCW	GCW		GCW
07	ICW				EX			ICW		ICW	
08	GPRES		ICW	GPRES	ICW		GPRES	GPRES		GPRES	
09	EX	MULTI		EX	EX		MULTI	MULTI			
10	ICW			ICW	EX	EX					
11	EX					EX		EX			EX
12	ICW					ICW			ICW		ICW
13	GCW		ICW	GCW	ICW GCW		GCW	GCW		GCW	
14					EX GPROJ		GPROJ				
15	ICW							ICW	ICW		ICW
16				MULTI	MULTI		MULTI	MULTI			MULTI
17					ICW ICW		ICW	ICW			ICW
18			ICW GCW	ICW			GCW	GCW			
19			GPRES	GPRES ICW	ICW			GPRES			
20	EX		EX		EX						
21	ICW GCW	ICW			GCW		GCW	GCW			
22			GPRES GWC	GWC	GWC		GPRES GWC	GWC			
23	ICW	ICW								ICW	ICW
24	ICW	ICW			ICW						ICW
25	GPRAC				ICW		ICW				
26				GWC	GWC		GWC	GWC			
27	ICW				ICW					ICW	
28				GWC			GWC	GWC		GWC	
29				EX	EX						EX

14

Award ILOs / Module No.	ILO1.	ILO2.	ILO3.	ILO4.	ILO5.	ILO6.	ILO7.	ILO8.	ILO9.	ILO10.	ILO11.
30	NOT RUNNING IN 2016/17										
31		GPRES GCW	GPRES GCW	GPRES GCW	GPRES GCW		GCW	GPRES GCW			
32		GWC	GWC	GWC	GWC			GWC	GWC		
33		GWC	GWC		GWC			GWC			
34/34a		ICW	ICW	ICW	ICW	ICW			ICW		ICW
35		ICW	ICW	ICW	ICW	ICW			ICW		ICW
36		GCW	GCW	GCW	GCW	GCW			GCW		GCW
37		GCW	GCW	GCW	GCW	GCW			GCW		GCW

B. MBA (Defence)

Award ILOs / Module No.	ILO1.	ILO2.	ILO3.	ILO4.	ILO5.	ILO6.	ILO7.	ILO8.	ILO9.	ILO10.	ILO11.
38	GPRES		ICW	ICW		ICW	GPRES	GPRES			
39			ICW			ICW			ICW	ICW	
40	MULTI				MULTI		MULTI				
41		ICW	ICW	ICW				ICW		ICW	
42	ICW	ICW	ICW		ICW				ICW	ICW	

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

Title	Modules Covered	Assessment	
		Type	Weight (%)
N/A			

8. How will the University assure the quality of the provision?

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to

the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. What opportunities are graduates likely to have on completing the course?

The list of opportunities available to our MBAs after graduating is extremely wide. Drawing on recent surveys of our graduates the most popular functions were as follows:

General Management
Engineering and R & D Management
Consultancy
Business Development
Strategy
Sales/Marketing
Finance/Accounting
Operations
IT Project Management

In addition a small but growing number of students set-up their own businesses, though this number increases after two to three years post-graduation

COURSE SPECIFICATION

Cranfield University: Course Specifications

Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information. Courses are under constant review, however, and the University reserves the right, without notice, to withdraw, update or amend this course specification at any time.

COURSE TITLE: MSc in Medical Technology Regulatory Affairs

Date of first publication/latest revision: September 2016

1. What is the course?

Course information

Course Title	MSc in Medical Technology Regulatory Affairs
Course code	MSMRAPTC, PDMRAPTC, PCMRAPTC
Academic Year	2016/17
Valid entry routes	MSc, PgDip, PgCert
Additional exit routes	Not Applicable
Mode of delivery	Part-time
Location of Study	Cranfield University
School(s)	School of Aerospace, Transport and Manufacturing
Theme	Manufacturing
Centre	Sustainable Manufacturing Systems Centre
Course Director	Dr Charles Wainwright
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	Standard University entry requirements
UK Qualifications Framework Level	QAA FHEQ Level 7 (Masters)
Benchmark Statement(s)	enter text here
Registration Period(s) available	Part-time MSc - up to three years, Part-time PgDip - two years, Part-time PgCert - two years
Course Start Month(s)	Throughout the year

Institutions delivering the course

This course is delivered by the School of Aerospace, Transport and Manufacturing, Manufacturing Theme, Sustainable Manufacturing Systems Centre where the research interests include development and implementation of operations management techniques, including regulatory management, within the context of healthcare providers and practitioners.

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is not accredited by any external bodies.

2. What are the aims of the course?

To equip students with an in-depth understanding of current regulatory issues to support organisations working with all aspects medical devices from design and manufacture through clinical evaluation to operation. In particular, to support the philosophy of process and practice central to medical device regulatory affairs.

This programme is intended for the following range of students:

> Graduate professionals working in healthcare regulatory affairs or related areas, who have already gained first-hand practical experience of handling regulatory issues.

3. What should students expect to achieve in completing the course?

Award intended learning outcomes (ILOs) (skills and knowledge).

A. Postgraduate Certificate

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1. Demonstrate a thorough objective appreciation of the complex legislative, regulatory, managerial and commercial pressures and obligations core to medical technology regulation.

ILO 2. Apply analytical and review skills for regulatory intelligence.

ILO 3. Apply leadership and management skills in context of regulatory requirements

ILO 4. Assess knowledge of regulatory requirements compliance.

ILO 5. Develop a critical appreciation of the similarities and differences in the regulatory processes undertaken in the Global Environment.

ILO 6. Develop a critical understanding of the processes required to achieve regulatory approval of a device, including design, evaluation and quality assurance throughout the product life cycle.

ILO 7. Evaluate the aims, objectives and practical role of medical device regulatory affairs professionals within the wider context of product commercialisation regulatory requirements.

ILO 8. Employ the practical methods and practices required to practice as a regulatory affairs professional.

ILO 9. Demonstrate an appreciation of the rapid rate of technological change in the healthcare product field and its impact on regulatory requirements.

B. Postgraduate Diploma

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 10. Collate, analyse and discuss information from a variety of sources.

C. MSc

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 11.   Demonstrate the ability to apply sound experimental design principles and appropriate research methods to obtain, analyse and evaluate data through the individual research project.

4. How is the course taught?

Students will be supported in their learning and personal development by:

- Use of case studies and class exercises to help develop knowledge and skills in analysis and critical evaluation.
- Use of the Blackboard VLE as a source of information on learning and assessment materials plus routes to additional information and sources of help if required.
- Provision of lectures from external speakers to strengthen teaching in selected areas from academia and industry outside the University's area of expertise.
- Access to library resources, both on-campus and online, which are introduced at the beginning of the course by the Health Information Specialist.
- Focused portfolio tutorial sessions to support the development of information assimilation, written communication and critical evaluation skills.
- Use of an Integrated Portfolio a self-directed activity of reflection and action planning, designed to encourage independent development of transferable skills such as oral presentation, written communication and project management.
- The opportunity to carry out a research project in the student's place of employment to enable practical application of the theory learned during the taught course and development of research skills.

5. What do students need to achieve in order to graduate?

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A.   Postgraduate Certificate
The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
None	
ELECTIVE MODULES:	
Any 6 modules from 1 - 8	60
TOTAL:	60

B.   Postgraduate Diploma

The accumulation of 120 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Modules 1 - 8 Integrating Portfolio (9)	80 40
ELECTIVE MODULES:	
None	
TOTAL:	120

C.   MSc

In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
Modules 1 - 8 Integrating Portfolio (9) Individual Research Project (10)	80 40 80
ELECTIVE MODULES:	
None	
TOTAL:	200

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria

The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does <u>not</u> have discretion to overrule this limit, but can refer a case to Senate's Education Committee);[1] [2]

---

[1]   For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2]   Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a

- **For Taught Assessments,** the minimum mark for each individual taught assessment <u>on the first attempt</u> for the significant majority of the taught assessments, noting that:
  - o if you fail to attain the minimum mark for **<u>up to 30 learning credits</u>**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
  - o if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **<u>any additional learning credits</u>** over the course of your studies you will be disqualified from the right to re-take the assessments: this will normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);
  - o it is <u>not</u> permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

Where Public, Statutory or Regulatory Body (PSRB) accreditation requires additional or higher levels of assessment the PSRB requirements will take precedence.

6. <u>How is the course structured?</u>

MSc students are expected to complete the course within 36 calendar months. PgDip and PgCert students are expected to complete within 24 months.

Each module is usually taught over 3 days with students typically taking four modules per year.

---

student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

Course modules

The following modules outline all parts of the programme leading to MSc. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar: Module Start Date (eg Pre-course task)	Calendar: 'Residential' Start Date	Calendar: 'Residential' End Date	Minimum Mark[5] - 40% or 50%	Independent Assessment: Type of Assessment	Independent Assessment: Weighting within module6 (%) of Independent assessments	Multi-part Assessment: Weighting within module of multi-part assessments[7] (100%)	Multi-part Assessment: Type of Assessment	Multi-part Assessment: Weighting of individual elements of multi-part assessment[8]	Submission dates: Assessment Submission and/or exam date[9]	Submission dates: Assessment / Exam Retake date
1	N-CRE-A1017	Principles of European Medical Technology Regulatory Affairs	Prof Phil Warner	25		10	N		Not running in 2016/17		40	ICW	100					
2	N-CRE-A1018	Design, Development and Testing of Medical Devices	Dr Jeff Newman	25		10	N		Not running in 2016/17		40	ICW	100					
3	N-CRE-A1019	Clinical Evaluation of Medical Devices	Dr Nicola White	25		10	N		Not running in 2016/17		40	ICW	100					
4	N-CRE-A1020	Strategic Management of Regulatory Affairs	Dr Charles Wainwright	25		10	N		Not running in 2016/17		40	ICW	100					

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Module Leader	Contact hours[3]	Total hours delivered by Visiting Lecturers [4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments [7](100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
												Independent Assessment		Multi-part Assessment			Submission dates	
5	N-CRE-A1021	Medical Technology Vigilance, Post-Market Surveillance and Risk Management	Dr Charles Wainwright	25		10	N		06/09/16	08/09/16	40	ICW	100				24/10/16	23/01/17
6	N-CRE-A1022	Special Topics in Medical Devices in the EU	Prof Phil Warner	25		10	N		22/11/16	24/11/16	40	ICW	100				16/01/17	10/04/17
7	N-CRE-A1023	US Regulation of Medical Technology	Dr Charles Wainwright	25		10	N		14/02/17	16/02/17	40	ICW	100				03/04/17	26/06/17
8	N-CRE-A1024	Regulatory Strategy through the Product Lifecycle	Dr Charles Wainwright	25		10	N		16/05/17	18/05/17	40	ICW	100				03/07/17	25/09/17
9	N-CRE-A1028	Integrating portfolio	Prof Phil Warner	24		40	N		Various[1]	Various[2]				100 MULTI	RP RP	80 20	Various[3]	n/a
10	N-CRE-A1029	Individual Research Project	Dr Charles Wainwright	25		80	N		06/01/17 Occ A 03/07/17 Occ B	13/09/17 04/04/18		IPROJ THESIS IPRES	10 80 10				05/06/17 08/09/17 13/09/17 27/11/17 02/03/18 04/04/18	Various[4]

Notes to table:

1 Student registration start date

2 End date of final course element (Module 1 - 8, Individual Research Project)

3 Two working weeks after final course assessment submission date (Module 1 - 8, Individual Research Project)

4 As determined by Examination Board

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
N/A			

7. How are the ILOs assessed?

The following assessment types are utilised:

> The course uses a range of assessment types by submitted work, which may include oral or written pieces plus a research thesis, and one element of assessment by formal presentation.
>
> This approach has been adopted in order to develop and assess the knowledge and skills required in addition to assessing the student's ability to integrate and apply information in a practical setting.

Assessment and ILO Mapping

Complete the grid below by inserting in the boxes which assessments from the modules directly assess the Award ILOs.

(Module numbers should correspond with those used in the Course module table above.)

For Example:

Award ILOs / Module No.	ILO 1.	ILO 2.	ILO 3.	ILO 4.	ILO 5.	ILO 6.	ILO 7.	ILO 8.	
98	ICW				EX	EX	ICW		
99	ICW1		ICW1	ICW2					

A. Postgraduate Certificate

Award ILOs / Module No.									

B. Postgraduate Diploma

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Award ILOs / Module No.											

C. MSc

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Award ILOs / Module No.											

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

Title	Modules Covered	Assessment	
		Type	Weight (%)
N/A			

8. How will the University assure the quality of the provision?

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total)

educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. <u>What opportunities are graduates likely to have on completing the course?</u>

It is anticipated that completion of this course will enhance career progression by providing a broader appreciation of the complex regulatory field. As the students taking this course are already in employment, completion of the course is expected to provide formal recognition of the skills and knowledge acquired during the course and in their field of work. Integration of theory and practice is a key objective of the course.

COURSE SPECIFICATION

Cranfield University: Course Specifications
Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.

COURSE TITLE:	MSc in Military Aerospace and Airworthiness

Date of first publication/latest revision:	31/08//2016

1. What is the course?

Course information

Course Title	Military Aerospace and Airworthiness
Course code	MSMAAPTR, PDMAAPTR, PCMAAPTR, SPMAAPTR
Academic Year	2016-2017
Valid entry routes	MSc, PgDip, PgCert
Exit routes	MSc, PgDip, PgCert
Mode of delivery	Part-time
Location of Study	Shrivenham and Bedford
School(s)	Cranfield Defence and Security
Theme	N/A
Centre	Centre for Defence Engineering: Aeromechanical Systems
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	Standard University entry requirement; additionally an IELTS score of 7.0 is required by students for whom English is not a first language.
UK Qualifications Framework Level	QAA FHEQ level 7 (Masters)
Benchmark Statement(s)	As set out in the Quality Assurance Agency for Higher Education subject benchmark statements for Engineering, Mathematics and Physics at Masters level
Registration Period(s) available	A student who registers for the PgCert will have a registration period of 3 years. For the PgDip this will be 4 years, and for the MSc 5 years.
Course Start Month(s)	September and January

1

Institutions delivering the course

This course is delivered by Centre for Defence Engineering: Aeromechanical Systems   where the research interests include aerial vehicle and weapon aerodynamics and performance; hybrid vehicle propulsion and performance.

Cranfield University interacts with the following institutions and in the following ways:

The Military Aerospace and Airworthiness course is delivered through the Defence Academy with the primary customers being the Military Aviation Authority and the Defence Equipment and Support (DE&S) Organisation. The Course Team has worked closely with the customers to ensure that the course meets their educational requirements whilst maintaining the academic standards of the University.

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is accredited formally by The Royal Aeronautical Society Society up to, and including, academic year 2016/17.

2. <u>**What are the aims of the course?**</u>

The aim of the course is to provide education, on a part-time basis, for employees within the MOD's Defence Equipment and Support agency, the wider MOD, the Armed Forces, and the international defence industry to enable them to work more effectively in the fields of military aerospace technology, airworthiness and safety.

Suitably qualified students, who achieve an acceptable standard on the course are awarded, as appropriate, either an MSc degree, Postgraduate Diploma (PgDip) or Postgraduate Certificate (PgCert) in Military Aerospace and Airworthiness (MAA) by Cranfield University.

The aims of the PgCert are:

- to provide students with a general understanding of the engineering and management theories, concepts, applications and practices in Military Aerospace and Airworthiness to enable students to relate their knowledge and understanding of Military Aerospace and Airworthiness to the interpretation and analysis of relevant engineering and management information.
- to equip students with the skills necessary to contribute effectively within their own organization and work with their customers and suppliers in the field of Military Aerospace and Airworthiness.

In addition to the PgCert the aims of the PgDip are:

- to provide students with the opportunity to acquire a broader knowledge base and a more holistic understanding of the engineering and management theories, concepts, applications and practices associated with Military Aerospace and Airworthiness than can be achieved at PgCert level.

- to enable students to relate their broader knowledge and understanding of Military Aerospace and Airworthiness to the interpretation and analysis of a more multidisciplinary range of engineering and management information than can be achieved at PgCert level.
- to equip students with the skills necessary to integrate effectively across a wide range of business groups within their own organisation as well as those of their customers and suppliers in the field of Military Aerospace and Airworthiness.

2

In addition to the PgDip the aims of the MSc are:

- that through the successful completion of a dissertation students will demonstrate independent learning and their ability to describe, analyse and critically review current research and methodologies in Military Aerospace and Airworthiness.
- for students to conduct a piece of original research, through an application of the knowledge, understanding and skills acquired during the taught phase, on a topic relevant to Military Aerospace and Airworthiness.

This programme is intended for the following range of students:

- engineers and scientists within the MOD's Defence Equipment and Support agency, the wider MOD, the Armed Forces, and the international defence industry.

3. <u>What should students expect to achieve in completing the course?</u>

Award intended learning outcomes (ILOs) (skills and knowledge).

A. **Postgraduate Certificate in Military Aerospace and Airworthiness**

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1. Identify key theoretical principles, concepts and practices in military aerospace technology, airworthiness and safety

ILO 2. Critically analyse the design, operation and performance of military aircraft at a level appropriate to airworthiness requirements

ILO 3. Demonstrate a critical awareness of aviation safety management

ILO 4. Utilise knowledge, theories and concepts to quantify and critically analyse operational and performance data for selected military aircraft

ILO 5. Based upon the lessons learned from previous accidents produce reliable, valid and incisive conclusions regarding the key aspects affecting the airworthiness of military aircraft

ILO 6. Critically evaluate the ways in which aviation safety is quantified and managed

B. **Postgraduate Diploma in Military Aerospace and Airworthiness**

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 7. Demonstrate knowledge and critical understanding of a broad range of aviation disciplines and their interdependency in the context of military aerospace and airworthiness

ILO 8. Demonstrate the application of knowledge and understanding in a complex multidisciplinary aerospace technology environment and within an airworthiness context

ILO 9. Synthesise and critically analyse systems-level military aircraft data

C. MSc in Military Aerospace and Airworthiness

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 10. Identify relevant areas of previous research, placing them in context with a research project and providing critical appraisal

ILO 11. Critically evaluate facts, concepts, principles and theories and articulate these through reasoned analysis and discussion

ILO 12. Describe the background to an area of research, justify the research methodologies and discuss the main findings and conclusions in a viva voce examination

ILO 13. Assess new research ideas, concepts or methodologies through the use of techniques such as experimentation, analytical models and numerical models

ILO 14. Plan a research project with aims, objectives, risk assessment and time lines (with identification of critical path and contingencies)

ILO 15. Engage confidently in academic and professional communication, reporting clearly and concisely

4. How is the course taught?

The course is delivered on a part-time modular basis and conforms to the University's system of 10 credits (100 learning hours) per module. It is taught, in general, by conventional means through student attendance of lectures at the Cranfield or Shrivenham campuses. Students will be provided with pre-course and post-course reading and assessment as dictated by the individual course modules. It is intended that all lecture material, together with a non-assessed online mathematics self-taught module, will be made available through the CDS VLE (Moodle).

5. What do students need to achieve in order to graduate?

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A. Postgraduate Certificate
The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
00 03, 04, 18, 21, 22	0 50
ELECTIVE MODULES:	
One module to the value of 10 credits	10

4

chosen from 05-09, 11-17, 23-25	
TOTAL:	**60**

FAE[1] QUALIFIED CANDIDATES ONLY

Description	Credits
APCL MODULES	
21, 22	20
CORE MODULES:	
00 03, 04, 18, 20	0 40
ELECTIVE MODULES	
N/A	
TOTAL:	**60**

B. **Postgraduate Diploma**

The accumulation of 120 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
00, 03, 04, 18, 21, 22	0 50
ELECTIVE MODULES:	
Modules to the value of 70 credits chosen from 05-09, 11-17, 23-25	70
TOTAL:	**120**

FAE[1] QUALIFIED CANDIDATES ONLY

Description	Credits
APCL MODULES	
21, 22	20
COMPULSORY MODULES:	
00 03, 04, 18, 20	0 40
ELECTIVE MODULES	
Modules to the value of 60 credits chosen from 05-09, 11-17, 24, 25	60
TOTAL:	**120**

C. **MSc**

In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

---

[1] Fundamentals of Aeronautical Engineering Accredited Short Course. A constituent part of the Officers Long Aeronautical Engineering (OLAE) Course.

Description	Credits
COMPULSORY MODULES:	
00, 03, 04, 18, 21, 22, 19	0 50 80
ELECTIVE MODULES:	
Modules to the value of 70 credits chosen from 05-09, 11-17, 23-25	70
TOTAL:	**200**

FAE[5] QUALIFIED CANDIDATES ONLY

Description	Credits
APCL MODULES	
21, 22	20
COMPULSORY MODULES:	
00 03, 04, 18, 20 19	0 40 80
ELECTIVE MODULES	
Modules to the value of 60 credits chosen from 05-09, 11-17, 24, 25	60
TOTAL:	**200**

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria
The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does <u>not</u> have discretion to overrule this limit, but can refer a case to Senate's Education Committee);[2] [3]

---

[2] For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[3] Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

- **For Taught Assessments,** the minimum mark for each individual taught assessment <u>on the first attempt</u> for the significant majority of the taught assessments, noting that:
  - if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
  - if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);
  - it is <u>not</u> permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

6. How is the course structured?

Part-time students register for the course in September or January and are expected to complete the course within 5 years.

Normal entry
The course is offered on a part-time basis only. The PgCert contains five core modules.

- MAA03: Airworthiness of Military Aircraft.
- MAA04: Aviation Safety Management.
- MAA18: Safety Assessment of Aircraft Systems.
- MAA21: Fixed-Wing Aeromechanics.
- MAA22: Propulsion Systems.

These provide an overarching introduction to the subject of military aerospace and airworthiness and impart the essential knowledge required by all students on the course. The first three modules cover the underpinning aspects of airworthiness and aviation safety. The latter two modules encompass the core elements of aerospace technology: aerodynamics; propulsion; flight mechanics; structures.

Students then choose one further module to complete the PgCert or a further seven to complete the PgDip (MSc taught phase). This provides the student with the flexibility to tailor their studies to account for prior educational and work experience and the current and future needs of their employment role.

The modules taken in the taught phase of the MSc (the PgDip) provide students with the knowledge and skills necessary to complete a research-based project, which forms the final part of the Masters award. Lecturing staff on both campuses will undertake supervision of research dissertations.

FAE-Qualified Students
Students who have successfully completed the Fundamentals of Aeronautical Engineering (FAE) Short Course for Credit to be permitted to use the 20 credits obtained from that course plus a 10-credit top-up module (MAA20) in lieu of the following three 10-credit MAA modules.

- MAA21: Fixed-Wing Aeromechanics
- MAA22: Propulsion Systems
- MAA23: Rotary-Wing Aeromechanics

In addition, students will complete the three core airworthiness and aviation safety modules:

7

- MAA03: Airworthiness of Military Aircraft
- MAA04: Aviation Safety Management
- MAA18: Safety Assessment of Aircraft Systems

Students then choose a further six modules to complete the PgDip (MSc taught phase) and a research project, which forms the final part of the Masters award.

Course calendar
This course is offered solely on a part-time basis. Students can join the programme in either September or January. The course timetable enables students to complete the core modules in the first year with either start date. The course duration is expected to be:

- Minimum period of registration
- PgCert: 1 year
- PgDip: 1 year
- MSc: 2 years

- Maximum period of registration
- PgCert: 3 years
- PgDip: 4 years
- MSc: 5 years

Course modules

The following modules outline all parts of the programme leading to an MSc. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Contact hours[4]	Total hours delivered by Visiting Lecturers[5]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[6] - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
							Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Type of Assessment	Weighting within module (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
00	R-MAA-SS	MAA00: Study Skills and Registration	12		0	N	05/09/16 09/01/17	05/09/16 09/01/17	07/09/16 11/01/17	N/A	AO					N/A	
03	R-MAA-AMA	MAA03: Airworthiness of Military Aircraft	30		10	N	05/12/16	05/12/16	09/12/16	50 50	EX ICW	30 70				09/12/16 06/02/17	07/04/17 05/06/17
							03/04/17	03/04/17	07/04/17	50 50	EX ICW	30 70				07/04/17 05/06/17	07/07/17 04/09/17
							03/07/17	03/7/17	07/7/17	50 50	EX ICW	30 70				07/07/17 04/09/17	AY 17-18 AY 17-18

[4] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[5] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[6] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Contact hours[4]	Total hours delivered by Visiting Lecturers[5]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[6] - 40% or 50%	Type of Assessment	Weighting within module (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
04	N-SAI-ISMS	MAA:04 Aviation Safety Management	30		10	Y	A:30/08/16	05/09/16	09/09/16	50	ICW	100				07/11/16	26/06/17
							B:17/04/17	24/04/17	28/04/17	50	ICW	100				26/06/17	AY 17-18
05	N-AW-ATEMO	MAA05: Air Transport Engineering – Maintenance Operations	30	8	10	Y	20/02/17	20/02/17	24/02/17	40			100	EX ICW	30 70	24/02/17 24/04/17	AY17-18
06	N-HFS-AAI	MAA06: Aircraft Accident Investigation and Response	30		10	Y	03/04/17	03/04/17	07/04/17	40	ICW	100				05/06/17	AY 17-18
07	R-MAA-AS	MAA07: Aircraft Survivability	35		10	N	06/03/17	06/03/17	10/03/17	40	ICW	100				08/05/17	AY 17-18
08	N-AW-ICAS	MAA08: Design Durability and Integrity of Composite Aircraft Structures	30		10	Y	10/07/17	10/07/17	14/07/17	40	ICW	100				11/09/17	AY 17-18
09	N-AW-FAEC	MAA09: Fundamentals of Aircraft Engine Control	30		10	Y	13/03/17	13/03/17	17/03/17	40	ICW	100				15/05/17	AY 17-18

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Contact hours[4]	Total hours delivered by Visiting Lecturers[5]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[6] - 40% or 50%	Assessment						
							Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
											Type of Assessment	Weighting within module (%) of Independent assessments	Weighting within module of multi-part assessments [7](100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
11	R-MAA-GW	MAA11: Guided Weapons	27		10	Y	16/01/17	16/01/17	20/01/17	40	ICW	100				20/03/17	AY 17-18
12	N-AEN-ASC	MAA12: Introduction to Aircraft Structural Crashworthiness	25		10	Y	03/07/17	03/07/17	07/07/17	40	ICW	100				04/09/17	AY 17-18
13	R-MAA-IHF	MAA13: Introduction to Human Factors	40		10	N	14/11/16	14/11/16	18/11/16	40 40	GPRES ICW	20 80				18/11/16 16/01/17	AY 17-18 AY 17-18
14	N-AW-MIGT	MAA14: Mechanical Integrity of Gas Turbines	30		10	Y	24/04/17	24/04/17	28/04/17	40	ICW	100				26/06/17	AY 17-18
15	R-MAA-MAS	MAA15: Military Aircraft Systems	35		10	N	05/06/17	05/06/17	09/06/17	40 40	EX ICW	50 50				10/07/17 07/08/17	AY 17-18 AY 17-18
16	R-MAA-MA	MAA16: Military Avionics – STA, Communications and Navigation	32		10	N	23/01/17	23/01/17	27/01/17	40	ICW	100				27/03/17	AY 17-18
17	R-AW-RA	MAA17: Practical	30	10	10	Y	10/10/16	17/10/16	21/10/16	40	ICW	100				19/12/16	AY 17-18

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

11

Module Number	Module code	Title	Contact hours[4]	Total hours delivered by Visiting Lecturers[5]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[6] - 40% or 50%	Assessment						
							Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
											Type of Assessment	Weighting within module (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
		Reliability															
18	N-AW-SAAS	MAA18: Safety Assessment of Aircraft Systems	35	12	10	Y	A:14/11/16 B:26/06/17	14/11/16 26/06/17	18/11/16 30/06/17	50 50			100 100	ICW GPRES ICW GPRES	70 30 70 30	A:16/01/17 A:18/11/16 B:29/08/17 B:30/06/17	29/08/17 AY 17-18
19	R-MAA-DISS	MAA19: Research Project	20		80	N				50	THESIS OR	80 20				End of Registration	
20	R-MAA-FAE	MAA20: FAE Top-Up	6		10	N	08/09/16 12/01/17	08/09/16 12/01/17	08/09/16 12/01/17	50 50	ICW ICW	100 100				03/11/16 09/03/17	09/03/17 AY 17-18
21	R-MAA-FWA	MAA21: Fixed-Wing Aeromechanics	33		10	N	26/09/16	26/09/16	30/09/16	50 50	EX ICW	50 50				31/10/16 28/11/16	AY 17-18 AY 17-18
22	R-MAA-PS	MAA22: Propulsion Systems	27		10	N	05/12/16	05/12/16	09/12/16	50 50	EX ICW	50 50				09/01/17 06/02/17	AY17-18 AY 17-18
23	R-MAA-RWA	MAA23: Rotary-Wing Aeromechanics	30		10	N	07/11/16	07/11/16	11/11/16	40 40	EX ICW	50 50				12/12/16 09/01/17	AY 17-18 AY 17-18

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Contact hours[4]	Total hours delivered by Visiting Lecturers[5]	Credits	Is the module shared? Y/N	Calendar			Assessment							
							Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[6] - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
											Type of Assessment	Weighting within module (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
24	N-AW-AFDT	MAA24: Aircraft Fatigue and Damage Tolerance	30		10	Y	12/06/17	12/06/17	16/06/17	40	ICW	100				14/08/17	AY 17-18
25	N-HFS-HFAM	MAA25: Human Factors in Aviation Maintenance	30		10	Y	13/03/17	13/03/17	17/03/17	40 40	ICW GPRES	90 10				15/05/17 17/03/17	AY 17-18 AY 17-18

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
N-SAI-ISMS	MAA04: Aviation Safety Management	Safety and Human Factors in Aviation	- Airworthiness - Air Transport Management - Safety and Accident Investigation (Air Transport) - Military Aerospace and Airworthiness
N-AW-ATEMO	MAA05: Air Transport Engineering – Maintenance Operations	Airworthiness	- Air Transport Management - Safety and Human Factors in Aviation - Military Aerospace and Airworthiness
N-HFS-AAI	MAA06: Aircraft Accident Investigation and Response	Safety and Human Factors in Aviation	- Airworthiness - Forensic Engineering and Science - Military Aerospace and Airworthiness
N-AW-ICAS	MAA08: Design Durability and Integrity of Composite	Airworthiness	Military Aerospace and Airworthiness
N-AW-FAEC	MAA09: Fundamentals of Aircraft Engine Control	Airworthiness	- Military Aerospace and Airworthiness - Thermal Power
N-AEN-ASC	MAA12: Introduction to Aircraft Structural Crashworthiness	Aircraft Engineering	- Airworthiness - Military Aerospace and Airworthiness - Safety and Accident Investigation
N-AW-MIGT	MAA14: Mechanical Integrity of Gas Turbines	Airworthiness	Military Aerospace and Airworthiness
N-AW-RA	MAA17: Practical Reliability	Airworthiness	Military Aerospace and Airworthiness
N-AW-SAAS	MAA18: Safety Assessment of Aircraft Systems	Airworthiness	- Military Aerospace and Airworthiness - Safety and Accident Investigation (Air Transport)
N-HFS-AFDT	MAA24: Aircraft Fatigue and Damage Tolerance	Airworthiness	Military Aerospace and Airworthiness
N-HFS-HFAM	MAA25: Human Factors in Aircraft Maintenance	Safety and Human Factors in Aviation	- Military Aerospace and Airworthiness - Safety and Accident Investigation (Air Transport)

R-MAA-GW	MAA11: Guided Weapons	Military Aerospace and Airworthiness	• Military Vehicle Technology and Gun Systems Design

7. **How are the ILOs assessed?**

The following assessment types are utilised:

The assessment of candidates is based upon a combination of examinations, coursework assignments, and, for masters' course students, a research-based dissertation. Details of the precise methods of assessment for each module are included in the Module Descriptors and are summarized in the Course Specification.

The PgCert uses a mixture of written examinations and coursework assignments, which are designed to assess the understanding and application of the core elements of aerospace engineering and airworthiness.

In the PgDip the emphasis is on developing the understanding over a broader range of topics and to a greater depth of analysis. Students are encouraged to adopt a more holistic approach to their understanding and application of the engineering and management theories, concepts, applications and practices associated with military aerospace and airworthiness. Assessment methods include written examinations, technical essays and reports, analytical work, computer-based exercises and group activities.

To complete the course to the award of an MSc qualification, students must complete a research-based project. The project is assessed through a combination of an examination of the student's written dissertation and a viva voce examination. Suggestions for projects may come from a variety of sources: an individual student's sponsor, a member of the Cranfield academic staff, or the wider aerospace community, for example.

The project may be conducted at the student's place of work under the day-to-day supervision of their employer and the overall supervision of one or more members of the Cranfield academic staff.

This approach has been adopted because it provides a balanced approach to the overall course assessment.

Assessment and ILO Mapping

A. Postgraduate Certificate

Award ILOs Module No.	ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
00						
03	EX/ICW				ICW	
04	ICW		ICW			
18	ICW					ICW

15

Award ILOs / Module No.	ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
21	EX/ICW	ICW		EX/ICW		
22	EX/ICW	ICW		EX/ICW		

B. Postgraduate Diploma

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Award ILOs / Module No.	ILO 7	ILO 8	ILO 9
Dependent upon electives chosen	The ILOs achieved over and above those of the PgCert are based upon a more comprehensive, holistic, and systems-level understanding of the military aerospace, airworthiness and safety disciplines		

C. MSc

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Award ILOs / Module No.	ILO 10	ILO 11	ILO 12	ILO 13	ILO 14	ILO 15
19	THESIS OR	THESIS OR	OR	THESIS	THESIS	THESIS OR

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

Title	Modules Covered	Assessment	
		Type	Weight (%)

8. How will the University assure the quality of the provision?

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for

16

Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. **What opportunities are graduates likely to have on completing the course?**

The course will equip graduates with the knowledge and skills necessary for them to work effectively within MOD and the defence industry in areas of military aerospace technology, airworthiness and safety. This will open up opportunities to work in integrated project teams on matters of equipment procurement, support and maintenance and contribute effectively with customers and suppliers. In addition, the qualification obtained will support their professional development towards Incorporated or Chartered Engineer status. The students on the course are all employed in the defence sector and are generally taking the course as CPD.

COURSE SPECIFICATION

Cranfield University: Course Specifications

Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.

| COURSE TITLE: | MSc Military Construction Engineering (Civil) |
| | MSc Military Construction Engineering (Electrical and Mechanical) |

Date of first publication/latest revision: 15/08/16

1. What is the course?

Course information

Course Title	Military Construction Engineering (Civil)
	Military Construction Engineering (Electrical and Mechanical)
Course code	MSMCCPTR, PDMCCPTR, PCMCCPTR – Civil
	MSMEMPTR, PDMEMPTR, PCMEMPTR – Electrical and Mechanical
Academic Year	2016/17
Valid entry routes	MSc
Exit routes	MSc, PgDip, PgCert
Mode of delivery	Part-time
Location of Study	Chatham
School(s)	Cranfield Defence and Security
Theme	Engineering
Centre	Royal School of Military Engineering
Awarding Body	Cranfield University
Teaching Institution	Royal School of Military Engineering (RSME) in conjunction with MKC Training Services Ltd (MKC TS)
Admissions body	Cranfield University
Entry requirements	Principally, a captain or major within the Royal Engineers with at least:
	One full tour at Regimental Duty and 4 years to run on their commission, on completion of the course.
	A 1st or 2nd class honours degree or equivalent in a subject accredited by the relevant professional institution (ICE, IMechE, IET or CIBSE). [Unless exceptionally otherwise agreed by the Course Director]
UK Qualifications Framework Level	QAA FHEQ Level 7 (Masters)
Benchmark Statement(s)	N/A

Registration Period(s) available	25 months
Course Start Month(s)	June

Institutions delivering the course

The MSc is a closed military course with strict limits on the number of students. It provides trained and qualified engineering officers who should then be able to charter in order to fulfil operational roles within the Royal Engineers. It is delivered at the Royal School of Military Engineering (RSME), Chatham, as part of the Professional Engineer Training (Civil) (PET(C)) and Professional Engineer Training (Electrical and Mechanical) (PET(E&M)) courses. There are 2 streams within the MSc; civil and, electrical and mechanical. These streams are reflected on the award certificates.

The delivery of the course lies completely with the Authority (MOD) and is exercised through the Chief Instructor of Professional Engineering Wing (CI PEW), who answers directly to the 1* Commandant of the RSME. The awards of the MSc, PgCert and PgDip are made through Cranfield University, having been endorsed by the MSc Examination Board.

On 5 January 2009, the RSME entered into a 30-year partnership with Holdfast Training Services (HTS) for the delivery of a substantial portion of its training and education. The military staffs from PEW are heavily reinforced by civilian senior lecturers who are employed by MKC TS, which is a sub-contractor of HTS. The lecturers currently employed by MKC TS include some of the Cranfield Recognised Teachers (CRTs) that existed before the partnership commencement date. Additional senior lecturers recruited by MKC TS are mentored and put forward for CRT status at the earliest opportunity.

Cranfield University interacts with the following institutions and in the following ways:

Students undertake their thesis work off both Shrivenham and Chatham campuses whilst they are on attachments to civilian civil engineering contractors and consultants.

- The US Army Corps of Engineers (USACE) in order to facilitate attachments in the US.
- John Holland Group and Brookfield Multiplex in Australia in order to facilitate attachments in Australia
- Major UK contractors, such as Laing O'Rourke and BAM Nuttall, and consultants, such as Arup, as required in order to facilitate attachments within the UK.

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

The existing MSc programme has been accredited by the following Professional Engineering Institutions:

	Renewal Date
The Institution of Civil Engineers (ICE)	November 2020
The Institution of Engineering and Technology (IET)	November 2017
The Institution of Mechanical Engineers (IMechE)	November 2017
Chartered Institution of Building Services Engineers (CIBSE)	November 2017

In July 2014 PEW was audited by the Engineering Accreditation Board and the MSc Military Construction Engineering has now been accredited by the Engineering Council.

2. What are the aims of the course?

The aim of the course is to:

- Deliver 'further learning' to specific Royal Engineer officer volunteers in order that they become academically qualified to gain Chartered Engineer status within either the ICE, IET, IMechE or CIBSE.
- Prepare specific Royal Engineer officers to deliver essential infrastructure on operations for UK deployed forces and other government departments worldwide.

Postgraduate Diploma (PgDip) and Postgraduate Certificate (PgCert) exit routes are provided for students who do not, or who are unable to complete the full course

This programme is intended for the following range of students:

- Royal Engineer officers (senior captains and junior majors).
- Recommended engineer officers of NATO and allied armies.
- Appropriate personnel from within the MOD Civil Service such as the Defence Infrastructure Organisation.

3. What should students expect to achieve in completing the course?

Award intended learning outcomes (ILOs) (skills and knowledge).

A. Postgraduate Certificate in Military Construction Engineering

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1. Evaluate established techniques of research and enquiry to create and interpret engineering knowledge.

ILO 2. Assess in detail how the behaviour and characteristics of construction materials and services are codified for design

ILO 3. Develop and justify sound, professional judgement, particularly in the absence of complete data.

ILO 4. Justify, clearly and confidently, orally and in writing, options to specialist and non-specialist audiences.

ILO 5. Develop competence of the operation of construction contracts including commercial and financial imperatives

B. Postgraduate Diploma in Military Construction Engineering

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 6. Develop a high degree of competence in the practical design and/or execution of construction, mechanical or electrical works; include health, safety and welfare; sustainability and project/contract management implications where appropriate.

ILO 7.   Critically appraise a real-life construction project, in either the design or the construction phase. Apply sound professional judgement in appraisal of methods and techniques chosen for design or execution of works towards successful completion. Defend the choice of methods and techniques, both orally and in writing, to specialist and non-specialist audiences.

C. MSc in Military Construction Engineering

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 8.   Evaluate a complex engineering issue and present research through a written report.

4. How is the course taught?

Students will be supported in their learning and personal development by:

- External visiting lecturers who are subject matter experts in their own particular fields.
- Site visits in order to study specific aspects of engineering.
- Visiting selected students on the senior courses during their attachments to contractors.
- Participation in local Institution events such as the ICE Emerging Engineers competition.
- Visiting the major Royal Engineers organisations which are responsible for the delivery of infrastructure engineering on operations.
- Visiting those Professional Institutions relevant to their future professional development.
- Personal mentoring by experienced RSME or MKC TS staff for Chartered Professional Review/Professional Review Interview (CPR/PRI) of their chosen Institution.

5. What do students need to achieve in order to graduate?

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A.   Postgraduate Certificate
The accumulation of 80 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES: CIVIL:	
Com 1-2 Com 2 Com 3 C1–C7	8 5 5 62
ELECTIVE MODULES:	
N/A	N/A
TOTAL:	**80**

4

Description	Credits
COMPULSORY MODULES: ELECTRICAL & MECHANICAL:	
Com 1-3 Com 2 Com 3 E1–E8	8 5 5 62
ELECTIVE MODULES:	
N/A	N/A
TOTAL:	**80**

B.   Postgraduate Diploma

The accumulation of 140 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES: CIVIL	
Com 1-2 Com 2 Com 3 C1 – C7 Com 4–Com 7	8 5 5 62 60
ELECTIVE MODULES:	
N/A	N/A
TOTAL:	**140**

Description	Credits
COMPULSORY MODULES: ELECTRICAL & MECHANICAL	
Com 1-3 Com 2 Com 3 E1–E8 Com 4–Com 7	8 5 5 62 60
ELECTIVE MODULES:	
N/A	N/A
TOTAL:	**140**

C.   MSc

In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES: CIVIL	
Com 1-2 Com 2	8 5

Description	Credits
Com 3	5
C1 – C7	62
Com 4–Com 7	60
Com 8	60
ELECTIVE MODULES:	
N/A	N/A
TOTAL:	**200**

Description	Credits
COMPULSORY MODULES: ELECTRICAL & MECHANICAL	
Com 1-3	8
Com 2	5
Com 3	5
E1–E8	62
Com 4–Com 7	60
Com 8	60
ELECTIVE MODULES:	
N/A	N/A
TOTAL:	**200**

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria
The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does not have discretion to overrule this limit, but can refer a case to Senate's Education Committee);[1][2]
- **For Taught Assessments,** the minimum mark for each individual taught assessment on the first attempt for the significant majority of the taught assessments, noting that:
  - if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit

---

[1] For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2] Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);

- o if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);
- o it is <u>not</u> permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

6. <u>How is the course structured?</u>

Students are selected for the course in the October of the preceding year having been interviewed by Chief Instructor PEW and Senior Instructor (Professional Engineer Training). They start the course in June and are expected to complete the full MSc course within 25 calendar months. In outline the course is as follows:

Phase	Length	Details
1	8-9 months	Full-time taught course at RSME Can lead to PgCert at the end of Phase 1
2	11-10 months	Attachment to a contractor
3	6 months	Attachment to a consultant Can lead to PgDip at the end of Phase 3.
N/A	N/A	Write thesis during attachments
4	2-3 weeks	Return to RSME to present on attachments, defend thesis if required. Update on military matters, prepare for CPR.

Course modules

The following modules outline all parts of the programme leading to an **MSc**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment						
							Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
											Type of Assessment	Weighting within module[6] (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
PHASE 1 –RSME																	
CIVIL STREAM																	
C1	R-MCE-STRUC	Structural Analysis	51	0	8	N		26 Jul 16	12 Sep 16	50	EX	100				12 Sep 16	

---

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

8

Module Number	Module code	Title	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
C2	R-MCE-APPSTR	Applied Structures	63	0	8	N		30 Aug 16	2 Feb 17	40 40	EX GCW	40 60				30 Jan 17	NK
C3	R-MCE-SD	Steel Design	57	6	10	N		8 Aug 16	6 Oct 16	40	ICW	100				3 Oct 16	NK
C4	R-MCE-CD	Concrete Design	54		10	N		27 Sep 16	17 Nov 16	40	ICW	100				14 Nov 16	NK
C5	R-MCE-ASM	Applied Soil Mechanics	60		10	N		11 Oct 16	8 Dec 16	40	ICW	100				5 Dec 16	NK
C6	R-MCE-FE	Applied Foundation Engineering	21		8	N		25 Jan 17	16 Feb 17	40	GCW	100				13 Feb 17	NK
C7	R-MCE-RPD	Roads, Drainage and Survey	18		8	N		9 Dec 16	12 Jan 17	40	GCW	100				9 Jan 17	NK
ELECTRICAL AND MECHANICAL STREAM																	
E1	R-MCE-	Mechanical Engineering	60		5	N		26 Jul 16	31 Oct 16	50	EX	100				31 Oct 16	NK

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

9

Module Number	Module code	Title	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Type of Assessment	Weighting within module[6] (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
	ME																
E2	R-MCE-EE	Electrical Engineering	48		5	N		26 Jul 16	14 Nov 16	50	EX	100				14 Nov 16	NK
E3	R-MCE-MBS	Mechanical Building Services	69		8	N		6 Oct 16	6 Jan 17	40	ICW	100				3 Jan 17	NK
E4	R-MCE-EBS	Electrical Building Services	45		10	N		5 Dec 16	25 Jan 17	40	ICW	100				23 Jan 16	NK
E5	R-MCE-WF	Water and Wastewater	24		8	N		15 Sep 16	5 Oct 16	40	ICW	100				3 Oct 16	NK
E6	R-MCE-EPD	Electrical Power Distribution	63		10	N		11 Jan 17	17 Feb 17	40	ICW	100				15 Feb 17	NK
E7	R-MCE-EAC	Electronics and Controls	36		8	N		1 Nov 16	25 Nov 16	40 40	EX GCW	25 75				23 Nov 16	NK
E8	R-MCE-FDP	Final Design Project	0		8	N		19 Sep 16	10 Mar 17	40	GCW	100				6 Mar 17	NK

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment						
							Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
											Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7](100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
COMMON MODULES																	
Com 1-1	R-MCE-INTRO	Foundation Introduction	84		0	N		08 Jun16	15 Jul16	N/A	AO	N/A					NK
Com 1-2	R-MCE-EMD	Electrical and Mechanical Design	45		8	N		17 Jun 16	15 Jul 16	40	GCW	100				14 Jul 16	NK
Com 1-3	R-MCE-CSD	Civil & Structural Design	42		8	N		15 Jun 16	15 Jul 16	40	GCW	100				14 Jul 16	NK
Com2	R-MCE-PPO	Project Procurement and Organisation	27		5	N		25 Jul 16	2 Sep 16	40	EX	100				2 Sep 16	NK
Com3	R-MCE-PCM	Project and Contract Management	30		5	N		31 Oct 16	28 Nov 16	50	EX	100				28 Nov 16	NK
PHASE 2 & 3 -ATTACHMENTS[10]																	

[10] Dates will be available January 2017

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Module Number	Module code	Title	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment						
							Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
											Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
Com4	R-MCE-TMR1	Technical and Managerial Reports	0		15	N		01 Apr 17	22 May 17	50	ICW	100				NYK	NK
Com5	R-MCE-TMR 2	Technical and Managerial Reports	0		15	N		29 May 17	14 Aug 17	50	ICW	100				NYK	NK
Com6	R-MCE-TMR3	Technical and Managerial Reports	0		15	N		21 Aug 17	09 Oct 17	50	ICW	100				NYK	NK
Com7	R-MCE-TMR4	Technical and Managerial Reports	0		15	N		16 Oct 17	05 Feb 18	50	ICW	100				NYK	NK
Com8	R-MCE-DISS	Thesis	0		60	N		17 Apr 17	07 May 18	50	THESIS	100				NYK	Nil

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module

7. How are the ILOs assessed?

A coherent range of assessment methods is used throughout the course. During the first 7 months (Phase 1), all students can expect to have 4 written examinations and 6 pieces of assessed project work, with each of the latter comprising up to 65 hours of work. Group work forms part of some of the projects.

During the subsequent 18 months (Phases 2 and 3) PgDip/MSc students can expect to complete four 3000-word Technical and Managerial Reports. This is over and above the five 3000-word Attachment Experience Reports that they are required to submit as part of the Professional Engineer Training courses. Finally, they will make a 20-minute presentation, with a further 5 minutes of questioning, on their site/design office attachments.

MSc students can expect to complete a 10,000 – 15,000 word thesis and must be prepared to undergo a *viva voce*.

This approach has been adopted because, besides the few formal examinations, the design projects and technical reports form:

- The basis of the training for the officers' roles when they return to the Field Army.

- A firm base from which the officers can seek to attain Chartered Engineer status.

Assessment and ILO Mapping

Complete the grid below by inserting in the boxes which assessments from the modules directly assess the Award ILOs.

(Module numbers should correspond with those used in the Course module table above.)

A. Postgraduate Certificate

Award ILOs / Module No.	ILO 1	ILO 2	ILO 3	ILO 4	ILO 5
Civil					
C1	EX				
C2	EX GCW	EX GCW	EX GCW	EX GCW	
C3	ICW	ICW	ICW	ICW	
C4	ICW	ICW	ICW	ICW	
C5	ICW	ICW	ICW	ICW	
C6	GCW	GCW	GCW	GCW	
C7	GCW	GCW	GCW	GCW	
Electrical & Mechanical					
E1	EX				

E2	EX				
E3	ICW	ICW	ICW	ICW	
E4	ICW	ICW	ICW	ICW	
E5	ICW	ICW	ICW	ICW	
E6	ICW	ICW	ICW	ICW	
E7	GCW EX	GCW	GWC EX	GCW EX	
E8	ICW	ICW	ICW	ICW	
Common					
Com 1-1	Nil	Nil	Nil	Nil	
Com 1-2	GCW			GCW	
Com 1-3	GCW			GCW	
Com 2					EX
Com 3					EX

B. Postgraduate Diploma

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Module No. / Award ILOs	ILO 6	ILO 7
Com 4	ICW	ICW
Com 5	ICW	ICW
Com 6	ICW	ICW
Com 7	ICW	ICW

C. MSc

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Module No. / Award ILOs	ILO 8
Com 8	THESIS

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

Title	Modules Covered	Assessment	
		Type	Weight (%)

8. How will the University assure the quality of the provision?

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for

Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. **What opportunities are graduates likely to have on completing the course?**

Subject to individual ability, the full range of opportunities for advancement and employment in the Corps of Royal Engineers is open to officers completing the course, both in the generalist and Professional Qualified Officer streams.

Officers are encouraged to undertake the Chartered Professional Review of their preferred Institution as soon as possible after the course and are offered extensive assistance to enhance the likelihood of a successful outcome at the first attempt. Being 'Chartered' is a prerequisite for promotion to lieutenant colonel within the technical roster

COURSE SPECIFICATION

<u>**COURSE SPECIFICATION**</u>

Cranfield University: Course Specifications

Course specifications outline the content and structure of a course leading to an award of Cranfield University. This version of the course specification has been approved by Education Committee and every effort has been made to ensure the accuracy of the information.

COURSE TITLE: MSc in Military Electronic Systems Engineering

Date of first publication/latest revision: 24/08/2016

---

1. <u>What is the course?</u>

Course information

Course Title	Military Electronic Systems Engineering Including: Communications Electronic Warfare PgCert Sensors Electronic Warfare PgCert
Course code	**MSMESFTR, PDMESFTR, MSMESPTR, PDMESPTR – PCCEWPTR – PCSEWPTR - SPMESPTR**
Academic Year	2016/2017
Valid entry routes	MSc, PgDip, PgCert
Exit routes	MSc, PgDip, PgCert
Mode of delivery	Full-time and Part-time
Location of Study	Shrivenham
School(s)	Cranfield Defence and Security
Theme	Defence and Security
Centre	Electronic Warfare and Information Centre (EWIC)
Awarding Body	Cranfield University
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	Standard University entry requirements
UK Qualifications Framework Level	QAA FHEQ level 7 (Masters)
Benchmark Statement(s)	N/A
Registration Period(s) available	Full time registration is for 1 year A part time student who registers for the PgCert will have a registration period of 3 years. For the PgDip this will be 4 years, and for the MSc 5 years.
Course Start Month(s)	September

Institutions delivering the course

This course is delivered by School of Defence and Security and largely by staff within the Electronic Warfare Centre, where the research interests include electro-magnetic systems and devices, radar systems and radar development, communications principles and networks, electro-optics including seekers, laser systems and image processing.

Cranfield University remains fully responsible for the quality of the delivery of the course.

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

This course is not accredited by any external bodies.

2. What are the aims of the course?

Cranfield University offers this MSc course in order to provide education and training in selected electronic military systems. The main object of the course is to bring together the wide variety of disciplines involved and present them in an integrated manner, emphasising the system aspects.

The formal aims of the course are as follows:

- The aim of the Postgraduate Certificates is to provide students with a detailed knowledge and understanding of either military communications or sensors systems with particular regard to electronic warfare.
- The aim of the Postgraduate Diploma course is to provide students with a detailed knowledge and understanding of military electronic warfare systems consisting of both communications and sensor systems.
- In addition, the MSc course enables the student to carry out an in-depth investigation into an area of electronic warfare to further enhance their analytical capability.
- Successful graduates of this course should be fully equipped for roles in defence intelligence, systems development and acquisition, involving the specification and analysis of such systems.

This programme is intended for the following range of students:

Officers of the armed forces and for scientists and technical officers in government defence establishments and the defence or related industry. It is particularly suitable for those who, in their subsequent careers, will be involved with the specification, analysis, development, technical management or operation of military radar, electro optics, communications, sonar or information systems, where the emphasis is on an electronic warfare environment.

3. What should students expect to achieve in completing the course?

Award intended learning outcomes (ILOs) (skills and knowledge).

A. **Postgraduate Certificate in Communications Electronic Warfare**

In completing this course, and achieving the associated award, a diligent student should be able to:

ILO 1. Critically analyse the threat from Electronic Surveillance (ES) and Electronic Attack (EA) to typical military information systems

ILO 2. Propose strategies involving Electronic Defence (ED) mechanisms to such threats

ILO 3. Investigate and evaluate current and proposed ED methods and techniques to the threats previously defined

2

ILO 4. Evaluate the performance of a number of military information systems given a system description and relate this performance to the original specification

ILO 5. Assess quantitatively the performance of such systems in a hostile EW environment

B. Postgraduate Certificate in Sensors Electronic Warfare

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 1 Critically analyse the threat from Electronic Surveillance (ES) and Electronic Attack (EA) to typical military sensor systems

ILO 2. Propose strategies involving Electronic Defence (ED) mechanisms to such threats

ILO 3. Investigate and evaluate current and proposed ED methods and techniques to the threats previously defined

ILO 4. Evaluate the performance of a number of military sensor systems given a system description and relate this performance to the original specification

ILO 5. Assess quantitatively the performance of such systems in a hostile EW environment

C. Postgraduate Diploma in Military Electronic Systems Engineering

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 6. Critically analyse the threat from Electronic Surveillance (ES) and Electronic Attack (EA) to typical military sensor and information systems. Specifically, the systems include radar, sonar, electro-optic and infrared sensors, communications systems and networks, communications and non-communications EW systems

ILO 7. Propose strategies involving Electronic Defence (ED) mechanisms to such threats

ILO 8. Investigate and evaluate current and proposed ED methods and techniques to the threats previously defined

ILO 9. Evaluate the performance of a number of military sensor and information systems given a system description and relate this performance to the original specification

ILO 10. Assess quantitatively the performance of such systems in a hostile EW environment

ILO 11. Specify a system from those listed that will meet a detailed operational requirement analyse the performance of various ED mechanisms against defined levels of EA and ES

3

D. MSc in Military Electronic Systems Engineering

In addition to the intended learning outcomes outlined above, a diligent student would also be expected to:

ILO 12. Implement and document an extended research project in the field of EW requiring elements of information retrieval, modelling, experimentation and theoretical analysis

ILO 13. Implement and employ research methodology in an extended investigation based on recognised project management principles

4. How is the course taught?

The course is taught through lectures, tutorials and demonstrations where appropriate.

In addition to the teaching methods outlined above, students will be supported in their learning and personal development by:
- individual tutorials where necessary and practical
- group tutorials where necessary and practical

5. What do students need to achieve in order to graduate?

Notwithstanding University Regulations and the authorities and powers exercised by examiners, students will normally need to demonstrate achievement in the elements of the course, as laid out in Section 7. Courses are structured through the accumulation of credit, where 1 credit represents 10 notional learning hours.

In brief, students will normally need to achieve the following in order to be awarded the qualifications:

A. Postgraduate Certificate in Communications Electronic Warfare
The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
1 Electromagnetic Propagation and Devices	10
2 Signal Processing, Statistics and Analysis	10
3 Communications Principles	10
4 Communications Systems 1 and 2	20
11 Information Networks	10
ELECTIVE MODULES:	
N/A	
TOTAL:	**60**

B.   Postgraduate Certificate in Sensors Electronic Warfare

The accumulation of 60 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
1 Electromagnetic Propagation and Devices	10
2 Signal Processing, Statistics and Analysis	10
5 Radar Principles	10
6 Radar Electronic Warfare	10
7 Electro-optics and Infrared Systems I	10
8 Electro-optics and Infrared Systems 2	10
ELECTIVE MODULES:	
N/A	
TOTAL:	**60**

C.   Postgraduate Diploma

The accumulation of 120 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
1 Electromagnetic Propagation and Devices	10
2 Signal Processing, Statistics and Analysis	10
3 Communications Principles	10
4 Communications Systems 1and 2	20
5 Radar Principles	10
6 Radar Electronic Warfare	10
7 Electro-optics and Infrared Systems 1	10
8 Electro-optics and Infrared Systems 2	10
9 Advanced Sensor Data Processing	10
10 Advanced Radar	10
11 Information Networks	10
ELECTIVE MODULES:	
N/A	
TOTAL:	**120**

D.   MSc

In addition to the requirement for the Postgraduate Diploma outlined above, students must successfully complete the thesis. An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
1 Electromagnetic Propagation and Devices	10
2 Signal Processing, Statistics and Analysis	10
3 Communications Principles	10
4 Communications Systems 1and 2	20
5 Radar Principles	10
6 Radar Electronic Warfare	10

5

7 Electro-optics and Infrared Systems 1	10
8 Electro-optics and Infrared Systems 2	10
9 Advanced Sensor Data Processing	10
10 Advanced Radar	10
11 Information Networks	10
12. Project	80
ELECTIVE MODULES:	
N/A	
TOTAL:	**200**

If a student does not meet the required standards for the award, the examiners for the programme may decide to offer a lower award associated with the programme, providing that a lower exit award exists and the student meets the requirements of that lower award.

Pass Criteria

The University operates standard pass criteria which can be found in the Senate Handbook on Assessment Rules.

In order to achieve your award, you are required to achieve:

- An overall average mark of ≥50%;
- An average mark of ≥50% across the taught assessment;
- All assessments need to be completed and the minimum mark attained: no more than one failure to complete an assessment (as defined in Section 2.3) will be permitted throughout the course of your studies (Please note that the board of examiners does not have discretion to overrule this limit, but can refer a case to Senate's Education Committee);[1] [2]
- **For Taught Assessments,** the minimum mark for each individual taught assessment on the first attempt for the significant majority of the taught assessments, noting that:
  - if you fail to attain the minimum mark for **up to 30 learning credits**, you will be permitted to re-take all of those assessments (except for circumstances where a resit award capped at 50% would be insufficient to achieve an overall average mark of ≥50% across the taught assessments);
  - if, having failed to attain the minimum mark for 30 learning credits, you fail to obtain the minimum mark for **any additional learning credits** over the course of your studies you will be disqualified from the right to re-take the assessments: this will normally result in intended award failure. (Please note the board of examiners may at its discretion overrule this limit, but this is not an automatic right);
  - it is not permissible for you to fail an elective module and then proceed to take a different elective module in its place.
- **For Substantial pieces of assessment** (corresponding to ≥40 credits, which are not part of the taught assessment average), the pass mark of ≥50% (where they exist);
- **For the thesis,** a mark of ≥50% in order to receive a pass (where it exists).

---

[1] For students who were registered before 1 August 2015, the requirement to obtain a minimum mark for a taught assessment will not apply for taught assessment taken before 31 August 2015 (unless the assessment was designated as a "key assessment" under the previous Assessment Rules).

[2] Providing the minimum mark is met, a mark of 40-49% will be automatically compensated if a student's overall average taught assessment mark (including the failed assessment) is greater than 50%. Students are advised, however, that they retain the right to re-take an assessment with a mark of <40% (but should note that a re-take attempt will be capped at 50%), as long as they haven't failed more than 30 credits. At the discretion of the Board of Examiners or by Board of Examiners Chair's Actions a student may be permitted a re-take attempt of modules in the range of 40-49% only if the average mark of their other taught modules would not allow them to qualify for their award (<50%).

6. How is the course structured?

Students register for the course in September and are expected to complete the full time MSc within 48 weeks and the PgDip within 40 weeks.
This course is also offered on a part-time basis. Students would instead be permitted a maximum of 5 years to complete the MSc, 4 years to complete the Diploma and 3 years to complete the Certificate.

With the exception of Communications 1 and 2 each module is taught over one week, but includes a week preparation time and will be followed by a week of consolidation / coursework. The weeks preceding and following the taught week are normally free of structured teaching. Communications 1 and 2 is taught over two separate weeks. Part-time students registering for this module should complete both teaching weeks and the module assessment **in the same academic year**.

Course modules

The following modules outline all parts of the programme leading to an **MSc**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment						
							Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment			Multi-part Assessment			Submission dates	
											Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
1	R-MES-EPD	Electromagnetic Propagation and Devices	45	0	10	N	05/09/16	05/09/16	16/09/16	50	ICW	100%				14/10/16 FT 28/10/16 PT	13/01/17
2	R-MES-SPSA	Signal Processing, Statistics and Analysis	30	0	10	Y	26/09/16	26/09/16	30/09/16	50			100	ICW ICW ICW	40 40 20	28/10/16 FT 11/11/16 PT 28/10/16 FT 11/11/16 PT 28/10/16 FT 11/11/16 PT	20/01/17

---

[3] Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

[4] Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

[5] A mark of 50% is required to pass the assessment however, where the stated minimum mark is 40%, a mark of 40-49% may be compensated by good performance in other modules providing that the overall average is ≥50%. This will be at the Board of Examiners discretion.

[6] For **independent assessments** please record type and weighting of each separate piece of assessment individually.

[7] For **multi-part assessments** please record the overall weighting of module which should be 100%.

[8] Failure to submit an element of a **multi-part assessment** will **not** require remedial action if the absence of the marks for the assignment still results in a pass for the assessment (whether 40 or 50% as appropriate). If, however, the absence of marks fails to meet the minimum mark for the module then **all** elements of the assessment must be re-taken.

[9] Please ensure you include submission dates for both FT and PT students and that you give details of the submission date for each individual element of a multi-part assessment.

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis SUP – Supervisor's assessment

Module Number	Module code	Title	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Calendar			Minimum Mark[5] - 40% or 50%	Assessment						
							Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date		Independent Assessment		Multi-part Assessment			Submission dates	
											Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
3	R-MES-CP	Communication Principles	30	0	10	N	31/10/16	31/10/16	04/11/16	50			100	ICW	60	02/12/16 FT 16/12/16 PT	03/03/17
														ICW	40	02/12/16 FT 16/12/16 PT	
4	R-MES-CS	Communication Systems I and II[10]	60	0	20	N	14/11/16	14/11/16	18/11/16	50	ICW	25				16/12/16 FT 13/01/17 PT 04/04/17	24/03/17
							06/02/17	06/02/17	10/02/17	50	EX	75					23/05/17
5	R-MES-RP	Radar Principles	30	0	10	Y	28/11/16	28/11/16	02/12/16	50			100	ICW		13/01/17 FT 13/01/17 PT	24/03/17
6	R-MES-REW	Radar Electronic Warfare	30	0	10	Y	23/01/17	23/01/17	27/01/17	50	ICW	100%				24/02/17 FT 10/03/17 PT	26/05/17
7	R-MES-EOIS1	Electro-optics and Infrared Systems I	32	0	10	Y	10/10/16	10/10/16	14/10/16	50	EX	100%				20/12/16	21/02/17
8	R-MES-EOIS2	Electro-optics and Infrared Systems II	32	0	10	Y	09/01/17	09/01/17	13/01/17	50	ICW	100%				10/02/17 FT 24/02/17 PT	05/05/17

[10] Part-time students taking Communication Systems 1 and 2 should complete both weeks and the assessment in the same academic year

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis SUP – Supervisor's assessment

9

Module Number	Module code	Title	Contact hours[3]	Total hours delivered by Visiting Lecturers[4]	Credits	Is the module shared? Y/N	Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark[5] - 40% or 50%	Independent Assessment Type of Assessment	Weighting within module6 (%) of Independent assessments	Weighting within module of multi-part assessments[7] (100%)	Multi-part Assessment Type of Assessment	Weighting of individual elements of multi-part assessment[8]	Assessment Submission and/or exam date[9]	Assessment / Exam Retake date
9	R-MES-ASDP	Advanced Sensor Data Processing	30	0	10	N	27/03/17	27/03/17	31/03/17	40			100	ICW		28/04/17FT 12/05/17 PT	21/07/17
10	R-MES-AR	Advanced Radar	30	0	10	N	27/02/17	27/02/17	03/03/17	40			100	ICW ICW	60 40	31/03/17 FT 21/04/17 PT 31/03/17 FT 21/04/17 PT	30/06/17
11	R-MES-IN	Information Networks	30	0	10	N	13/03/17	13/03/17	17/03/17	40	ICW	100%				21/04/17 FT 28/04/17 PT	07/07/17
12	R-MES-DISS	Project	50	0	80	N	10/04/17	10/04/17	14/07/17	50			100%	THESIS SUP OR	50% 25% 25%	13/7/17 13/7/17 25/7/17	19/9/17

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination ; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS - thesis SUP – Supervisor's assessment

Military Electronic Systems Engineering COURSE SPECIFICATION
QA&E Version: 1.7 October 2016   Course / SAS Version:

Please list all modules that are shared with another existing course.

Module code	Module title	Course that owns the module	Course(s)/programme(s) that share the module
R-MES-EOIS1	Electro-optics & Infrared Systems I	Military Electronic Systems Engineering	Guided Weapons Systems
R-MES-EOIS2	Electro-optics & Infrared Systems II	Military Electronic Systems Engineering	Guided Weapons Systems
R-MES-RP	Radar Principles	Military Electronic Systems Engineering	Guided Weapons Systems
R-MES-REW	Radar Electronic Warfare	Military Electronic Systems Engineering	Guided Weapons Systems
R-MES-SPSA	Signal Processing, Statistics and Analysis	Military Electronic Systems Engineering	Guided Weapons Systems

7. How are the ILOs assessed?

The course uses a range of assessment types. Students can expect to have written examinations, pieces of assessment by submitted work and project assessment by written work, presentation and viva.

This approach has been adopted in order to best suit the nature of the individual modules and their content.

Assessment and ILO Mapping

Complete the grid below by inserting in the boxes which assessments from the modules directly assess the Award ILOs.

(Module numbers should correspond with those used in the Course module table above.)

For Example:

Award ILOs Module No.	ILO 1.	ILO 2.	ILO 3.	ILO 4.	ILO 5.	ILO 6.	ILO 7.	ILO 8.	
98	ICW				EX	EX	ICW		
99	ICW1		ICW1	ICW2					

A. Postgraduate Certificate in Communications Electronic Warfare

Award ILOs / Module No.	ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6	ILO 7	ILO 8
1	ICW							
2		ICW	ICW	ICW	ICW			
3	ICW	ICW		ICW				
4	ICW	ICW EX	ICW EX	ICW EX	EX			
11	ICW		ICW	ICW	ICW			

B. Postgraduate Certificate in Sensors Electronic Warfare

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Award ILOs / Module No.	ILO 1	ILO 2	ILO 3	ILO 4	ILO 5
1	ICW				
2		ICW	ICW	ICW	ICW
5		ICW	ICW	ICW	ICW
6		ICW	ICW	ICW	ICW
7	EX	EX	EX	EX	EX
8	ICW	ICW	ICW	ICW	ICW

C. MSc in Military Electronic Systems Engineering

In addition to those outlined above, the Award intended learning outcomes are assessed by the following module assessments:

Award ILOs / Module No.	ILO 6	ILO 7	ILO 8	ILO 9	ILO 10	ILO 11
9	ICW	ICW	ICW	ICW	ICW	ICW
10	ICW	ICW	ICW	ICW	ICW	ICW
12	IPROJ	IPROJ	IPROJ	IPROJ	IPROJ	IPROJ

CROSS-MODULAR ASSESSMENT (including any assessment which rests outside an individual module)

Title	Modules Covered	Assessment	
		Type	Weight (%)

8. **How will the University assure the quality of the provision?**

New course proposals are reviewed by a Course Validation Panel, comprising at least the following membership: normally one subject matter expert external to the School or University, at least 3 academic staff not associated with the proposal. The Panel may include 1 member of professional staff. Panels are supported by an appropriately trained Secretary who acts as advisor to the Panel. Proposals are reviewed in line with the Quality Assurance Agency for Higher Education (QAA) Quality Code, in particular Chapter B1 (Programme Design and Approval) and in the case of partnership arrangements in accordance with Chapter B10 (Managing Higher Education with Others). New courses are ultimately approved by the University's Education Committee, on behalf of Senate.

Course changes are approved by the School's Director of Education on behalf of Education Committee and Senate. Significant changes to a course will be referred to a Course Review Panel at the discretion of the Director of Education.

The University has in place regular monitoring procedures for quality assurance including an Annual Reflective Review for each course and an in depth 6 year review of each School's (total) educational provision known as the Senate Review. For collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focussed Review which looks at each course in depth. In addition occasional site inspection visits are made.

Each course has at least one External Examiner who monitors all aspects of the assessment process. This is in line with the guidance provided by the QAA particularly in Chapter B7 (External Examining) which emphasises that external examining is one of the principal means for maintaining UK threshold academic standards within autonomous higher education institutions.

Each course has a formally constituted Examination Board, which includes the External Examiner, and which is responsible for ensuring that awards are made within the Regulations of the University and that students are made awards on the basis of meeting the specified Intended Learning Outcomes of a course at the appropriate standard.

Each course has a formally constituted Course Committee which meets at least twice a year to discuss, inter alia, programme design and planning, the student experience (including feedback) and student progress.

Each course has an Industry Advisory Panel (or similar) which meets at least once a year to engage with external stakeholders on curriculum design and currency of course content.

Student feedback both qualitative and quantitative is collected for each module studied. In addition students are invited to participate in the University's annual New Student Survey and Student Satisfaction Survey along with the annual national Postgraduate Taught Student Experience Survey. The results of all feedback are considered by the Course Committee and additionally, in respect of the University and national surveys, issues of quality are considered by and acted on where appropriate by the Education Committee, Senate, School and University Executives.

9. **What opportunities are graduates likely to have on completing the course?**

Successful graduates of this course should be fully equipped for roles in defence intelligence, systems development and acquisition, involving the specification and analysis of such systems, working individually or as part of a team either in the military or in the defence industry.