



Course Libraries 2017/18

Courses G – M

Course	Pages
Geographical Information Management	3 – 18
Geospatial Intelligence	19 – 33
Geothermal Engineering	34 – 47
Global Product Development and Management	48 – 62
Guided Weapon Systems	63 – 79
Information Capability Management	80 – 94
Innovation and Creativity in Industry	95 – 108
International Defence and Security	109 – 122
Investment Management	123 – 136
Land Reclamation and Restoration	137 – 151
Logistics and Supply Chain Management	152 – 169
Logistics and Supply Chain Management (Executive)	170 – 181
Management	182 – 194
Management and Corporate Sustainability	195 – 206
Management and Entrepreneurship	207 – 223

Management and Information Systems	224 – 239
Manufacturing Technology and Management	240 – 257
MBA	258 – 275
MBA (Executive)	276 – 292
Military Aerospace and Airworthiness	293 – 311
Military Construction Engineering	312 – 328
Military Electronic Systems Engineering	329 – 343

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 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	2017/18
Valid entry routes	MSc, PgDip, PgCert
Additional Exit routes	PgDip, PgCert
Mode of delivery	Full-time, Part-time
Location(s)¹ of Study	Cranfield
School(s)	School of Water, Energy and Environment
Theme	Environment & Agrifood
Centre	Cranfield Soil and Agrifood Institute
Course Director	Dr Toby Waine
Awarding Body	Cranfield University
Is this an AP Contract course?²	No
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)

¹ If any part of this course is delivered at another site, please note which one(s) here

² AP Contract courses are provided by Cranfield University to the MoD as part of the Academic Provider contract

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 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). This accreditation is ongoing and is 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 to address problems faced by industrial clients; creating new problem diagnoses, designs, or system insights; and communicating findings in a professional manner in written, oral and visual forms.

C. MSc in Geographical Information Management

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

- ILO 8. Define a research question, develop aim(s) and objectives, select and execute a methodology, analyse data, evaluate findings critically and draw justifiable conclusions, demonstrating self-direction and originality of thought.
- ILO 9. To communicate their individual research via a thesis and in an oral presentation in a style suitable for academic and professional audiences.

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 6. 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 Week	0
Aerial Photography and Digital Photogrammetry	10
GIS Fundamentals	10
Spatial Data Management	10
Environmental Resource Survey	10
Spatial Data and the Internet	10
ELECTIVE MODULES:	
One of the following modules:	
Image Processing and Analysis	10
Modelling Environmental Processes	10
Physical Principles of Remote Sensing	10
Applied Environmental Informatics	10
Advanced GIS Methods	10
Landscape Ecology	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:	
Induction Week	0
Aerial Photography and Digital Photogrammetry	10
GIS Fundamentals	10
Spatial Data Management	10
Environmental Resource Survey	10
Spatial Data and the Internet	10
Group Project (Full Time Student)	40
ELECTIVE MODULES:	
Image Processing and Analysis	10
OR	
Modelling Environmental Processes	10
Physical Principles of Remote Sensing	10
OR	
Applied Environmental Informatics	10
Advanced GIS Methods	10
OR	
Landscape Ecology	10
(or any 3 for part time students)	
Part Time Students:	
Group Project	40
OR	
Dissertation	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:	
Induction Week	0
Aerial Photography and Digital Photogrammetry	10
GIS Fundamentals	10
Spatial Data Management	10
Environmental Resource Survey	10
Spatial Data and the Internet	10
Group Project (Full Time Students)	40
Thesis	80
ELECTIVE MODULES:	

Image Processing and Analysis OR Modelling Environmental Processes	10 10
Physical Principles of Remote Sensing OR Applied Environmental Informatics	10 10
Advanced GIS Methods OR Landscape Ecology	10 10
(or any 3 for part time students)	
Part Time Students: Group Project OR Dissertation	40 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 $\geq 50\%$;
- An average mark of $\geq 50\%$ 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);^{3 4}
- **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 $\geq 50\%$ across the taught assessments);

³ 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).

⁴ 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%).

- 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 $\geq 50\%$ (where they exist);
- **For the thesis**, a mark of $\geq 50\%$ 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.

Part time students would be strongly encouraged to join the course at the start of the new academic year to coincide with induction for full time students. If they however join in year then ad hoc induction sessions can be arranged as required.

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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
1	I-ENV-INWK	Induction Week	T Brewer	33		0	Y		02/10/17	06/10/17	N/A	AO	N/A				N/A	
2	I-GIM-A1135	Aerial Photography & Digital Photogrammetry	T Brewer	50		10	Y		09/10/17	13/10/17	40	ICW	100				FT - 21/10/2017 PT - 04/11/2017	Week 9 - 4-8 June 2018
3	I-GIM-A1131	GIS Fundamentals	T Brewer	42		10	Y		23/10/17	27/10/17	40	ICW	100				FT - 04/11/2017	Week 9 - 4-8 June

⁵ Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

⁶ Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

⁷ 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.

⁸ For **independent assessments** please record type and weighting of each separate piece of assessment individually.

⁹ For **multi-part assessments** please record the overall weighting of module which should be 100%.

¹⁰ 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.

¹¹ 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
																	PT - 18/11/2017	2018
4	I-GIM-A1134	Spatial Data Management	S Hallett	33		10	N		06/11/17	10/11/17	40	ICW	100				FT - 18/11/2017 PT - 02/12/2017	Week 9 - 4-8 June 2018
5	I-GIM-A1129	Image Processing and Analysis	T Waine	35		10	N		20/11/17	24/11/17	40	ICW	100				FT - 02/12/2017 PT - 16/12/2017	Week 9 - 4-8 June 2018
6	I-EI-A1001	Modelling Environmental Processes	R Corstanje	26		10	Y		20/11/17	24/11/17	40			100	IPRES ICW	60 40	IPRES - FT/PT Week comm: 27/11/17 ICW - FT 02/12/17 PT 16/12/17	Week 9 - 4-8 June 2018
7	I-GIM-A1130	Physical Principles of Remote Sensing	T Waine	20		10	N		04/12/17	08/12/17	40	EX	100				FT/PT - Exam Week 2 Week	Week 9 - 4-8 June 2018

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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
																	commencing, 3 Jan 18	
8	I-EI-A1002	Applied Environmental Informatics	M Rivas Casado	45		10	N		04/12/17	08/12/17	40	ICW	100				FT - 16/12/17 PT - 06/01/18	Week 9 - 4-8 June 2018
9	I-GIM-A1132	Advanced GIS Methods	T Brewer	35		10	N		08/01/18	12/01/18	40	ICW	100				FT - 20/01/2018 PT - 03/02/2018	Week 9 -+ 4-8 June 2018
10	I-LAM-A1522	Landscape Ecology	R Corstanje	30		10	Y		08/01/18	12/01/18	40	ICW	100				FT - 20/01/18 PT - 03/02/18	Week 9 - 4-8 June 2018
11	I-GIM-A1133	Environmental Resource Survey	J Meersmans	40	3	10	N		22/01/18	26/01/18	40			100	ICW ICW	70 30	FT - 03/02/2018 PT - 17/02/2018	Week 9 - 4-8 June 2018
12	I-GIM-A1136	Spatial Data and the Internet	S Hallett	36.5		10	N		5/02/18	9/02/18	40	ICW	100				FT - 17/02/2018 PT -	Week 9 - 4-8 June 2018

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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
																	03/03/2018	
13	I-ENV-GRPP	Group Project	Supervisors	16		40	Y		19/02/18	04/05/18	50	GPROJ ICW	80 20				GPROJ - 01/05/2018 ICW - 05/05/2018	
14	I-ENV-DISS	Dissertation for part time students	Supervisors	10		40	N		02/10/17	28/09/18	50	IPROJ IPRES	80 20				28/09/18	
15	I-ENV-THESIS	Individual Research Project	Supervisors	20		80	Y		07/05/18	07/09/18	50	THESIS OR	90 10				3/9/18	

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.

<u>Module code</u>	<u>Module title</u>	<u>Course that owns the module</u>	<u>Course(s)/programme(s) that share the module</u>
I-GIM-A1135	Aerial Photography & Digital Photogrammetry	Geographical Information Management	<ul style="list-style-type: none"> • Land Reclamation and Restoration • Safety and Accident Investigation
I-GIM-A1131	GIS Fundamentals	Geographical Information Management	<ul style="list-style-type: none"> • Land Reclamation and Restoration • Safety and Accident Investigation • REMS EngD
I-EI-A1001	Modelling Environmental Processes	Environmental Water Management	<ul style="list-style-type: none"> • Geographical Information Management • Environmental Engineering
I-LAM-A1522	Landscape Ecology	Land Reclamation and Restoration	<ul style="list-style-type: none"> • Geographical Information Management

7. How are the ILOs assessed?

The following assessment types are utilised:

Students on the MSc will have one taught module assessed as a written examination, seven taught modules assessed as individual coursework, (eight if they do not choose the elective module which is assessed as a written examination), 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.

Assessment and ILO Mapping

Postgraduate Certificate

Award ILOs Module No.	ILO 1.	ILO 2.	ILO 3.	ILO 4.	ILO 5.	ILO 6.
2	ICW	ICW		ICW	ICW	ICW
3	ICW	ICW	ICW		ICW	ICW
4	ICW	ICW	ICW		ICW	ICW
11	ICW/ICW	ICW/ICW	ICW/ICW		ICW/ICW	ICW/ICW
12	ICW	ICW		ICW	ICW	ICW
5	ICW	ICW		ICW	ICW	ICW
6	IPRES/ICW	IPRES/ICW	IPRES/ICW		IPRES/ICW	
7	EX	EX	EX		EX	EX
8	ICW	ICW	ICW	ICW	ICW	

Award ILOs Module No.	ILO 1.	ILO 2.	ILO 3.	ILO 4.	ILO 5.	ILO 6.
9	ICW	ICW	ICW	ICW	ICW	ICW
10	ICW	ICW	ICW		ICW	

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.
13	GPROJ/ICW
14	IPROJ/IPRES

MSc

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

Award ILOs Module No.	ILO 8.	ILO 9.
15	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.

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.

New Partnership arrangements are considered in two stages:

1. The University Executive is responsible for ensuring appropriate due diligence has been undertaken in respect of the University's legal, financial, reputational and ethical responsibilities.
2. A Partnership Delivery Approval Panel then considers whether the proposal meets the expectations and indicators of sound practice of the QAA Quality Code Chapter B10: Managing Higher Education Provision with Others, with regards to the management and operation of the partnership and that the academic standards and the quality of the student experience are assured in line with the remaining chapters of the QAA Quality Code. The delivery of new partnership provision is ultimately approved by the University's Education Committee, on behalf of Senate.

Year one partnership reviews are undertaken one year after the initiation of a new partnership involving academic (award bearing) provision. The aim is to provide a supportive framework to assist the Sponsoring School and its new Partner Institution to work collaboratively to ensure that: the learning and teaching provision and associated student experiences are of a high standard; and that those responsible for delivering the provision are undertaking their respective roles and responsibilities in an appropriate way.

As part of the regular monitoring procedures for established collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focused Review which looks at each partnership in depth. Occasional site inspection visits are also made.

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: 24/02/2017

1. What is the course?

Course information

Course Title	Geospatial Intelligence
Course code	MSGSIFTR, PDGSIFTR, PCGSIFTR, MSGSIPTR, PDGSIPTR, PCGSIPTR, SPGSIPTR
Academic Year	2017/18
Valid entry routes	MSc, PgDip, PgCert
Additional Exit routes	PgDip, PgCert
Mode of delivery	Full-time and Part-time
Location(s)¹ 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
Course Director	Dr Stephen Robinson
Awarding Body	Cranfield University
Is this an AP Contract course?²	No
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	QAA FHEQ level 7 (Masters)

¹ If any part of this course is delivered at another site, please note which one(s) here

² AP Contract courses are provided by Cranfield University to the MoD as part of the Academic Provider contract

Framework Level	
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. What are the aims of the course?

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
- 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?

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 6. 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:	
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 $\geq 50\%$;
- An average mark of $\geq 50\%$ 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);^{3 4}

³ 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).

⁴ 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 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 $\geq 50\%$ 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 $\geq 50\%$ (where they exist);
- **For the thesis**, a mark of $\geq 50\%$ 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.

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	Module Leader	Contact hours ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark' - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
1	R-GSI-GIR1	Geospatial Intelligence Requirements 1		64		10	N	04/09/17	04/09/17	20/09/17	50	ICW	100				20/09/17]	09/03/18]
2	R-GSI-FGS	Fundamentals of Geospatial Science		85		10	N	21/09/17	21/09/17	04/10/17	50	ICW	100				04/10/17]	09/03/18]
3	R-GSI-GIPDG	Geospatial Intelligence		74		10	N	05/10/17	05/10/17	01/11/17	50	IPRAC	100				01/11/17]	09/03/18]

⁵ Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

⁶ Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

⁷ 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 $\geq 50\%$. This will be at the Board of Examiners discretion.

⁸ For **independent assessments** please record type and weighting of each separate piece of assessment individually.

⁹ For **multi-part assessments** please record the overall weighting of module which should be 100%.

¹⁰ 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.

¹¹ 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
		Product Design and Generation																
4	R-GSI-SA1	Spatial Analysis 1		70		10	N	02/11/17	02/11/17	22/11/17	50	IPRAC	100				22/11/17]	09/03/18]
5	R-GSI-RSI	Remotely Sensed Imagery		54		20	N	23/11/17	23/11/17	10/01/18	50 50	ICW ICW	50 50				10/01/18 10/01/18]	09/03/18]
6	R-GSI-SA2	Spatial Analysis 2		56		10	N	08/03/18	08/03/18	29/03/18	50			100	ICW ICW	30 70	19/03/18 29/03/18]	29/06/18 29/06/18]
7	R-GSI-GISM	Geospatial Information Systems Management		80		10	N	11/01/18	11/01/18	07/02/18	50	EX	100				07/02/18]	09/05/18]
8	R-GSI-IE	Imagery Exploitation		40		10	N	16/04/18	16/04/18	04/05/18	50	ICW	100				04/05/18]	29/06/18]
9	R-GSI-GWS	Geospatial Web Services		80		10	N	10/05/18	10/05/18	01/06/18	50			100	ICW ICW	60 40	01/06/18 01/06/18]	29/06/18 29/06/18]
10	R-GSI-MG	Military Geography		35		10	N	08/02/18	08/02/18	28/02/18	50	ICW	100				28/02/18]	09/05/18]

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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark' - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
11	R-GSI-GIR2	Geospatial Intelligence Requirements 2		90		10	N	04/06/18	04/06/18	15/06/18	40			100	IPRAC IPRAC IPRAC IPRAC	10 50 30 10	15/06/18]	29/06/18]
12	R-GSI-DISS	Research Project		30		80	N	01/03/18	01/03/18 09/04/18 08/05/18 18/06/18	07/03/18 11/04/18 09/05/18 31/08/18	50 50	THESIS ICW	90 10				31/08/18 31/08/18]	[]

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 used by another existing course.

<u>Module code</u>	<u>Module title</u>	<u>Course that owns the module</u>	<u>Other course(s)/ programme(s) that share the module</u>
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

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
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	MULTI	MULTI		MULTI	MULTI	MULTI

Award ILOs Module No.	ILO 1	ILO2	ILO3	ILO4	ILO5	ILO6
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	MULTI	MULTI		MULTI	MULTI
R-GSI-MG				ICW	
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 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.

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.

New Partnership arrangements are considered in two stages:

1. The University Executive is responsible for ensuring appropriate due diligence has been undertaken in respect of the University's legal, financial, reputational and ethical responsibilities.
2. A Partnership Delivery Approval Panel then considers whether the proposal meets the expectations and indicators of sound practice of the QAA Quality Code Chapter B10: Managing Higher Education Provision with Others, with regards to the management and operation of the partnership and that the academic standards and the quality of the student experience are assured in line with the remaining chapters of the QAA Quality Code. The delivery of new partnership provision is ultimately approved by the University's Education Committee, on behalf of Senate.

Year one partnership reviews are undertaken one year after the initiation of a new partnership involving academic (award bearing) provision. The aim is to provide a supportive framework to assist the Sponsoring School and its new Partner Institution to

work collaboratively to ensure that: the learning and teaching provision and associated student experiences are of a high standard; and that those responsible for delivering the provision are undertaking their respective roles and responsibilities in an appropriate way.

As part of the regular monitoring procedures for established collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focused Review which looks at each partnership in depth. Occasional site inspection visits are also made.

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.

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 Geothermal Engineering

Date of first publication/latest revision: 03/03/2017

1. What is the course?

Course information

Course Title	MSc in Geothermal Engineering
Course code	MSGEOFTC, MSGEOPTC, PDGEOFTC, PDGEOPTC, PCGEOFTC, PCGEOPTC
Academic Year	2017/2018
Valid entry routes	PgCert, PgDip, MSc
Additional exit routes	PgDip, PgCert
Mode of delivery	Full-time, Part-time
Location(s)¹ of Study	Cranfield
School(s)	School of Water, Energy and Environment
Theme	Energy & Power
Centre	Oil and Gas Engineering
Course Director	Prof. Gioia Falcone
Awarding Body	Cranfield University
Is this an AP Contract course?²	No
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)	

¹ If any part of this course is delivered at another site, please note which one(s) here

² AP Contract courses are provided by Cranfield University to the MoD as part of the Academic Provider contract

Registration Period(s) available	1 year full-time, 3 years part-time
Course Start Month(s)	October

Institutions delivering the course

This course is delivered by School of Water, Energy and Environment/Energy and Power Theme/Oil and Gas Engineering Centre where the research interests include: Petroleum Engineering; Geothermal Engineering; Subsea Engineering; Multiphase Flow Systems; Multiphase Flow Measurement; CFD Modelling; Artificial Lift; Production Optimisation; Integrated/Hybrid Energy Systems; CO2 Transport, Boosting and Underground Injection; Resources and Reserves Classification.

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

Cranfield's long-standing relationships with businesses, governments and not-for-profit organisations around the world enable collaboration on research projects that address global challenges. Critical intellectual mass is provided through Cranfield being organised around specialist areas of focus, or themes, Energy and Power being one of them. Close engagement with the energy sector over the last 20 years has produced long-standing strategic partnerships with Alstom Power, BP, Centrica, Chevron, Doosan Babcock, Dong Energy, Petrofac, Rolls Royce, Saudi Aramco, Shell and Siemens among many others. Since 2016, Cranfield University is a member of the European Geothermal Energy Council. The Head of the Oil and Gas Engineering Centre (and proposed course director) is one of the 21 members of the United Nations Economic Commission for Europe (UNECE) Bureau of the Expert Group on Resource Classification and of its Renewable Reserves Taskforce. She is also the appointed Leader of the International Geothermal Association (IGA)/UNECE working group for the development of the recently published geothermal specifications for the UNFC-2009.

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

Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

Accreditation will be sought from the Energy Institute, together with endorsement by the European Geothermal Energy Council (EGEC) and the European Federation of Geologists (EFG). In an email of 7-Dec-2017, Valentina Pinzuti, EGEC's Communication Officer, wrote: "EGEC fully supports the idea of a MSc in Geothermal Engineering. It is exactly in line with what we promote. As we could see also from the results of the GeoElec project, there is a growing need for more education and training in the sector. In fact, we developed an information factsheet specifically to spread awareness on that. We have promoted Master courses in the past, but it is the first time that we receive a request for accreditation, so in that regard we will need to investigate further. In the meanwhile, EGEC would be glad to offer its endorsement to the course and promote it amongst our network". In an email of 30-Nov-2016, Isabel Fernandez, EFG Executive Director, wrote: "Congratulations for your new MSc program direction. EFG don't accredit university courses, normally the accreditation is a national level, and in this context the EFG National Association, Geological Society of London, do the accreditation for UK. However we can endorse your new programme. Here you can find information. Until now the training endorsed by EFG has been training courses, no MSc program, but EFG Board is working to improve the service to our members and your proposal could be considered. Please don't hesitate to send us more information and we will check with EFG Board".

2. What are the aims of the course?

The aim of this course is to respond to the growing demand for renewable energy. Geothermal resources will play a significant role in ensuring access to sustainable and reliable energy for all

(UNECE, 2016 - <https://www.unece.org/info/media/presscurrent-press-h/sustainable-energy/2016/unfc-is-now-applicable-to-geothermal-energy-resources/doc.html>). Interdisciplinary competence is needed to untap the vast geothermal potential worldwide, through implementation of more and larger projects (see the Course Concept and Business Case, already approved). This is the only course to encompass all aspects of geothermal exploitation, from exploration to project delivery. Students will develop the professional profile required by a growing energy sector, with a high level of skills that are transferable across other geo-resource sectors, including oil and gas.

This programme is intended for the following range of students:

The course is intended for engineering and applied science graduates who wish to embark on successful careers as geothermal energy professionals.

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 fundamental principles, terminology and key issues related to the major renewable energy technologies.
- ILO 2. Critically assess the potential of geothermal energy in the global energy resource portfolio.
- ILO 3. Design and evaluate strategies for the exploitation and utilisation of geothermal energy.
- ILO 4. Apply key technical management principles, including project management, people management, technology marketing, product development and finance.

B. Postgraduate Diploma

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

- ILO 5. Critically evaluate the current concepts and theories governing heat transfer and reservoir engineering.
- ILO 6. Integrate knowledge, understanding and skills from the taught modules in a real-life situation to address problems faced by industrial clients; creating new problem diagnoses, designs, or system insights; and communicating findings in a professional manner in written, oral and visual forms.

C. MSc

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

- ILO 7. Define a research question, develop aim(s) and objectives, select and execute a methodology, analyse data, evaluate findings critically and draw justifiable conclusions, demonstrating self-direction and originality of thought.

ILO 8. To communicate their individual research via a thesis and in an oral presentation in a style suitable for academic and professional audiences.

4. How is the course taught?

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

- A dedicated electronic Blackboard site.
- Workshops on specialist software for geothermal reservoir simulations (e.g. Comsol, TOUGH2, Ansys).
- Site visits (contingent on availability of operator and funding).
- Delivery of invited lectures by industry and academic guest speakers via remote connection.
- A structured variety of assessment methods.
- Option for a virtual group project for part-time students, in place of a dissertation.

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:	
Renewable Energy Technologies: Fundamentals	10
Geothermal Exploration	10
Geothermal Drilling and Production	10
Power Generation Systems	10
Geothermal Heat Pumps, District Heating and Direct Use	10
Management for Technology	10
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:	
Heat Transfer	10
Renewable Energy Technologies: Fundamentals	10
Geothermal Exploration	10
Geothermal Reservoir Engineering	10

Geothermal Drilling and Production	10
Power Generation Systems	10
Geothermal Heat Pumps, District Heating and Direct Use	10
Management for Technology	10
Group Project (compulsory for full-time students)	40
ELECTIVE MODULES:	
Dissertation (in place of Group Project, for part-time students)	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:	
Heat Transfer	10
Renewable Energy Technologies: Fundamentals	10
Geothermal Exploration	10
Geothermal Reservoir Engineering	10
Geothermal Drilling and Production	10
Power Generation Systems	10
Geothermal Heat Pumps, District Heating and Direct Use	10
Management for Technology	10
Group Project (compulsory for full-time students)	40
Individual Research Project	80
ELECTIVE MODULES:	
Dissertation (in place of Group Project, for part-time students)	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 $\geq 50\%$;
- An average mark of $\geq 50\%$ 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);^{3 4}

- **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 $\geq 50\%$ 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 $\geq 50\%$ (where they exist);
- **For the thesis**, a mark of $\geq 50\%$ 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.

Part-time students register for the course in October and are expected to complete the course within 3 years.

Each module is taught over one week, typically with the second week largely free of structured teaching to allow time for more independent learning and reflection.

The group project, which runs between February and April, enables students to apply the skills and knowledge acquired during the course modules to an industrially relevant problem that requires a team-based, multi-disciplinary solution. In addition to gaining experience working in technical project teams, students will deliver presentations and learn other valuable skills. A poster presentation will be required from all students. This presentation provides the opportunity to develop presentation skills and effectively handle questions about complex issues in a professional manner. All groups must also submit a written report. Part-time students are encouraged to participate in a group project as it provides a wealth of learning opportunities. However, an option of an individual dissertation is available, if agreed with the Course Director. The individual research project allows students to delve deeper into a specific area of interest. As Cranfield's academic research is so closely related to industry, it is common for our industrial partners to put forward real practical problems or areas of development as potential research topics. Students will develop the skills required to design, optimise and evaluate the technical and economic viability of geothermal energy projects. Individual research projects may involve

³ 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).

⁴ 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%).

designs, computer simulations, feasibility assessments, reviews, practical evaluations and experimental investigations. The individual research project runs between April/May and August for full-time students. For part-time students, their research project is likely to be undertaken in collaboration with their place of work, under academic supervision.

Postgraduate Diploma (PgDip) and Postgraduate Certificate (PgCert) exit routes are provided as fall back routes for MSc candidates.

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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
1	I-ENE-INWK Occ A	Induction	Gill Drew	24		0	Y		02/10/17	06/10/17	N/A	AO	N/A				N/A	
2	N-PSE-HT	Heat Transfer	Ilai Sher	30		10	Y		16/10/17	20/10/17	40	EX	100				w/c 11/12/17 (prefer 15/12/17)	Sept 18
3	I-MES-RETF	Renewable Energy Technologies:	Gill Drew	30		10	Y		30/10/17	03/11/17	40	ICW	100				F 18/11/17 P 02/12/17	June 18

⁵ Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

⁶ Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

⁷ 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.

⁸ For **independent assessments** please record type and weighting of each separate piece of assessment individually.

⁹ For **multi-part assessments** please record the overall weighting of module which should be 100%.

¹⁰ 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.

¹¹ 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

Module Number	Module code	Title	Module Leader	Contact hours ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
		Fundamentals																
4	N-GEO-GE	Geothermal Exploration	Stefano Benato	30	10	10	N		06/11/17	10/11/17	40	ICW	100				F 02/12/17 P 16/12/17	June 18
5	N-GEO-GRE	Geothermal Reservoir Engineering	Imma Bortone	30	0	10	N		20/11/17	24/11/17	40			100	GCW IPRES	50 50	F & P 02/01/18 F & P 24/11/17	June 18
6	N-GEO-GDP	Geothermal Drilling and Production	Gioia Falcone	30	15	10	N		04/12/17	08/12/17	40	IPRES	100				11/12/17	June 18
7	N-PSE-PGRES	Power Generation Systems	Giuseppina Di Lorenzo	30		10	Y		08/01/18	12/01/18	40	ICW	100				F 27/01/18 P 10/02/18	June 18
8	N-GEO-GHP	Geothermal Heat Pumps, District Heating and Direct Use	Gioia Falcone	30	24	10	N		29/01/18	02/02/18	40	EX	100				w/c 19/02/18	Sept 18
9	G-MTI Occ A	Management for Technology	Stephen Carver	30		10	Y		26/02/18	02/03/18	40	EX GCW	50 50				EX w/c 19/03/18 FT 10/03/18	Sept 18 June 18

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRACT – 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

Module Number	Module code	Title	Module Leader	Contact hours ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
																	PT 24/03/18	
10	I-ENE-GRPP Occ A	Group Project	Gill Drew	30		40	Y		05/03/18	04/05/18	50 50	GPROJ ICW	80 20				01/05/18 11/05/18	
11	I-ENE-DISS Occ A	Dissertation for part-time students	Gill Drew	10		40	Y		02/03/18	29/09/18	50	IPROJ IPRES	80 20				28/09/18 28/09/18	
12	I-ENE-THESIS Occ A	Individual Research Project	Gill Drew	20		80	Y		07/05/18	07/09/18	50 50	OR THESIS	10 90				03/09/18 03/09/18	03/09/19

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

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

<u>Module code</u>	<u>Module title</u>	<u>Course that owns the module</u>	<u>Other course(s)/ programme(s) that use the module</u>
N-PSE-HT	Heat Transfer	Energy Systems & Thermal Processes	Advanced Chemical Engineering
I-MES-RETF	Renewable Energy Technologies: Fundamentals	Renewable Energy Technology	Renewable Energy Marine Structures
N-PSE-PGRES	Power Generations Systems	Energy Systems & Thermal Processes	Advanced Mechanical Engineering Advanced Chemical Engineering
G-MTI	Management for Technology	School of Management	Advanced Mechanical Engineering Advanced Chemical Engineering Design of Rotating Machines Energy from Waste Energy Systems & Thermal Processes Flow Assurance for Oil & Gas Production Offshore (all options) Process Systems Engineering Renewable Energy Engineering Renewable Energy Technology

7. How are the ILOs assessed?

The following assessment types are utilised:

The course uses a range of assessment types, including individual coursework, group coursework, group presentations, viva voce examinations, written examinations, a group project and a thesis.

This approach has been adopted because:

The next generation of geothermal engineers needs to be able to operate effectively both individually and as part of inter-disciplinary teams; communicate findings in both written and oral forms.

Assessment and ILO Mapping

A. Postgraduate Certificate

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

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
2					EX			
5			EX GCW					
10						GPROJ ICW		
11						I PROJ		

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
12							OR THESIS	OR 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.

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.

New Partnership arrangements are considered in two stages:

1. The University Executive is responsible for ensuring appropriate due diligence has been undertaken in respect of the University's legal, financial, reputational and ethical responsibilities.
2. A Partnership Delivery Approval Panel then considers whether the proposal meets the expectations and indicators of sound practice of the QAA Quality Code Chapter B10: Managing Higher Education Provision with Others, with regards to the management and operation of the partnership and that the academic standards and the quality of the student experience are assured in line with the remaining chapters of the QAA Quality

Code. The delivery of new partnership provision is ultimately approved by the University's Education Committee, on behalf of Senate.

Year one partnership reviews are undertaken one year after the initiation of a new partnership involving academic (award bearing) provision. The aim is to provide a supportive framework to assist the Sponsoring School and its new Partner Institution to work collaboratively to ensure that: the learning and teaching provision and associated student experiences are of a high standard; and that those responsible for delivering the provision are undertaking their respective roles and responsibilities in an appropriate way.

As part of the regular monitoring procedures for established collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focused Review which looks at each partnership in depth. Occasional site inspection visits are also made.

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

Graduates from this course will develop diverse and rewarding careers in the extremely exciting and challenging field of geothermal engineering. The international nature of this growing field means that career opportunities are not restricted to the domestic market; Cranfield graduates develop careers around the world. Upon graduation, they can expect to secure engineering, management and energy analyst positions in the private and public sectors, with field operators, governmental agencies, energy councils, service providers, auditing and insurance companies.

Those wishing to continue their education via PhD or MBA studies in the energy sector will be greatly facilitated by the interdisciplinary, project-oriented profile that they will have acquired through this 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 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	2017/18
Valid entry routes	MSc, PgDip, PgCert
Additional exit routes	Not Applicable
Mode of delivery	Full-time, Part-time
Location(s)¹ 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
Is this an AP Contract course?²	enter here
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

¹ If any part of this course is delivered at another site, please note which one(s) here

² AP Contract courses are provided by Cranfield University to the MoD as part of the Academic Provider contract

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	80 40
Group Project for full-time students (10a) or Dissertation for part-time students (10b)	
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 $\geq 50\%$;
- An average mark of $\geq 50\%$ 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);^{3 4}
- **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 $\geq 50\%$ 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.

³ 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).

⁴ 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 $\geq 50\%$ (where they exist);
- **For the thesis**, a mark of $\geq 50\%$ 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.

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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
1	I-MAN-INWK	Induction	Dr Konstantinos Salonitis	22		0	Y		02/10/17	06/10/17	N/A	AO	N/A				N/A	
2	I-ICI-A1019	Technology and Prototyping	Matthew Collins	38		10	Y		09/10/17	13/10/17	40 40			100 MULTI	IPRAC IPROJ	60 40	28/11/17	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.

⁵ Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

⁶ Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

⁷ 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.

⁸ For **independent assessments** please record type and weighting of each separate piece of assessment individually.

⁹ For **multi-part assessments** please record the overall weighting of module which should be 100%.

¹⁰ 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.

¹¹ 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
3	I-MNU-A1034	Operations Management	Prof Charalampos (Harris) Makatsoris	32		10	Y		16/10/17	20/10/17	40	EX	100				Wc 06/11/17	Manufacturing resit exams will be during week commencing 18/09/17
4	I-ICI-A1020	Managing Innovation and New Product Development	Dr Clive Savory	35		10	Y		30/10/17	03/11/17	40	GCW	100				25/11/17	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		13/11/17	17/11/17	40			100 MULTI	GCW GPRES ICW	50 25 25	08/12/17	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		20/11/17	24/11/17	40	EX	100				Wc 02/01/18	Manufacturing resit exams will be during week commencing 18/09/17
7	I-GPD-A1505	Product Development	Dr Ahmed Al-Ashaab	32		10	N		04/12/17	08/12/1	40	GCW	100				26/01/18	Re-assessment date to be set by agreement of 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

Module Number	Module code	Title	Module Leader	Contact hours ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
																	and Module Leader as/when required.	
8	I-KME-A1037	Enterprise Modelling	Dr John Ahmet Erkoyuncu	32		10	Y		15/01/18 /	19/01/18	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	N		22/01/18	26/01/18	40	EX	100				12/02/18	Manufacturing resit exams will be during week commencing 18/09/17
10a	I-MAT-GRPP	Group Project for Full Time Students	Dr David Ayre	20		40	Y		02/02/18	25/04/18				80 MULTI 20 MULTI	GPRES GPROJ ICW observed behaviour	16 64 10 10	25/04/18	
10b	I-MAT-DISS	Dissertation for Part Time Students	Dr Konstantinos Salonitis	20		40	Y		31/01/18	30/08/18		ICW	100				30/08/18	
11	I-MNU-THESIS	Individual Research Project	Dr Yuchun Xu	20		80	Y		07/05/18	5/09/18		THESIS OR	90 10				05/09/18	

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 used by another existing course.

<u>Module code</u>	<u>Module title</u>	<u>Course that owns the module</u>	<u>Other course(s)/ programme(s) that use the module</u>
I-MAN-INWK	Induction	Engineering and Management of Manufacturing Systems	Engineering & Management of Manufacturing Systems, Management and Information Systems, Knowledge Management for Innovation (not currently running), Aerospace Manufacturing, Cyber-Secure Manufacturing
I-ICI-A1019	Technology and Prototyping	Innovation and Creativity in Industry	Innovation and Creativity in Industry
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, 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 (not currently running)
I-MNU-A1018	General Management	Engineering and Management of Manufacturing Systems	Advanced Materials, Applied Nanotechnology, Manufacturing Technology and Management, Management and Information Systems, Knowledge Management for Innovation (not currently running), Engineering & Management of Manufacturing Systems
I-KME-A1037	Enterprise Modelling	Management and Information Systems	Management and Information Systems
I-MAT-DISS	Dissertation for Part Time Students	Manufacturing Technology and Materials Programme	Advanced Materials, Aerospace Materials, Applied Nanotechnology, Manufacturing Technology & Management, Aerospace Manufacturing, Engineering & Management of Manufacturing Systems, Knowledge Management for Innovation (not currently running), Management and Information Systems, Cyber-

			Secure Manufacturing, Welding Engineering
I-MAT-GRPP	Group Project for Full Time Students	Manufacturing Technology and Materials Programme	Advanced Materials, Aerospace Materials, Applied Nanotechnology, Manufacturing Technology & Management, Engineering & Management of Manufacturing Systems, Management and Information Systems, Knowledge Management for Innovation (not currently running), Aerospace Manufacturing, Cyber-Secure Manufacturing, Welding Engineering
I-MNU-THESIS	Individual Research Project	Aerospace Manufacturing	Engineering & Management of Manufacturing Systems, Management and Information Systems, Knowledge Management for Innovation (not currently running), Cyber-Secure Manufacturing, Advanced Materials, Aerospace Materials, Applied Nanotechnology, Manufacturing Technology & Management, Welding Engineering

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

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: 04/09/17

1. What is the course?

Course information

Course Title	Guided Weapon Systems
Course code	MSGWSFTR, PDGWSFTR, PCGWSFTR, MSGWSPTR, PDGWSPTR, PCGWSPTR SPGWSPTR
Academic Year	2017/18
Valid entry routes	MSc, PgDip, PgCert
Exit routes	PgDip, PgCert
Mode of delivery	Full-time/Part time
Location(s)¹ of Study	Shrivenham
School(s)	Cranfield Defence & Security
Theme	Defence and Security
Centre	Centre for Defence Engineering
Course Director	Dr Derek Bray
Awarding Body	Cranfield University
Is this an AP Contract course?²	Yes
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)

¹ If any part of this course is delivered at another site, please note which one(s) here

² AP Contract courses are provided by Cranfield University to the MoD as part of the Academic Provider contract

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

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 (Portsmouth 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 course is not currently accredited by an external body, re-accreditation is being sought from the IMechE.

2. What are the aims of the course?

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.

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. 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. 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 (Portsmouth 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:

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:	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 $\geq 50\%$;
- An average mark of $\geq 50\%$ 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);^{3 4}
- **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 $\geq 50\%$ 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 $\geq 50\%$ (where they exist);
- **For the thesis**, a mark of $\geq 50\%$ 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"

³ 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).

⁴ 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%).

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)

- **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

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)

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)

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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹]	Assessment / Exam Retake date]
1	R-GWS-IFS	Introductory and Foundation		20		0	N	[04/09/17	[04/09/17]	[08/09/17	N/A	AO	N/A				[N/A]	[]
2	R-MES-SPSA	Signal Processing, Statistics & Analysis		30		10	Y	[25/09/17	[25/09/17	[29/09/17	50			100	ICW ICW	50 50	[27/10/17(FT &PT) 27/10/17 (FT & PT]	[12/01/18]

⁵ Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

⁶ Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

⁷ 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 $\geq 50\%$. This will be at the Board of Examiners discretion.

⁸ For **independent assessments** please record type and weighting of each separate piece of assessment individually.

⁹ For **multi-part assessments** please record the overall weighting of module which should be 100%.

¹⁰ 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.

¹¹ 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹]	Assessment / Exam Retake date]
3	R-MES-EOIS1	Electro-Optic & Infrared Systems, Part 1		32		10	Y	09/10/17	09/10/17	13/10/17	50	EX	100				20/12/17 (FT & PT)]	21/02/18 (FT & PT)]
4	R-MES-RP	Radar Principles		30		10	Y	27/11/17	27/11/17	01/12/17	50	ICW	100				05/1/18 (FT & PT)]	16/03/18 (FT & PT)]
5	R-GWS-GWPAT	Guided Weapons Propulsion & Aerodynamics Theory		28		10	N	11/09/17	11/09/17	15/09/17	50 50	OR IPRAC	75 25				17-18/10/17 13/10/17 (FT) 03/11/17 (PT)	08/11/17 12/01/18 (FT& PT)]
6	R-GWS-GWCT	Guided Weapons Control Theory		30		10	N	30/10/17	30/10/17	03/11/17	50 50	OR ICW	75 25				12-13/12/17 12/1/18 (FT) 02/02/18 (PT)	17/01/18 03/04/18 (FT & PT)]
7	R-GWS-GWACG	Guided Weapons Applications – Control & Guidance		30		10	N	05/02/18	05/02/18	09/02/18	50 50	EX ICW	75 25				03/04/18 09/03/18 (FT) 03/04/18 (PT)	16/05/18 08/06/18 (FT & PT)]
8	R-GWS-GWAPA	GW Propulsion & Aerodynamics		28		10	N	05/03/18	05/03/18	09/03/18	40	EX	50				29/03/18	17/05/18

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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹]	Assessment / Exam Retake date]
		Applications									40	IPRAC	50				20/04/18 (FT) 11/05/18 (PT)	08/06/18 (FT & PT)
9	R-MES-REW	Radar Electronic Warfare		30		10	Y	22/01/18	29/01/18	02/02/18	50	ICW	100				02/03/18 (FT & PT)]	18/05/18 (FT & PT)]
10	R-MES-EOIS2	Electro-Optic and Infrared Systems, Part II		32		10	Y	08/01/18	08/01/18	12/01/18	40	ICW	100				09/02/18 (FT & PT)]	27/04/18 (FT & PT)]
11	R-GWS-GWA	Guided Weapons Warheads, Explosives & Materials		30		10	N	13/11/17	13/11/17	17/11/17	40	EX	75				15/12/17	18/01/18
											40	ICW	25				19/01/18 (FT&PT)]	02/03/18(FT) 23/03/18 (PT)]
12	R-GWS-GWA2	Guided Weapons Structures, Aeroelasticity & Power Supplies		26		10	N	19/02/18	19/02/18	23/02/18	40	EX	75				05/04/18	18/05/18
											40	ICW	25				23/03/18 (FT) 20/04/18 (PT)	25/05/18 (FT&PT)]
13	R-GWS-PS	Parametric Study		5		5	N	19/03/18	19/03/18	23/03/18	50	GPRAC	75				12/04/18 (FT&PT)	16/05/18 (FT&PT)
											50	GPRES	25				28/03/18	16/05/18

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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹]	Assessment / Exam Retake date]
																	(FT&PT)]	(FT&PT)]
14	R-GWS-GWSLSA	Guided Weapon Systems		48		15	N	[09/04/18	[09/04/18	[27/04/18	50 50	OR ICW	50 50				[0203/05/18 13/05/18 (FT) 3/06/18 (PT)]	[18/05/18 22/07/18 (FT) 22/07/18 (PT)]
15	R-GWS-DISS	Research Project		3		70	N	[01/01/18	[01/01/18	[27/07/18	50	THESIS	100				[27/07/18]	[]

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 used by another existing course.

<u>Module code</u>	<u>Module title</u>	<u>Course that owns the module</u>	<u>Other course(s)/ programme(s) that use the module</u>
R-MES-SPSA	Signal Processing, Statistics & Analysis	Military Electronic Systems Engineering	Guided Weapons Systems
R-MES-EOIS1	Electro-Optic & Infrared Systems, Part 1	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-EOIS2	Electro-Optic & Infrared Systems, Part 2	Military Electronic Systems Engineering	Guided Weapons Systems

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

A. Postgraduate Certificate & Postgraduate Diploma

The Award intended learning outcomes are assessed by the following module assessments:

Award ILOs Module No.	PgCert		PgDip			
	ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
1	AO	AO	AO			
2	ICW	ICW	ICW			
3	EX	EX	EX			
4	ICW	ICW	ICW			
5	OR & IPRAC	OR & IPRAC	OR & IPRAC			
6	OR & ICW	OR & ICW	OR & ICW			
7	EX &	EX &	EX &			

Award ILOs Module No.	PgCert		PgDip			
	ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
	ICW	ICW	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			
13	GPRES & GPRA C	GPRES & GPRA C	GPRES & GPRA C	GPRES & GPRA C	GPRES & GPRA C	
14	OR & ICW	OR & ICW	OR & ICW	OR & ICW	OR & ICW	OR & ICW

B. MSc

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
15	THESI S	THESI S	THESI S

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

Not applicable

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.

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.

New Partnership arrangements are considered in two stages:

The University Executive is responsible for ensuring appropriate due diligence has been undertaken in respect of the University's legal, financial, reputational and ethical responsibilities.

A Partnership Delivery Approval Panel then considers whether the proposal meets the expectations and indicators of sound practice of the QAA Quality Code Chapter B10: Managing Higher Education Provision with Others, with regards to the management and operation of the partnership and that the academic standards and the quality of the student experience are assured in line with the remaining chapters of the QAA Quality Code. The delivery of new partnership provision is ultimately approved by the University's Education Committee, on behalf of Senate.

Year one partnership reviews are undertaken one year after the initiation of a new partnership involving academic (award bearing) provision. The aim is to provide a supportive framework to assist the Sponsoring School and its new Partner Institution to work collaboratively to ensure that: the learning and teaching provision and associated student experiences are of a high standard; and that those responsible for delivering the provision are undertaking their respective roles and responsibilities in an appropriate way.

As part of the regular monitoring procedures for established collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focused Review which looks at each partnership in depth. Occasional site inspection visits are also made.

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.

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 Information Capability Management

Date of first publication/latest revision: August 2016 / July 2017

1. What is the course?

Course information

Course Title	Information Capability Management
Course code	MSICMFTR – PDICMFTR – PCICMFTR – MSICMPTR - PDICMPTR- PCICMPTR - SPICMPTR
Academic Year	2017/18
Valid entry routes	MSc, PgDip, PgCert
Additional exit routes	PgDip, PgCert
Mode of delivery	Full time, part time and short course for credit
Location(s)¹ of Study	Shrivenham
School(s)	Cranfield Defence and Security
Theme	Defence and Security
Centre	Centre for Cyber Security and Information Systems
Course Director	Mr Ross Harris
Awarding Body	Cranfield University
Is this an AP Contract course?²	Yes
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

¹ If any part of this course is delivered at another site, please note which one(s) here

² AP Contract courses are provided by Cranfield University to the MoD as part of the Academic Provider contract

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

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 2021 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. What are the aims of the course?

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. How is the course taught?

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. 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:	
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 $\geq 50\%$;
- An average mark of $\geq 50\%$ 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);^{3 4}

- **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 $\geq 50\%$ 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 $\geq 50\%$ (where they exist);
- **For the thesis**, a mark of $\geq 50\%$ 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).

³ 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).

⁴ 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
1	R-SISD-F	Foundations of IS (A) Foundations of IS (B)		30		10	N	[]	[04/09/17 08/01/18]	[08/09/17 12/01/18]	40	ICW	100				18/09/17 FT 02/10/17 PT 05/02/18 PT(B)	[]
2	R-SISD-PI	Professional Issues+		10		10	N	[04/09/17]	[04/09/17]	[11/12/17]	40	ICW	100				11/12/17 FT/PT]	[]

+ Distance learning module

⁵ Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

⁶ Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

⁷ 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 $\geq 50\%$. This will be at the Board of Examiners discretion.

⁸ For **independent assessments** please record type and weighting of each separate piece of assessment individually.

⁹ For **multi-part assessments** please record the overall weighting of module which should be 100%.

¹⁰ 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.

¹¹ 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

Module Number	Module code	Title	Module Leader	Contact hours ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
3	R-SISD-PM	Programme and Project Management for Information Systems		30		10	N	[16/10/17 (PT) 30/10/17 (FT)]	[06/11/17]	[10/11/17]	40	ICW	100				20/11/17 FT 04/12/17 PT]	[]
4	R-SISD-MT	Methods and Tools for Information Systems Development		30		10	N	[04/09/17 (PT) 18/09/17 (FT)]	[25/09/17]	[29/09/17]	40 40	GPRES ICW	25 75				29/09/17 FT/PT 09/10/17 FT 23/10/17 PT]	[]
5	R-SISD-SE	Software Engineering		30		10	N	[25/09/17 (PT) 09/10/17 (FT)]	[16/10/17]	[20/10/17]	40 40	GCW ICW	25 75				20/10/17 FT/PT 30/10/17 FT 13/11/17 PT]	[]
6	R-SISD-ISA	Systems Architecture		30		10	N	[06/11/17 (PT) 20/11/17 (FT)]	[27/11/17]	[01/12/17]	40 40	GCW ICW	25 75				01/12/17 FT/PT 11/12/17 FT 08/01/18 PT]	[]
7	R-SISD-SAIS	Digital Business Strategy		30		10	N	[02/01/18 (PT) 15/01/18 (FT)]	[22/01/18]	[26/01/18]	40 40	GCW ICW	25 75				26/01/18 FT/PT 05/02/18 FT 19/02/18 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

Module Number	Module code	Title	Module Leader	Contact hours ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
8	R-SISD-ETM	Emerging Technology Monitoring+		7		10	N	[08/01/18]	[27/2/18 one day	[30/04/18]	40	ICW	100				30/04/18 FT 30/04/18 PT]	[]
9	R-SISD-OD	Organisational Development		30		10	N	[22/01/18 (PT) 05/02/18 (FT)]	[12/02/18]	[16/02/18]	40	ICW	100				26/02/18 FT 12/03/18 PT]	[]
10	R-SISD-IAS	Cyber Security & Information Assurance		30		10	N	[12/02/18 (PT) 26/02/18 (FT)]	[05/03/18]	[09/03/18]	40 40	GCW ICW	25 75				09/03/18 FT/PT 19/03/18 FT 02/04/18 PT]	[]
11	R-SISD-DMSM	Data Modelling, Storage and Management		30		10	N	[05/03/18 (PT) 19/03/18 (FT)]	[26/03/18]	[30/03/18]	40 40	GCW ICW	25 75				30/03/18 PT/FT 09/04/18 FT 23/04/18 PT]	[]
12	R-SISD-DLDS	Data-led Decision Support		30		10	Y	[26/03/18 (PT) 09/04/18 (FT)]	[16/04/18]	[20/04/18]	40 40	GCW ICW	25 75				20/04/18 PT/FT 30/04/18 FT 14/05/18 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

Module Number	Module code	Title	Module Leader	Contact hours ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
13	R-SISD-DISS	Dissertation ¹²		24		80	N	Workshop: A 30/04/18 B 29/09/17 C 31/01/18 D 30/03/18 E 31/07/18	[12/12/17 25/06/18]	14/12/17 27/06/18 A 30/07/18 B 28/09/18 C 31/01/19 D 29/03/19 E 31/07/19]	50	Thesis	100				A 30/07/18 FT B 28/09/18 PT C 31/01/19 PT D 29/03/19 PT E 31/07/19 PT]	[]

¹² 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

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

<u>Module code</u>	<u>Module title</u>	<u>Course that owns the module</u>	<u>Other course(s)/ programme(s) that use the module</u>
R-SISD-DLDS	Data Led Decision Support	ICM MSC	Defence Cyber Masters Programme

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.

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.

New Partnership arrangements are considered in two stages:

1. The University Executive is responsible for ensuring appropriate due diligence has been undertaken in respect of the University's legal, financial, reputational and ethical responsibilities.
2. A Partnership Delivery Approval Panel then considers whether the proposal meets the expectations and indicators of sound practice of the QAA Quality Code Chapter B10: Managing Higher Education Provision with Others, with regards to the management and operation of the partnership and that the academic standards and the quality of the student experience are assured in line with the remaining chapters of the QAA Quality Code. The delivery of new partnership provision is ultimately approved by the University's Education Committee, on behalf of Senate.

Year one partnership reviews are undertaken one year after the initiation of a new partnership involving academic (award bearing) provision. The aim is to provide a supportive framework to assist the Sponsoring School and its new Partner Institution to work collaboratively to ensure that: the learning and teaching provision and associated student experiences are of a high standard; and that those responsible for delivering the provision are undertaking their respective roles and responsibilities in an appropriate way.

As part of the regular monitoring procedures for established collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focused Review which looks at each partnership in depth. Occasional site inspection visits are also made.

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 / June 2017

1. What is the course?

Course information

Course Title	Innovation and Creativity in Industry
Course code	MNICIFTC, MNICIPTC, PDICIFTC, PDICIPTC, PCICIFTC, PCICIPTC
Academic Year	2017/18
Valid entry routes	MDes, PgDip, PgCert
Additional exit routes	PgDip, PgCert
Mode of delivery	Full-time, Part-time
Location(s)¹ of Study	Cranfield Campus
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
Is this an AP Contract course?²	No
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)	Full-time PgCert - one year, Part-time PgCert - two years, Full-time

¹ If any part of this course is delivered at another site, please note which one(s) here

² AP Contract courses are provided by Cranfield University to the MoD as part of the Academic Provider contract

available	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. Apply state-of-the-art design tools and processes, to create product and/or service innovations.
- ILO 2. Evaluate the role of design thinking to make formative decisions for industrial competitiveness.
- ILO 3. Analyse and deconstruct complex innovation challenges, through best practice design methodologies, to problem solve and facilitate product, service or other innovations.
- ILO 4. Synthesise and apply design methods and knowledge of advanced manufacturing processes to create innovative solutions through proof-of-concept prototypes.

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 5. Integrate knowledge, understanding and skills from the taught modules in a real-life situation to address problems faced by industrial clients; creating new problem diagnoses, designs, or system insights; and communicating 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 6. Define a research question, develop aim(s) and objectives, select and execute a methodology, analyse data, evaluate findings critically and draw justifiable conclusions, demonstrating self-direction and originality of thought.
- ILO 7. To communicate their individual research via a thesis and in an oral presentation in a style suitable for academic and professional audiences.

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 modules, 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 6. 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 Week	0
ELECTIVE MODULES:	
Any 6 of the following modules:	
Technology and Prototyping	10
Consumer Trends	10
Managing Innovation and New Product Development	10
Creative Enterprise and Entrepreneurship	10
Design and Brand Management	10
Whole System Design	10
Smart Materials and Processes	10
Project Management Introduction	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:	
Induction Week	0
Technology and Prototyping	10
Consumer Trends	10
Managing Innovation and New Product Development	10
Creative Enterprise and Entrepreneurship	10
Design and Brand Management	10
Whole System Design	10
Smart Materials and Processes	10
Project Management Introduction	10
Group Project (Full-time Students)	40

ELECTIVE MODULES:	
Part Time Students: Group Project OR Dissertation	40 40
TOTAL:	120

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:	
Induction Week	0
Technology and Prototyping	10
Consumer Trends	10
Managing Innovation and New Product Development	10
Creative Enterprise and Entrepreneurship	10
Design and Brand Management	10
Whole System Design	10
Smart Materials and Processes	10
Project Management Introduction	10
Group Project (Full-time Students)	40
Individual Thesis Project	80
ELECTIVE MODULES:	
Part Time Students: Group Project OR Dissertation	40 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 $\geq 50\%$;
- An average mark of $\geq 50\%$ 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);^{3 4}

- **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 $\geq 50\%$ 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 $\geq 50\%$ (where they exist);
- **For the thesis**, a mark of $\geq 50\%$ 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) over years one and two
- 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.

³ 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).

⁴ 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 **MDes**. Other awards associated with the course include some or all of these modules.

Module Number	Module code	Title	Module Leader	Contact hours ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
1	I-DES-INWK	Induction	M Moreno	30		0	Y		02/10/17	06/10/17	N/A	AO	N/A				N/A	
2	I-ICI-A1019	Technology & Prototyping	M Collins	37		10	Y		09/10/17	13/10/17	40			100	IPRAC IPROJ	60 40	FT 21/10/17 PT 04/11/17	June 18
3	I-DSL-A1021	Consumer Trends	F Charley	30		10	Y		23/10/17	27/10/17	40			100	GPRES GPRES	25 75	FT 11/11/17	June 18

⁵ Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

⁶ Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

⁷ 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 $\geq 50\%$. This will be at the Board of Examiners discretion.

⁸ For **independent assessments** please record type and weighting of each separate piece of assessment individually.

⁹ For **multi-part assessments** please record the overall weighting of module which should be 100%.

¹⁰ 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.

¹¹ 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
																	PT 25/11/17	
4	I-ICI-A1020	Managing Innovation & New Product Development	C Savory	35		10	Y		30/10/17	03/11/17	40	GCW	100				FT 25/11/17 PT 09/12/17	June 18
5	I-ICI-A1009	Creative Enterprise & Entrepreneurship	O Koryak	30		10	Y		13/11/17	17/11/17	40			100	ICW GPRES GCW ICW	10 30 50 10	FT 09/12/17 PT 02/01/18	June 18
6	I-DFS-A1521	Design and Brand Management	L Williams	40		10	Y		27/11/17	01/12/17	40	ICW	100				FT 02/01/18 PT 13/01/18	June 18
7	I-DFS-A1028	Whole System Design	F Charnley	27		10	Y		11/12/17	15/12/17	40	ICW	100				FT 08/01/18 PT 20/01/18	June 18
8	I-ICI-A1022	Smart Materials & Processes	M Collins	37		10	N		08/01/18	12/01/18	40	ICW	100				FT 20/01/18 PT 03/02/18	June 18
9	M-M/PMI	Project Management	J Algar	20		10	Y		29/01/18	02/02/18	40 40	EX	40	60	GCW GPRAC	10 30	W/B 19/02/18	July 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment								
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates		
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date	
		Introduction													GPRES	20			
10	I-DES-GRPP	Group Project For Full-Time Students	Supervisors	16		40	Y		19/02/18	04/05/18	50	GPROJ IPROJ	80 20					01/05/18 05/05/18	
11	I-DES-DISS	Dissertation For Part-time Students	Supervisors	10		40	Y		02/10/17	30/09/18	50	IPROJ IPRES	80 20					30/09/18	
12	I-DES-THESIS	Individual Research Project	Supervisors	20		80	Y		07/05/18	07/09/18	50	THESIS OR	90 10					03/09/18	Sept 19

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.

<u>Module code</u>	<u>Module title</u>	<u>Course that owns the module</u>	<u>Other course(s)/ programme(s) that use the module</u>
I-DSL-A1021	Consumer Trends	Design Strategy and Leadership	Digital Design and Strategic Communication MDes in Innovation and Creativity in Industry
I-ICI-A1009	Creative Enterprise & Entrepreneurship	Innovation & Creativity in Industry/ SOM programme- Bettany Centre for Entrepreneurship	Design Strategy & Leadership Digital Design and Strategic Communication
I-DFS-A1521	Design and Brand Management	Design Strategy and Leadership	Digital Design and Strategic Communication Innovation and Creativity in Industry
I-ICI-A1020	Managing Innovation and New Product Development	Innovation & Creativity in Industry/ SOM programme- Centre for Innovative Products and Services	Design Strategy & Leadership Digital Design and Strategic Communication Global Product Development and Management Manufacturing Technology and Management
M-M/PMI	Project Management Introduction	SOM MBA	Design Strategy & Leadership Digital Design and Strategic Communication Innovation and Creativity in Industry Procurement and Supply Chain Management Logistics and Supply Chain Management
I-DFS-A1028	Whole System Design	Design Strategy & Leadership	Digital Design and Strategic Communication Innovation and Creativity in Industry Cost Engineering Sustainable Manufacturing Systems EngD
I-ICI-A1019	Technology and Prototyping	Innovation and Creativity in Industry	Global Product Development and Management Manufacturing and

			Technology Management
--	--	--	-----------------------

7. How are the ILOs assessed?

The following assessment types are utilised:

The taught modules are assessed by in-module assessment (predominantly coursework, focussing on the application of design thinking and learning through practice). The group project is assessed by means of a written group report, a reflective exercise, individual contribution and an oral presentation. The research project is assessed by a thesis and an oral examination.

This approach has been adopted because it provides a balance of theory and practice based on the multi-discipline of design, management, technology, methods.

Assessment and ILO Mapping

A. Postgraduate Certificate

Award ILOs Module No.	ILO1	ILO2	ILO3	ILO4
I-ICI-A1019		IPRAC IPROJ	IPRAC IPROJ	IPRAC IPROJ
I-DFS-A1021	GPRES		GPRES	
I-ICI-A1020	GCW		GCW	GCW
I-ICI-A1009	GCW ICW GPRES ICW		GCW ICW GPRES ICW	
I-DFS-A1521	ICW		ICW	
I-DSL-A1028	ICW	ICW	ICW	
I-ICI-A1022		ICW	ICW	ICW
M-M/PMI	GCW GPRAC GRPES EX		GCW GPRAC GRPES 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.	ILO5
I-DES-GRPP	GROJ IPROJ
I-DES-	IPROJ

Award ILOs Module No.	ILO5
DISS	IPRES

C. MDes

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

Award ILOs Module No.	ILO6	ILO7
I-DES-THESIS	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.

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.

New Partnership arrangements are considered in two stages:

1. The University Executive is responsible for ensuring appropriate due diligence has been undertaken in respect of the University's legal, financial, reputational and ethical responsibilities.
2. A Partnership Delivery Approval Panel then considers whether the proposal meets the expectations and indicators of sound practice of the QAA Quality Code Chapter B10: Managing Higher Education Provision with Others, with regards to the management and operation of the partnership and that the academic standards and the quality of the student experience are assured in line with the remaining chapters of the QAA Quality Code. The delivery of new partnership provision is ultimately approved by the University's Education Committee, on behalf of Senate.

Year one partnership reviews are undertaken one year after the initiation of a new partnership involving academic (award bearing) provision. The aim is to provide a supportive framework to assist the Sponsoring School and its new Partner Institution to work collaboratively to ensure that: the learning and teaching provision and associated student experiences are of a high standard; and that those responsible for delivering the provision are undertaking their respective roles and responsibilities in an appropriate way.

As part of the regular monitoring procedures for established collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focused Review which looks at each partnership in depth. Occasional site inspection visits are also made.

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 International Defence and Security

Date of first publication/latest revision: August 2017

1. What is the course?

Course information

Course Title	International Defence and Security
Course code	MSIDSFTR, PDIDSFTR, PCIDSFTR
Academic Year	2017-18
Valid entry routes	MSc, PgDip, PgCert
Additional Exit routes	PgDip, PgCert
Mode of delivery	Full Time
Location(s)¹ of Study	Shrivenham
School(s)	Cranfield Defence and Security
Theme	Defence and Security
Centre	Centre for International Security and Resilience
Course Director	Mr David Turns
Awarding Body	Cranfield University
Is this an AP Contract course?²	NO
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

¹ If any part of this course is delivered at another site, please note which one(s) here

² AP Contract courses are provided by Cranfield University to the MoD as part of the Academic Provider contract

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 6. 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 Study Skills and Research Methods	10
C2 International Security, Conflict and Development	20
C3 Defence in the 21st Century	20
ELECTIVE MODULES:	
1 elective module chosen from E1 – E17	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 Study Skills and Research Methods	10
C2 International Security, Conflict and Development	20
C3 Defence in the 21st Century	20
ELECTIVE MODULES:	
7 elective modules chosen from E1 – E17	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 Study Skills and Research Methods	10
C2 International Security, Conflict and Development	20
C3 Defence in the 21st Century	20
Dissertation	80
ELECTIVE MODULES:	

7 elective modules chosen from E1 - E17	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 $\geq 50\%$;
- An average mark of $\geq 50\%$ 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);^{3 4}
- **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 $\geq 50\%$ 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 $\geq 50\%$ (where they exist);
- **For the thesis**, a mark of $\geq 50\%$ 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.

³ 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).

⁴ 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%).

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.

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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
C1	R-IDS-SSRM	Study Skills and Research Methodology		30	0	10	N	[04/09/17	[04/09/17	[22/09/17	40			100 MULTI	ICW ICW ICW ICW	20% 20% 20% 40%	[18/09/17 18/09/17 21/09/17 25/09/17	[TBC TBC TBC TBC]
C2	R-IDS-IISCD	Issues in International Security, Conflict and Development		60	0	20	N	[25/09/17	[25/09/17	[10/11/17	40 40	CW EX	50 50				[20/11/17 11/12/17]	[30/01/18 20/02/18]

⁵ Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

⁶ Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

⁷ 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.

⁸ For **independent assessments** please record type and weighting of each separate piece of assessment individually.

⁹ For **multi-part assessments** please record the overall weighting of module which should be 100%.

¹⁰ 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.

¹¹ 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

Module Number	Module code	Title	Module Leader	Contact hours ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
C3	R-IDS-D21C	Defence in the 21st Century		60	10	20	N	[09/10/17	[09/10/17	[24/11/17	40 40	ICW EX	50 50				[04/12/17 03/01/18]	[13/02/18 07/03/18]
E1	R-IDS-DCR	Diplomacy and Conflict Resolution		30	0	10	N	[13/11/17	[13/11/17	[01/12/17	40 40	ICW IPRES	70 30				[11/12/17 01/12/17]	[20/02/18 TBC]
E2	R-IDS-MDWS C	Managing Defence in the Wider Security Context		30	0	10	N	[02/01/18	[02/01/18	[19/01/18	40			100	ICW IPRES	80 20	[29/01/18 19/01/18]	[02/04/18]
E3	R-IDS-ILAC	International Law and Armed Conflict		30	4	10	N	[12/02/18	[12/02/18	[23/02/18	40 40	ICW EX	60 40				[05/03/18 26/03/18]	[07/05/18 28/05/18]
E4	R-IDS-ICLHR	International Criminal Law and Human Rights		30	4	10	N	[NOT RUNNING IN 2017-18]			40 40	ICW EX	60 40				[]	[]
E5	R-IDS-AMFC MW	Intelligence in International Security		30	0	10	N	[NOT RUNNING IN 2017-18]			40 40	ICW EX	60 40				[]	[]
E6	R-IDS-TCT	Counter-Terrorism and Intelligence		30	0	10	N	[22/01/18	[22/01/18	[09/02/18	40 40	ICW IPRES	70 30				[19/02/18 09/02/18]	[23/04/18 TBC]
E7	R-IDS-RS	Regional Security		30	0	10	N	[21/05/18	[21/05/18	[08/06/18	40	ICW	100				[18/06/18]	[20/08/17]

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 ; MULTI – Multi part

Module Number	Module code	Title	Module Leader	Contact hours ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
E8	R-IDS-IIPS	International Interventions for Peace and Statebuilding		30	0	10	N	[13/11/17	[13/11/17	[01/12/17	40	ICW	100				[11/12/17]	[20/02/18]
E9	R-IDS-MND	Managing Natural Disasters		30	0	10	N	[NOT RUNNING IN 2017/18]			40	ICW	100				[]	[]
E10	R-IDS-WMDC V	Weapons of Mass Destruction, Control and Verification		30	8	10	N	[NOT RUNNING IN 2017/18]			40	ICW	100				[]	[]
E11	R-IDS-MSD	Military Support to Disasters		30	0	10	N	[NOT RUNNING IN 2017/18]			40 40			100 MULTI	ICW ICW	60 40	[]	[]
E12	R-IDS-CM	Crisis Management		30	5	10	N	[NOT RUNNING IN 2017/18]			40	ICW	100				[]	[]
E13	R-RES-RC	Resilience		30	0	10	N	[NOT RUNNING IN 2017/18]			40	ICW	100				[]	[]
E14	R-IDS-RR	Risk, Crisis and Resilience		30	0	10	N	[19/03/18]	[19/03/18]	[06/04/18]	40	ICW	100				[16/04/18]	[18/06/18]

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 ; MULTI – Multi part

Module Number	Module code	Title	Module Leader	Contact hours ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
E15	R-IDS-FMC	Future Military Conflicts and Support to Disasters		30	N/A	10	N	21/05/18]	21/05/18]	08/06/18]	40	ICW	100				[18/06/18]	[20/08/18]
E16	R-IDS-SFDA MW	Strategic Frameworks and Decision-making in the Ancient and Modern Worlds		30		10		12/02/18]	12/02/18]	02/03/18]	40	ICW IPRES	60 40				[12/03/18 02/03/18]	[14/05/18 TBC]
E17	R-IDS-GVA C	Gender, Violence and Armed Conflicts		30		10		19/03/18]	19/03/18]	29/03/18]	40	ICW IPRAC	50 50				[28/03/17 09/04/17]	[05/06/18 13/06/18]
D1	R-IDS-DISS	Dissertation		30	N/A	80	N	25/06/18]	25/07/18]	17/08/18]	50	THESIS	100				[17/08/18]	[02/01/19]

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

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

<u>Module code</u>	<u>Module title</u>	<u>Course that owns the module</u>	<u>Other course(s)/ programme(s) that use the module</u>
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

A. Postgraduate Certificate

Award ILOs Module No.	ILO1	ILO2	ILO3	ILO4	ILO5
C2	ICW/EX		ICW/EX	ICW/EX	ICW/EX
C3	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.	ILO6	ILO7	ILO8	ILO9	ILO10
E1	ICW/IPRES	ICW/IPRES	ICW/IPRES	ICW/IPRES	ICW/IPRES
E2	ICW	ICW	ICW	ICW	
E3	ICW/EX	ICW/EX	ICW/EX	ICW/EX	
E4	ICW/EX	ICW/EX	ICW/EX	ICW/EX	
E5	ICW/EX	ICW/EX	ICW/EX	ICW/EX	
E6	ICW/IPRES	ICW/IPRES	ICW/IPRES	ICW/IPRES	ICW/IPRES
E7	ICW	ICW	ICW	ICW	
E8	ICW	ICW	ICW	ICW	
E9	ICW	ICW	ICW	ICW	
E10	ICW	ICW	ICW	ICW	
E11	ICW1/ICW2	ICW1/ICW2	ICW1/ICW2	ICW1/ICW2	
E12	ICW	ICW	ICW	ICW	
E13	ICW	ICW	ICW	ICW	
E14	ICW	ICW	ICW	ICW	
E15	ICW	ICW	ICW	ICW	
E16	ICW/IPRES	ICW/IPRES	ICW/IPRES	ICW/IPRES	ICW/IPRES
E17	ICW/IPRAC	ICW/IPRAC	ICW/IPRAC	ICW/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.	xi	xii	xiii
C1		ICW	
D1	THESIS	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.

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.

New Partnership arrangements are considered in two stages:

1. The University Executive is responsible for ensuring appropriate due diligence has been undertaken in respect of the University's legal, financial, reputational and ethical responsibilities.
2. A Partnership Delivery Approval Panel then considers whether the proposal meets the expectations and indicators of sound practice of the QAA Quality Code Chapter B10: Managing Higher Education Provision with Others, with regards to the management and operation of the partnership and that the academic standards and the quality of the student experience are assured in line with the remaining chapters of the QAA Quality Code. The delivery of new partnership provision is ultimately approved by the University's Education Committee, on behalf of Senate.

Year one partnership reviews are undertaken one year after the initiation of a new partnership involving academic (award bearing) provision. The aim is to provide a supportive framework to assist the Sponsoring School and its new Partner Institution to work collaboratively to ensure that: the learning and teaching provision and associated student experiences are of a high standard; and that those responsible for delivering the provision are undertaking their respective roles and responsibilities in an appropriate way.

As part of the regular monitoring procedures for established collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focused Review which looks at each partnership in depth. Occasional site inspection visits are also made.

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: February 2017

1. What is the course?

Course information

Course Title	MSc in Investment Management
Course code	MSIVMFTC, PDIVMFTC, PCIVMFTC
Academic Year	2017/18
Valid entry routes	MSc
Additional exit routes	PgDip, PgCert
Mode of delivery	Full-time
Location(s)¹ 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
Is this an AP Contract course?²	No
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

¹ If any part of this course is delivered at another site, please note which one(s) here

² AP Contract courses are provided by Cranfield University to the MoD as part of the Academic Provider contract

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 11-21	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:	
Modules 1-10	100
Thesis 22	80
ELECTIVE MODULES:	
4 modules must be taken from 8 optional modules 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 $\geq 50\%$;
- An average mark of $\geq 50\%$ 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);^{3 4}

³ 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).

⁴ 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 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 $\geq 50\%$ 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 $\geq 50\%$ (where they exist);
- **For the thesis**, a mark of $\geq 50\%$ in order to receive a pass (where it exists).

6. How is the course structured?

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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
TERM 1																		
1	M-F/COF	Corporate Finance	Dr Yacine Belghitar	20		10	Y		02/10/17	08/12/17	40	EX	100				wb 11/12/17	TBC
2	M-F/SAF	Statistical Analysis in Finance	Abdul Mohammed	20		10	Y		02/10/17	08/12/17	40 40	GCW EX	40 60				01/12/17 wb 11/12/17	TBC
3	M-F/ACC	Accounting	Dr Matthias Nnadi	20	6	10	Y		02/10/17	08/12/17	40 40	EX EX	25 75				10/11/17 wb 11/12/17	TBC

⁵ Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

⁶ Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

⁷ 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.

⁸ For **independent assessments** please record type and weighting of each separate piece of assessment individually.

⁹ For **multi-part assessments** please record the overall weighting of module which should be 100%.

¹⁰ 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.

¹¹ 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
4	M-F/ECO	Economics for Financial Markets	Dr Constantinos Alexiou	20		10	Y		02/10/17	08/12/17	40	EX	100				wb 11/12/17	TBC
5	M-F/ORG	Organisational Management	Dr Orly Levy	20		10	Y		02/10/17	08/12/17	40	ICW	100				08/12/17	TBC
TERM 2																		
6	M-F/FM	Valuation and Financial Modelling	Dr Vineet Agarwal	20		10	Y		08/01/18	16/03/18	40 40	GCW EX	50 50				12/03/18 wb 19/03/18	TBC
7	M-F/FMRE	Financial Markets, Regulation and Ethics	Paul Richards/ Steve Wallace	20	14 / 6	10	Y		08/01/18	16/03/18	40 40	ICW ICW	67 33				09/03/18 16/03/18	TBC
8	M-I/IPM	Investment and Portfolio Management	Prof Sunil Poshakwale/ Dr Peter Yallup	20		10	N		08/01/18	16/03/18	40	EX	100				wb 19/03/18	TBC
9	M-I/DFR	Derivatives and Financial Risk Management	Dr Peter Yallup	20		10	N		08/01/18	16/03/18	40	EX	100				wb 19/03/18	TBC
10	M-F/RMF	Research Methods in Finance	Dr Vineet Agarwal	20		10	Y		08/01/18	16/03/18	40 40	GPRES ICW	30 70				16/03/18 14/03/18	TBC
TERM 3																		
11	M-F/FEC	Applied Financial Econometrics	Dr Yacine Belghitar, Dr Peter Yallup	15		5	Y		09/04/18	18/05/18	40	ICW	100				11/06/18	TBC

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPAC – 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
12	M-I/FNM	Fund Management	Jane Vessey	15		5	Y		09/04/18	18/05/18	40	EX	100				24/05/18	TBC
13	M-F/MAD	Mergers and Acquisitions	Dr Andrea Moro Prof Ruth Bender	15		5	Y		09/04/18	18/05/18	40	ICW	100				15/06/18	TBC
14	M-I/FIS	Fixed Interest Securities	Dr Vineet Agarwal	15		5	Y		09/04/18	18/05/18	40	EX	100				25/05/18	TBC
15	M-F/PEQ	Private Equity	Dr Abdulkadir Mohamed	15		5	Y		09/04/18	18/05/18	40	ICW	100				18/06/18	TBC
16	M-I/TATS	Technical Analysis and Trading Systems	Dr Peter Yallup	15		5	Y		09/04/18	18/05/18	40 40	ICW GCW	50 50				11/06/18 22/06/18	TBC
17	M-I/IEM	International Investment and Emerging Markets	Prof Sunil Poshakwale	15		5	Y		09/04/18	18/05/18	40			100 MULTI	IPRES ICW	25 75	08/06/18	TBC
18	M-F/CRS	Corporate Restructuring	Dr Yacine Belghitar	15		5	Y		09/04/18	18/05/18	40	ICW	100				13/06/18	TBC
19	M-F/IFF	Infrastructure Finance	Ian Alexander	15		5	Y		09/04/18	18/05/18	40	EX	100				29/05/18	TBC
20	M-F/ENF	Entrepreneurial Finance	Dr Andrea Moro	15		5	Y		09/04/18	18/05/18	40	ICW	100				20/06/18	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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
21	M-F/SMA	Strategic Management Accounting and Control	Prof Michael Bourne	15		5	Y		09/04/18	18/05/18	40	ICW	100				22/06/18	TBC
TERM 4																		
22	M-F/THS	Thesis	Various Supervisors	50		80	Y		25/06/18	07/09/18		THESIS	100				04/09/18	

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 used by another existing course.

<u>Module code</u>	<u>Module title</u>	<u>Course that owns the module</u>	<u>Other course(s)/ programme(s) that use the module</u>
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-I/FNM	Fund Management	Investment Management	Finance and Management
M-I/FIS	Fixed Income Securities	Investment Management	Finance and Management
M-I/TATS	Technical Analysis and Trading Systems	Investment Management	Finance and Management
M-I/IEM	International Investment and Emerging Markets	Investment Management	Finance and Management
M-F/CRS	Corporate Restructuring	Finance and Management	Finance and Management
M-F/IFF	Infrastructure Finance	Finance and Management	Finance and Management
M-F/ENF	Entrepreneurial Finance	Finance and Management	Finance and Management
M-F/SMA	Strategic Management Accounting and Control	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.

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	✓	✓		✓										
9	✓	✓		✓										
10	✓	✓		✓										
11							✓	✓						
12					✓		✓	✓						
13					✓	✓	✓	✓						
14						✓	✓	✓						
15					✓	✓		✓						
16					✓		✓	✓						
17					✓		✓	✓						
18					✓	✓	✓	✓						
19					✓	✓		✓						
20					✓	✓	✓	✓						
21					✓		✓	✓						
22									✓	✓	✓	✓	✓	✓

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.

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.

New Partnership arrangements are considered in two stages:

1. The University Executive is responsible for ensuring appropriate due diligence has been undertaken in respect of the University's legal, financial, reputational and ethical responsibilities.
2. A Partnership Delivery Approval Panel then considers whether the proposal meets the expectations and indicators of sound practice of the QAA Quality Code Chapter B10: Managing Higher Education Provision with Others, with regards to the management and operation of the partnership and that the academic standards and the quality of the student experience are assured in line with the remaining chapters of the QAA Quality Code. The delivery of new partnership provision is ultimately approved by the University's Education Committee, on behalf of Senate.

Year one partnership reviews are undertaken one year after the initiation of a new partnership involving academic (award bearing) provision. The aim is to provide a supportive framework to assist the Sponsoring School and its new Partner Institution to work collaboratively to ensure that: the learning and teaching provision and associated student experiences are of a

high standard; and that those responsible for delivering the provision are undertaking their respective roles and responsibilities in an appropriate way.

As part of the regular monitoring procedures for established collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focused Review which looks at each partnership in depth. Occasional site inspection visits are also made.

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 Land Reclamation and Restoration

Date of first publication/latest revision: 21/01/16 – July 2017

1. What is the course?

Course information

Course Title	Land Reclamation and Restoration
Course code	MSLREFTC, MSLREPTC, PDLREFTC, PDLREPTC, PCLREFTC, PCLREPTC
Academic Year	2017/18
Valid entry routes	MSc, PgDip, PgCert
Additional Exit routes	PgDip, PgCert
Mode of delivery	Full-time, Part-time
Location(s)¹ 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
Is this an AP Contract course?²	No
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)

¹ If any part of this course is delivered at another site, please note which one(s) here

² AP Contract courses are provided by Cranfield University to the MoD as part of the Academic Provider contract

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 (October preferred, other times on case by case basis)

Institutions delivering the course

This course is delivered by the School of Water, Energy and Environment primarily through 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 Government's 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 are involved in Group Projects where they work together with their peers from other MSc courses in a particular project closely associated with organisations such as Tarmac, the Coal Authority, the Environment Agency etc which offers an opportunity to apply their knowledge base in a problem solving context -that is multi-disciplinary.

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.

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. What are the aims of the course?

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

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 applications of principles of soil-plant interactions and use of appropriate options in restoring soil functions
- ILO 3. Evaluate suitability of theoretical considerations and apply it in an ecosystems approach to address challenges in land remediation and restoration

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. Assess bespoke tools and its suitability to be applied in a sustainable land reclamation and restoration context
- ILO 5. Integrate knowledge, understanding and skills from the taught modules in a real-life situation to address problems faced by industrial clients; creating new problem diagnoses, designs, or system insights; and communicating 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 6. Define a research question, develop aim(s) and objectives, select and execute a methodology, analyse data, evaluate findings critically and draw justifiable conclusions, demonstrating self-direction and originality of thought
- ILO 7. To communicate their individual research via a thesis and in an oral presentation in a style suitable for academic and professional audiences.

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

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. Part time students who cannot attend the scheduled induction week can have ad hoc induction sessions arranged.

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 6. 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	0
GIS Fundamentals	10
Soil Systems	10
Soil Engineering, Contaminant and Nutrient Management	10
Landscape Ecology	10
Module 10 (full time only)	10
Module 11 (part time only)	10
Ecological Restoration	10
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:	
Induction	0
GIS Fundamentals	10
Soil Systems	10
Soil Engineering, Contaminant and Nutrient Management	10
Landscape Ecology	10

Module 10 (full time only)	10
Module 11 (part time only)	10
Ecological Restoration	10
Group Project (Full Time Students)	40
ELECTIVE MODULES:	
Principles of Sustainability	10
Aerial Photography and Digital Photogrammetry	10
Land Engineering and Water Management	10
Land Resource Planning	10
Part Time Students:	
Group Project	40
OR	
Dissertation	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:	
Induction	0
GIS Fundamentals	10
Soil Systems	10
Soil Engineering, Contaminant and Nutrient Management	10
Landscape Ecology	10
Module 10 (full time only)	10
Module 11 (part time only)	10
Ecological Restoration	10
Module 13 (Group Project)	40
Module 14 in place of Module 13 (part time students)	40
Module 15 (Thesis project)	80
ELECTIVE MODULES:	
Principles of Sustainability	10
Aerial Photography and Digital Photogrammetry	10
Land Engineering and Water Management	10
Land Resource Planning	10
Part Time Students:	
Group Project	40
OR	
Dissertation	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 $\geq 50\%$;
- An average mark of $\geq 50\%$ 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);^{3 4}
- **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 $\geq 50\%$ 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 $\geq 50\%$ (where they exist);
- **For the thesis**, a mark of $\geq 50\%$ 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.

³ 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).

⁴ 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
1	I-ENV-INWK	Induction Week	T Brewer	33		0	Y	N/A	02/10/17	06/10/17	N/A	AO	N/A				N/A	
2	I-EMB-A1122	Principles of Sustainability	P Burgess	26		10	Y	N/A	09/10/17	13/10/17	40	ICW	100				F 21/10/17 P 04/11/17	Week 9 - 4-8 June 2018
3	I-GIM-A1135	Aerial Photography and Digital	T Brewer	50		10	Y	N/A	09/10/17	13/10/17	40	ICW	100				FT - 21/10/2017 PT -	Week 9 - 4-8 June 2018

⁵ Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

⁶ Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

⁷ 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 $\geq 50\%$. This will be at the Board of Examiners discretion.

⁸ For **independent assessments** please record type and weighting of each separate piece of assessment individually.

⁹ For **multi-part assessments** please record the overall weighting of module which should be 100%.

¹⁰ 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.

¹¹ 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
		Photogrammetry															04/11/2017	
4	I-GIM-A1131	GIS Fundamentals	T Brewer	42		10	Y	N/A	23/10/17	27/10/17	40	ICW	100				FT - 04/11/2017 PT - 18/11/2017	Week 9 - 4-8 June 2018
5	I-LAM-A1138	Soil Systems	J Hannam	34		10	Y	N/A	06/11/17	10/11/17	40	ICW	100				FT - 18/11/17PT - 02/12/17	Week 9 - 4-8 June 2018
6	I-LAM-SECNM	Soil Engineering, contaminant and nutrient management	S de Baets	33		10	N	N/A	20/11/17	24/11/17	40			100	ICW IPRES	60% 40%	ICW - FT - 02/12/17 PT - 16/12/17 IPRES - FT/PT - Week commencing ; 20/11/17	Week 9 - 4-8 June 2018
7	I-LAM-A1145	Land Engineering and Water	L Deeks	30		10	Y	N/A	04/12/17	08/12/17	40	ICW	100				F 16/12/17 P 08/01/18	Week 9 - 4-8 June 2018

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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment								
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates		
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date	
		Management																	
8	I-ILE-ALRP	Land Resource Planning	T Brewer	30		10	N	N/A	04/12/17	08/12/17	40	ICW	100				F 16/12/17 P 08/01/18	Week 9 - 4-8 June 2018	
9	I-LAM-A1522	Landscape Ecology	R Corstanje	30		10	Y	N/A	08/01/18	12/01/18	40	ICW	100				FT - 20/01/18 PT - 03/02/18	Week 9 - 4-8 June 2018	
10	I-LAM-A1523	Soil Erosion Control: Principles and Practices (FT)	R Simmons	40		10	Y	N/A	22/01/18	26/01/18	40			100	GCW ICW	50% 50%	GCW & ICW 10/02/18	Week 9 - 4-8 June 2018	
11	I-LAM-A1524	Soil Erosion Control: Principles and Practices (PT)	R Simmons	40		10	Y	N/A	22/01/18	26/01/18	40	ICW	100				24/02/18	Week 9 - 4-8 June 2018	
12	I-LAM-A1148	Ecological Restoration	J Harris	32		10	N	N/A	29/01/18	02/02/18	40	ICW	100				F 17/2/18 P 03/3/18	Week 9 - 4-8 June 2018	
13	I-ENV-GRPP	Group Project	Supervisors	16		40	Y	N/A	19/02/18	04/05/18	50	GPROJ	80				GPROJ 1/05/18		

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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
												ICW	20				ICW 05/05/18	
14	I-ENV-DISS	Dissertation	Supervisors	10		40	Y	N/A	02/10/17	28/09/18	50	IPROJ IPRES	80 20				28/09/18	
15	I-ENV-THESIS	Individual Research Project	Supervisors	20		80	Y	N/A	07/05/18	07/09/18	50	THESIS OR	90 10	N/A	N/A	N/A	3/9/18	

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 used by another existing course.

<u>Module code</u>	<u>Module title</u>	<u>Course that owns the module</u>	<u>Other course(s)/ programme(s) that use the module</u>
I-EMB-A1122	Principles of Sustainability	Environmental Management for Business	<ul style="list-style-type: none"> • Future Food Sustainability • Land Reclamation and Restoration • Renewable Energy Technology • REMS EngD
I-GIM-A1135	Aerial Photography and Digital Photogrammetry	Geographical Information Management	<ul style="list-style-type: none"> • Land Reclamation and Restoration • Safety and Accident Investigation
I-GIM-A1131	GIS Fundamentals	Geographical Information Management	<ul style="list-style-type: none"> • Land Reclamation and Restoration • Safety and Accident Investigation • REMS EngD
I-LAM-A1522	Landscape Ecology	Land Reclamation and Restoration	<ul style="list-style-type: none"> • Geographical Information Management
I-LAM-A1145	Land Engineering and Water Management	Land Reclamation and Restoration	<ul style="list-style-type: none"> • Environmental Engineering
I-LAM-A1523	Soil Erosion Control: Principles and Practices (Full Time Study)	Land Reclamation and Restoration	<ul style="list-style-type: none"> • Environmental Engineering
I-LAM-A1524	Soil Erosion Control: Principles and Practices (Part Time Study)	Land Reclamation and Restoration	<ul style="list-style-type: none"> • Environmental Engineering
I-LAM-A1138	Soil Systems	Land Reclamation and Restoration	<ul style="list-style-type: none"> • Future Food Sustainability

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.

A. Postgraduate Certificate

Award ILOs Module No.	ILO 1	ILO 2	ILO 3
4	ICW		
5		ICW	
6		ICW IPRES	
9			ICW
10			GCW ICW
11			ICW
12			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 4	ILO 5
2	ICW	
3	ICW	
7	ICW	
8	ICW	
13		GPROJ ICW
14		IPROJ 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.	ILO 6	ILO 7
15	THESIS/ ORAL	THESIS/ ORAL

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.

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.

New Partnership arrangements are considered in two stages:

1. The University Executive is responsible for ensuring appropriate due diligence has been undertaken in respect of the University's legal, financial, reputational and ethical responsibilities.
2. A Partnership Delivery Approval Panel then considers whether the proposal meets the expectations and indicators of sound practice of the QAA Quality Code Chapter B10: Managing Higher Education Provision with Others, with regards to the management and operation of the partnership and that the academic standards and the quality of the student experience are assured in line with the remaining chapters of the QAA Quality Code. The delivery of new partnership provision is ultimately approved by the University's Education Committee, on behalf of Senate.

Year one partnership reviews are undertaken one year after the initiation of a new partnership involving academic (award bearing) provision. The aim is to provide a supportive framework to assist the Sponsoring School and its new Partner Institution to work collaboratively to ensure that: the learning and teaching provision and associated student experiences are of a high standard; and that those responsible for delivering the provision are undertaking their respective roles and responsibilities in an appropriate way.

As part of the regular monitoring procedures for established collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focused Review which looks at each partnership in depth. Occasional site inspection visits are also made.

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

Assistant Restoration Managers (x3), Tarmac

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: 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: July 2017

1. What is the course?

Course information

Course Title	MSc in Logistics and Supply Chain Management
Course code	MSLOSFTC, PDLOSFTC, PCLOSFTC, MSLSOFTC, MSLSOPTC
Academic Year	2017-18
Valid entry routes	MSc
Additional exit routes	PgDip, PgCert
Mode of delivery	Full-time (Cranfield only), Part-time (Muscat only)
Location(s)¹ of Study	Cranfield Campus and Muscat University, Oman
School(s)	School of Management
Theme	Leadership and Management
Centre	Centre for Demand Chain Management
Course Director	Dr Denyse Julien
Awarding Body	Cranfield University
Is this an AP Contract course?²	No
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 (Cranfield and Muscat), Part-time MSc – up to three years (Muscat only)
Course Start Month(s)	September

¹ If any part of this course is delivered at another site, please note which one(s) here

² AP Contract courses are provided by Cranfield University to the MoD as part of the Academic Provider contract

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 lectures, in-class case discussions, group and self-study. Group project work, reflective practice and class exercises are used to develop problem solving skills.

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:

- Induction Programme
- Learning teams supported by an academic tutor

- Extensive use of BlackBoard (VLE) as a means of delivering material to support and augment classroom learning
- Library induction, referencing and plagiarism 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. **MSc**

An MSc will be awarded on successful completion of 200 credits as outlined below:

Logistics and Supply Chain Management (Cranfield) (Full-time only)

Description	Credits
COMPULSORY MODULES:	
Supply Chain Strategy and Sustainability	10
Principles of Strategic Procurement	10
Accounting and Finance	10
Analytical Techniques for Supply Chain Management	10
Freight Transport	10
Inventory and Operations Management	10
Information Systems and e-Business	10
Project Management Introduction	10
Physical Network Design	10
Warehousing	10
Personal Development	0
Research Methods	0
Thesis	80
ELECTIVE MODULES:	
Select 4 elective modules from the following:	20
Business Process Outsourcing	
Designing and Managing Resilient Supply Chains	
Logistics Outsourcing	
Planning and Resourcing Road Freight Transport	
Humanitarian Logistics	
Simulation	
Six Sigma	
Performance Measurement in the Supply Chain	
Sales and Operations Planning	
Retail Logistics	
Social Network Analysis in a Supply Chain Context	
Business Model Generation	
TOTAL:	200

Logistics and Supply Chain Management (Muscat)

Description	Credits
COMPULSORY MODULES:	
Supply Chain Strategy and Sustainability	10
Principles of Strategic Procurement	10
Accounting and Finance	10
Analytical Techniques for Supply Chain Management	10
Freight Transport	10
Inventory and Operations Management	10
Information Systems and e-Business	10
Project Management Introduction	10
Physical Network Design	10
Warehousing	10
Six Sigma	5
Performance Measurement in the Supply Chain	5
Sales and Operations Planning	5
Retail Logistics	5
Research Methods	0
Thesis	80
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 $\geq 50\%$;
- An average mark of $\geq 50\%$ 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);^{3 4}
- **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

³ 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).

⁴ 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 $\geq 50\%$ 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 $\geq 50\%$ (where they exist);
 - **For the thesis**, a mark of $\geq 50\%$ in order to receive a pass (where it exists).

6. How is the course structured?

All students register for the course in September. Full-time students are expected to complete the course in September in the following year. The part-time course is structured over two 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.

Logistics and Supply Chain Management (Cranfield)

Module Number	Module code	Title	Module Leader	Contact hours ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
1	M-L/SCSS	Supply Chain Strategy and Sustainability	Dr Heather Skipworth	25		10	Y		02/10/17	15/12/17	40 40	GPRES ICW	25 75				TBC 23/11/17	
2	M-L/PSP	Principles of Strategic Procurement	Farooq Habib	25		10	Y		02/10/17	15/12/17	40	ICW	100				11/01/18	

⁵ Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

⁶ Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

⁷ 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.

⁸ For **independent assessments** please record type and weighting of each separate piece of assessment individually.

⁹ For **multi-part assessments** please record the overall weighting of module which should be 100%.

¹⁰ 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.

¹¹ 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
3	M-L/ACF	Accounting and Finance	Dr Simon Templar	25		10	Y		02/10/17	15/12/17	40	EX	100				w/c 11/12/17	
4	M-L/ATS	Analytical Techniques for Supply Chain Management	Dr Emel Aktas	35		10	Y		02/10/17	15/12/17	40	EX	100				w/c 11/12/17	
5	M-L/FRT	Freight Transport	Melvyn Peters	25		10	Y		02/10/17	15/12/17	40	ICW	100				18/01/18	
6	M-L/IOM	Inventory and Operations Management	Dr Benny Tjahjono	25		10	Y		02/10/17	15/12/17	40			100 MULTI	GCW ICW	60 40	30/11/17	
7	M-L/ISB	Information Systems and e-Business	Dr Vahid Mirza Beiki	25		10	Y		08/01/18	23/03/18	40 40	GCW ICW	80 20				13/04/18 13/04/18	
8	M-M/PMI	Project Management Introduction	John Algar	20		10	Y		05/02/18	09/02/18	40 40			60 MULTI	GCW GPRAC GPRES	10 30 20	TBC TBC	
9	M-L/PND	Physical Network Design	Dr Nicky Yates	25		10	N		08/01/18	23/03/18	40	ICW	100				22/03/18	

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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
10	M-L/WHs	Warehousing	Dr Hendrick Reefke	25		10	N		08/01/18	23/03/18	40	ICW	100				TBC	
11	M-P/BPO	Business Process Outsourcing	Dr Vahid Mirza Beiki	12		5	Y		08/01/18	23/03/18	40			100 MULTI	GCW ICW	75 25	01/03/18	
12	M-P/RSC	Designing and Managing Resilient Supply Chains	Dr Uta Jüttner	12		5	Y		08/01/18	23/03/18	40	GCW	100				15/03/18	
13	M-L/OUT	Logistics Outsourcing	Melvyn Peters	12		5	Y		08/01/18	23/03/18	40	ICW	100				12/02/18	
14	M-L/PRR	Planning and Resourcing Road Freight Transport	Melvyn Peters	12		5	Y		08/01/18	23/03/18	40			100 MULTI	GPRES GCW ICW	10 40 50	05/03/18 05/03/18 TBC	
15	M-L/HLR	Humanitarian Logistics	Dr Silvia Rossi Tafuri	12		5	Y		08/01/18	23/03/18	40	ICW	100				07/03/18	
16	M-L/SIM	Simulation	Dr Nicky Yates	12		5	Y		08/01/18	23/03/18	40	ICW	100				11/04/18	
17	M-L/SXS	Six Sigma	Farooq Habib	12		5	Y		08/01/18	23/03/18	40			100 MULTI	GCW ICW	75 25	09/04/18	

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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
18	M-L/PFM	Performance Measurement in the Supply Chain	Dr Andrey Pavlov	12		5	Y		08/01/18	23/03/18	40	ICW	100				19/02/18	
19	M-L/SOP	Sales and Operations Planning	Dr Heather Skipworth	12		5	Y		08/01/18	23/03/18	40	ICW	100				08/02/18	
20	M-L/RLO	Retail Logistics	Prof Michael Bourlakis	12		5	Y		08/01/18	23/03/18	40	ICW	100				16/04/18	
21	M-L/SNCC	Social Network Analysis in a Supply Chain Context	Dr Leila Alinaghian	12		5	Y		08/01/18	23/03/18	40	ICW	100				09/03/18	
22	M-L/BMG	Business Model Generation	Dr Denyse Julien	12		5	Y		08/01/18	23/03/18	40	GCW	100				TBC	
23	M-L/PDV	Personal Development	Dr Denyse Julien	0		0	Y		02/10/17	23/03/18	N/A	AO	N/A				N/A	
24	M-L/RSM	Research Methods	Dr Denyse Julien	12		0	Y		09/04/18	29/04/18	N/A	AO	N/A				N/A	
25	M-L/THS	Thesis	Supervisor	0		80	Y		01/04/18	03/06/18		THESIS	100				04/09/18	

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

Logistics and Supply Chain Management (Muscat)

Module Number	Module code	Title	Module Leader	Contact hours ¹²	Total hours delivered by Visiting Lecturers ¹³	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ¹⁴ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ¹⁵ (%) of independent assessments	Weighting within module of multi-part assessments ¹⁶ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁷	Assessment Submission and/or exam date ¹⁸	Assessment / Exam Retake date
1	M-L/SCSS Occ B	Supply Chain Strategy and Sustainability	Mike Bernon, Dr Soroosh Saghiri	25		10	Y		08/10/17	12/10/17	40 40	GPRES ICW	25 75					
2	M-L/PSP Occ B	Principles of Strategic Procurement	Farooq Habib	25		10	Y		25/02/18	28/02/18	40	ICW	100					
3	M-L/ACF Occ B	Accounting and Finance	Dr Simon Templar	25		10	Y		14/01/18	17/01/18	40	EX	100					
4	M-L/ATSM Occ B	Analytical Techniques for Supply Chain Management	Dr Emel Aktas, Dr Anne Laure Humbert	25		10	Y		12/11/17	16/11/17	40	EX	100					

¹² Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

¹³ Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

¹⁴ 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.

¹⁵ For **independent assessments** please record type and weighting of each separate piece of assessment individually.

¹⁶ For **multi-part assessments** please record the overall weighting of module which should be 100%.

¹⁷ 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.

¹⁸ 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 ¹²	Total hours delivered by Visiting Lecturers ¹³	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ¹⁴ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ¹⁵ (%) of Independent assessments	Weighting within module of multi-part assessments ¹⁶ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁷	Assessment Submission and/or exam date ¹⁸	Assessment / Exam Retake date
5	M-L/FRT Occ B	Freight Transport	Melvyn Peters	25		10	Y		28/10/18	31/10/18	40	ICW	100					
6	M-L/IOM Occ B	Inventory and Operations Management	Dr Benny Tjahjono	25		10	Y		03/02/19	06/02/19	40			100 MULTI	GCW ICW	60 40		
7	M-L/ISBM Occ B	Information Systems and e-Business	Dr Donna Champion	25		10	Y		18/03/19	21/03/19	40 40	GCW ICW	80 20					
8	M-L/PMI Occ B	Project Management Introduction	John Algar	20		10	Y		22/04/18	26/04/18	40 40			60 MULTI	GCW GPRAC GPRES	10 30 20		
9	M-L/PND Occ B	Physical Network Design	Dr Nicky Yates	25		10	N		02/12/18	05/12/18	40	ICW	100					
10	M-L/WHs Occ B	Warehousing	Dr Hendrick Reefke	25		10	N		17/06/18	21/06/18	40	ICW	100					
11	M-P/BPO	Business Process Outsourcing	Dr Vahid Mirza Beiki	12		5	Y	NOT RUNNING IN MUSCAT			40			100 MULTI	GCW ICW	75 25		
12	M-P/RSC	Designing and Managing Resilient Supply Chains	Dr Uta Jüttner	12		5	Y	NOT RUNNING IN MUSCAT			40	GCW	100					

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 ¹²	Total hours delivered by Visiting Lecturers ¹³	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ¹⁴ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ¹⁵ (%) of Independent assessments	Weighting within module of multi-part assessments ¹⁶ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁷	Assessment Submission and/or exam date ¹⁸	Assessment / Exam Retake date
13	M-L/OUT	Logistics Outsourcing	Melvyn Peters	12		5	Y	NOT RUNNING IN MUSCAT			40	ICW	100					
14	M-L/PRR	Planning and Resourcing Road Freight Transport	Melvyn Peters	12		5	Y	NOT RUNNING IN MUSCAT			40			100 MULTI	GPRES GCW ICW	10 40 50		
15	M-L/HLR	Humanitarian Logistics	Dr Silvia Rossi Tafuri	12		5	Y	NOT RUNNING IN MUSCAT			40	ICW	100					
16	M-L/SIM	Simulation	Dr Nicky Yates	12		5	Y	NOT RUNNING IN MUSCAT			40	ICW	100					
17	M-L/SXS Occ B	Six Sigma	Dr Denyse Julien	12		5	Y		05/12/18	06/12/18	40			100 MULTI	GCW ICW	75 25		
18	M-L/PFM Occ B	Performance Measurement in the Supply Chain	Dr Andrey Pavlov	12		5	Y		17/03/19	18/03/19	40	ICW	100					
19	M-L/SOP Occ B	Sales and Operations Planning	Dr Heather Skipworth	12		5	Y		06/02/19	07/02/19	40	ICW	100					
20	M-L/RLO Occ B	Retail Logistics	Prof Michael Bourlakis	12		5	Y		28/02/18	01/03/18	40	ICW	100					
21	M-L/SNCC	Social Network Analysis in a Supply	Dr Leila Alinaghian	12		5	Y	NOT RUNNING IN MUSCAT			40	ICW	100					

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 ¹²	Total hours delivered by Visiting Lecturers ¹³	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ¹⁴ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ¹⁵ (%) of independent assessments	Weighting within module of multi-part assessments ¹⁶ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁷	Assessment Submission and/or exam date ¹⁸	Assessment / Exam Retake date
		Chain Context																
22	M-L/BMG	Business Model Generation	Dr Denyse Julien	12		5	Y	NOT RUNNING IN MUSCAT			40	GCW	100					
23	M-L/PDV	Personal Development	Dr Denyse Julien	0		0	Y	NOT RUNNING IN MUSCAT			N/A	AO	N/A					
24	M-L/RSM Occ B	Research Methods	Muscat Academics	12		0	Y		06/01/19	10/01/19	N/A	AO	N/A					
25	M-L/THS Occ B	Thesis	Supervisor	0		80	Y		10/01/19	05/09/19		THESIS	100					

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.

<u>Module code</u>	<u>Module title</u>	<u>Course that owns the module</u>	<u>Other course(s)/ programme(s) that use the module</u>
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	Master of Business Administration	Master of Business Administration, Procurement and Supply Chain Management, Design Strategy and Leadership, Digital Design and Strategic Communication, Innovation and Creativity in Industry
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/SNCC	Social Network Analysis in a Supply Chain Context	Logistics and Supply Chain Management	Procurement and Supply Chain Management
New Module	Business Model Generation	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/PDV	Personal Development	Logistics and Supply	Procurement and Supply Chain

		Chain Management	Management
M-L/RSM	Research Methods	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/THS	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					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

25					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
----	--	--	--	--	---	---	---	---	---	---	---	---	---	---	---	---	---	---

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.

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.

New Partnership arrangements are considered in two stages:

1. The University Executive is responsible for ensuring appropriate due diligence has been undertaken in respect of the University's legal, financial, reputational and ethical responsibilities.
2. A Partnership Delivery Approval Panel then considers whether the proposal meets the expectations and indicators of sound practice of the QAA Quality Code Chapter B10: Managing Higher Education Provision with Others, with regards to the management and operation of the partnership and that the academic standards and the quality of the student experience are assured in line with the remaining chapters of the QAA Quality Code. The delivery of new partnership provision is ultimately approved by the University's Education Committee, on behalf of Senate.

Year one partnership reviews are undertaken one year after the initiation of a new partnership involving academic (award bearing) provision. The aim is to provide a supportive framework to assist the Sponsoring School and its new Partner Institution to work collaboratively to ensure that: the learning and teaching provision and associated student experiences are of a high standard; and that those responsible for delivering the provision are undertaking their respective roles and responsibilities in an appropriate way.

As part of the regular monitoring procedures for established collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focused Review which looks at each partnership in depth. Occasional site inspection visits are also made.

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.

COURSE TITLE: Executive Logistics & Supply Chain Management

Date of first publication/latest revision: April 2017

A. What is the course?

Course information

Course Title	Executive Logistics & Supply Chain Management
Course code	MSLOSPTC, PCLOSPTC, PDLOSPTC
Academic Year	2017/18
Valid entry routes	MSc, PgCert, PgDip
Additional exit routes	Not Applicable
Mode of delivery	Part-time
Location(s)¹ 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
Is this an AP Contract course?²	No
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 If any part of this course is delivered at another site, please note which one(s) here

² AP Contract courses are provided by Cranfield University to the MoD as part of the Academic Provider contract

Institutions delivering the course

This course is delivered by Logistics, Procurement and Supply 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)

The MSc Executive Logistics and Supply Chain Management is accredited formally by The Chartered Institute of Logistics & Transport until 2021 and The Chartered Institute of Purchasing and Supply until August 2018.

B. 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, Procurement 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

This programme is intended for the following range of students:

- candidates with a minimum of three 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;
- for candidates on the full-time option, experience is not a requirement.

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

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

A. Postgraduate Certificate

- ILO1. Demonstrate a systematic knowledge of supply chain management in general and a critical awareness of current supply problems and new thinking at the forefront of the discipline.
- ILO2. Understand and identify appropriate techniques to address specific challenges in supply chain management

B. Postgraduate Diploma

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

- ILO 3. Demonstrate a comprehensive and critical knowledge of logistics and supply chain components
- ILO 4. Investigate and solve advanced and complex real-life supply chain problems systematically and creatively using a range of quantitative techniques, analytical tools and supply chain design methodologies.
- ILO 5. Manage and plan supply chains within an overall business environment in an integrated and coordinated manner
- ILO 6. Adapt and apply appropriate supply chain management frameworks, theories, and techniques, and contextualise them for a variety of real-life situations.
- ILO 7. Demonstrate the ability to adapt logistics and supply chain frameworks to address cultural, organisational and sustainability issues.

C. MSc

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

- ILO 8. Undertake independent and original research on a relevant supply chain subject, demonstrating the ability to plan, manage and execute an industrial or research based project within a specified time scale.
- ILO 9. Produce a high quality thesis, based on self-directed research including critical literature review, justified research method(s), valid data gathering, analysis and interpretation, and report writing.

4. How is the course taught?

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

- Lectures by the Cranfield University faculty members and external speakers from industry
- A study tour– for MSc students
- 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:

Executive Logistics & Supply Chain Management

A. Postgraduate Certificate

The accumulation of 60 credits through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
N/A	N/A
ELECTIVE MODULES: (Choose modules to accumulate at least 60 credits)	
Supply Chain Concepts	15
Logistics Management	15
SC Analysis and Modelling Tools	15
Information, Sales and Operation Planning	15
Finance and Procurement Management	15
Supply Chain Design	15
Quality and Performance in Supply Chains; Research Methods	10
TOTAL:	60

B: Postgraduate Diploma

The accumulation of 120 credits through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Supply Chain Concepts	15
Logistics Management	15
SC Analysis and Modelling Tools	15
Information, Sales and Operation Planning	15
Finance and Procurement Management	15
Supply Chain Design	15
Quality and Performance in Supply Chains; Research Methods	10
Logistics - Study Tour	10
Supply Chains of the Future	10
ELECTIVE MODULES:	
N/A	N/A
TOTAL:	120

C. 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:	

Supply Chain Concepts	15
Logistics Management	15
SC Analysis and Modelling Tools	15
Information, Sales and Operation Planning	15
Finance and Procurement Management	15
Supply Chain Design	15
Quality and Performance in Supply Chains; Research Methods	10
Logistics - Study Tour	10
Supply Chains of the Future	10
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 $\geq 50\%$;
- An average mark of $\geq 50\%$ 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);^{3 4}
- **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 $\geq 50\%$ 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);

³ 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).

⁴ 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%).

- 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 $\geq 50\%$ (where they exist);
- **For the thesis**, a mark of $\geq 50\%$ in order to receive a pass (where it exists).

6. How is the course structured?

Cranfield

Part-time students register for the course in January and are expected to complete the course within 2 years.

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 code	Title	Module Leader	Contact hours ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
							Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
											Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
MXL/S CCP	Supply Chain Concepts	Soroosh Saghiri	40	0	15	N		22-01-18	26-01-18	40	ICW	100				TBC	
MXL/L M	Logistics Management	Hendrik Reefke	40	0	15	N		09-04-18	13-04-18	40 40	ICW ICW	50 50				TBC TBC	

⁵ Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

⁶ Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

⁷ 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 $\geq 50\%$. This will be at the Board of Examiners discretion.

⁸ For **independent assessments** please record type and weighting of each separate piece of assessment individually.

⁹ For **multi-part assessments** please record the overall weighting of module which should be 100%.

¹⁰ 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.

¹¹ 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

MXL/S CAMT	SC Analysis and Modelling Tools	Nicky Yates	40	0	15	N		04-06-18	09-06-18	40 40	EX ICW	50 50	50	M/choice EX	25 75	TBC TBC	
MXL/ SOP	Information, Sales and Operation Planning	Benny Tjahjono	40	0	15	N		17-09-18	21-09-18	40 40	ICW ICW	50 50				TBC TBC	
MXL/F PM	Finance and Procurement Management	Soroosh Saghiri	38		15	N		05-11-18	10-11-18	40 40	ICW EX	50 50				TBC TBC	
MXL/S CD	Supply Chain Design	Richard Wilding	40	4	15	N		14-01-19	18-01-19	40 40	ICW ICW	50 50	50	IPRES ICW	20 80	TBC TBC	
MXL/Q PRM	Quality and Performance in Supply Chains; Research Methods	Denyse Julien	36	12	10	N		04-03-19	08-03-19	40 40	ICW ICW	50 50				TBC TBC	
MXL/I NT	Logistics - Study Tour	Denyse Julien	36	0	10	N		04-05-19	11-05-19	40	ICW	100				TBC	
MXL/S CF	Supply Chain of the Future	Soroosh Saghiri	36	16	10	N		09-09-19	13-09-19	40 40	GPRES ICW	50 50	50	IPRES ICW	40 60	TBC TBC	
MXL/T HS	Individual Thesis	Supervisor	0	0	80	N		04-05-19	13-12-19	50	THESIS	100				13-12-19	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRA – 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.

<u>Module code</u>	<u>Module title</u>	<u>Course that owns the module</u>	<u>Other course(s)/ programme(s) that use the module</u>
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, fourteen 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.

Master of Science in Logistics and Supply Chain Management (ILO1-9) <i>Needs 200 credits from all modules 1-9 plus thesis</i>									
Postgraduate Diploma (ILO1-7) <i>Needs 120 credits from all modules 1-9</i>									
PgCert (ILO1-2) <i>Needs 60 credit from modules 1-7</i>									
Award ILOs	ILO1	ILO2	ILO3	ILO4	ILO5	ILO6	ILO7	ILO8	ILO9
Module # /Assessment									
Logistics & Supply Chain Concepts - ICW	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>			
Freight Transport - ICW	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Warehousing – ICW	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>			
Statistics & Forecasting - EX		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>					
Quantitative Method & Simulation - ICW	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>			
Information Systems - ICW -	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Sales & Operations	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			

Master of Science in Logistics and Supply Chain Management (ILO1-9) <i>Needs 200 credits from all modules 1-9 plus thesis</i>									
Postgraduate Diploma (ILO1-7) <i>Needs 120 credits from all modules 1-9</i>									
PgCert (ILO1-2) <i>Needs 60 credit from modules 1-7</i>									
Award ILOs	ILO1	ILO2	ILO3	ILO4	ILO5	ILO6	ILO7	ILO8	ILO9
Module # /Assessment									
Planning - ICW									
Finance – EX		☑		☑					
Procurement – ICW	☑	☑	☑			☑			
Supply Chain design - ICW	☑	☑	☑	☑	☑	☑			
Physical Network Design	☑	☑		☑		☑			
Performance measurement – ICW	☑	☑		☑	☑	☑			
Six Sigma – ICW	☑	☑		☑	☑	☑			
Study Tour – ICW	☑	☑	☑	☑	☑	☑	☑		
Sustainability – ICW	☑	☑			☑	☑	☑		
Organisation Management – GPRES	☑	☑			☑	☑	☑		
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.

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.

New Partnership arrangements are considered in two stages:

1. The University Executive is responsible for ensuring appropriate due diligence has been undertaken in respect of the University's legal, financial, reputational and ethical responsibilities.
2. A Partnership Delivery Approval Panel then considers whether the proposal meets the expectations and indicators of sound practice of the QAA Quality Code Chapter B10: Managing Higher Education Provision with Others, with regards to the management and operation of the partnership and that the academic standards and the quality of the student experience are assured in line with the remaining chapters of the QAA Quality Code. The delivery of new partnership provision is ultimately approved by the University's Education Committee, on behalf of Senate.

Year one partnership reviews are undertaken one year after the initiation of a new partnership involving academic (award bearing) provision. The aim is to provide a supportive framework to assist the Sponsoring School and its new Partner Institution to work collaboratively to ensure that: the learning and teaching provision and associated student experiences are of a high standard; and that those responsible for delivering the provision are undertaking their respective roles and responsibilities in an appropriate way.

As part of the regular monitoring procedures for established collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focused Review which looks at each partnership in depth. Occasional site inspection visits are also made.

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

Graduates of the full-time course are much sought after by employers. 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.

The graduates from the part-time course are likely to be in employment and many maybe sponsored by their employer. However many of these 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.

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: March 2017

1. What is the course?

Course information

Course Title	MSc in Management
Course code	MSMGTFCTC, PDMGTFCTC, PCMGTFCTC
Academic Year	2017/18
Valid entry routes	MSc
Additional exit routes	PgDip, PgCert
Mode of delivery	Full-time
Location(s)¹ 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
Is this an AP Contract course?²	No
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

¹ If any part of this course is delivered at another site, please note which one(s) here

² AP Contract courses are provided by Cranfield University to the MoD as part of the Academic Provider contract

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 $\geq 50\%$;
- An average mark of $\geq 50\%$ 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);^{3 4}

³ 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 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 $\geq 50\%$ 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 $\geq 50\%$ (where they exist);
- **For the thesis**, a mark of $\geq 50\%$ in order to receive a pass (where it exists).

6. How is the course structured?

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.

⁴ 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
1	M-T/MST	Marketing Strategy	Dr Emma MacDonald	25		10	Y		02/10/17	15/12/17	40	ICW	100				TBC	
2	M-T/MPO	Managing People and Organisations	Dr Richard Kwiatkowski	25		10	Y		02/10/17	15/12/17	40	ICW	100				TBC	
3	M-T/MPL	Managing Profitability, Liquidity and Asset Utilisation	Dr Simon Templar	25		10	Y		02/10/17	15/12/17	40	EX	100				15/12/17	

⁵ Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

⁶ Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

⁷ 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.

⁸ For **independent assessments** please record type and weighting of each separate piece of assessment individually.

⁹ For **multi-part assessments** please record the overall weighting of module which should be 100%.

¹⁰ 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.

¹¹ 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
4	M-T/IDQ	Improving Decision Quality with Management Science	Dr Benny Tjahjono	25		10	Y		02/10/17	15/12/17	40	EX	100				15/12/17	
5	M-T/ECM	Economics for Managers	Dr Catarina Figueira	25		10	Y		02/10/17	15/12/17	40	EX	100				15/12/17	
6	M-T/MNO	Managing Operations	Dr Bob Lillis	25		10	Y		02/10/17	15/12/17	40	ICW	100				TBC	
7	M-T/STG	Strategic Management	Dr Richard Schoenberg	25		10	Y		08/01/18	23/03/18	40	EX	100				23/03/18	
8	M-T/MAC	Management Consulting	Dr Monica Franco-Santos	25		10	Y		09/04/18	22/06/18	40 40	GPRES ICW	50 50				TBC TBC	
9	M-T/MCS	Managing Corporate Sustainability	Dr Palie Smart	25	5	10	Y		08/01/18	23/03/18	40	ICW	100				TBC	
10	M-T/MBT	Managing Business Technology Investments	Dr Donna Champion	25		10	N		08/01/18	23/03/18	40	ICW	100				TBC	
11	M-T/ORP	Organisational Performance: Direction Control and Measurement	Prof Mike Bourne	25		10	N		08/01/18	23/03/18	40	ICW	100				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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
12	M-T/SCM	Supply Chain Management	Dr Vahid Mirza Beiki	25		10	N		08/01/18	23/03/18	40			100 MULTI	ICW GPRAC GCW	50 10 40	TBC	
13	M-T/DIN	Disruptive Innovation	Dr Clive Savory	25		10	Y		08/01/18	23/03/18	40			100 MULTI	GCW ICW	40 60	TBC	
14	M-T/ENT	Entrepreneurship	Dr Maarten Van der Kamp	25		10	Y		08/01/18	23/03/18	40	ICW	100				TBC	
15	M-T/MPM	Mastering Project Management	Dr Edward Ochieng	25		10	Y		08/01/18	23/03/18	40			100 MULTI	GPRES IPRAC GCW	20 20 60	TBC	
16	M-T/ECC	Effective Cross-Cultural Management	Prof Michael Dickmann	25		10	N		09/04/18	22/06/18	40			100 MULTI	GCW ICW	70 30	TBC	
17	M-T/RMS occurrence A16	Research Methods and Statistics	Ian Crawford	25		10	Y		09/04/18	22/06/18	40	ICW	100				TBC	
18	M-T/THS	Masters of Management Thesis (Internship)	Various - Supervisors	10		90	N		09/04/18	26/10/18				100 MULTI	THESIS ICW	70 30	26/10/18	
19	M-T-THSNI	Masters of Management Thesis (Non-internship)	Various - Supervisors	10		90	N		10/04/18	26/10/18		THESIS	100				26/10/18	

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 used by another existing course.

<u>Module code</u>	<u>Module title</u>	<u>Course that owns the module</u>	<u>Other course(s)/ programme(s) that use the module</u>
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), Cleantech Entrepreneurship
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.

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	ILO 16	ILO 17	ILO 18	ILO 19
	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.

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.

New Partnership arrangements are considered in two stages:

1. The University Executive is responsible for ensuring appropriate due diligence has been undertaken in respect of the University's legal, financial, reputational and ethical responsibilities.
2. A Partnership Delivery Approval Panel then considers whether the proposal meets the expectations and indicators of sound practice of the QAA Quality Code Chapter B10: Managing Higher Education Provision with Others, with regards to the management and operation of the partnership and that the academic standards and the quality of the student experience are assured in line with the remaining chapters of the QAA Quality Code. The delivery of new partnership provision is ultimately approved by the University's Education Committee, on behalf of Senate.

Year one partnership reviews are undertaken one year after the initiation of a new partnership involving academic (award bearing) provision. The aim is to provide a supportive framework to assist the Sponsoring School and its new Partner Institution to work collaboratively to ensure that: the learning and teaching provision and associated student experiences are of a high standard; and that those responsible for delivering the provision are undertaking their respective roles and responsibilities in an appropriate way.

As part of the regular monitoring procedures for established collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focused Review which looks at each partnership in depth. Occasional site inspection visits are also made.

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 from 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 Corporate Sustainability

Date of first publication/latest revision: March 2017

1. What is the course?

Course information

Course Title	Management and Corporate Sustainability
Course code	MSMPSFTC, PDMPSTFC, PCMPSTFC
Academic Year	2017/18
Valid entry routes	MSc
Additional exit routes	PgDip, PgCert
Mode of delivery	Full-time
Location(s)¹ of Study	Cranfield
School(s)	School of Management
Theme	Leadership and Management
Centre	Policy, Sustainability and Performance
Course Director	Professor Hugh Wilson
Awarding Body	Cranfield University
Is this an AP Contract course?²	No
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	1 year

¹ If any part of this course is delivered at another site, please note which one(s) here

² AP Contract courses are provided by Cranfield University to the MoD as part of the Academic Provider contract

Course Start Month(s)	September
------------------------------	-----------

Institutions delivering the course

This course is delivered by the School of Management, Leadership and Management Theme, Centre for Policy, Sustainability and Performance where the research interests include business sustainability and risk management.

There are no academic partners for this course.

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?

Cranfield University offers this course to add value to first degrees in Business and Management, Applied Science fields, Humanities and the Social Sciences. It seeks to develop candidates from different academic disciplines and backgrounds, with perhaps some relevant experience, who want to undertake a sustainability related qualification and future career.

The aim of the MSc in Management and Corporate Sustainability 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 corporate sustainability, and assisting them in pursuing entry level managerial careers within those organisations. More specifically it seeks to ensure the:

- Provision of a comprehensive and advanced understanding of the range of global sustainability challenges facing organisations in public, private and third sectors.
- Integration and application of in-depth knowledge and understanding of management sub-disciplines to support the development of corporate responsibility and sustainability initiatives.
- Ability of students to synthesise large elements of data to inform management decision making.
- Development of students to apply management and applied science concepts for improving the effectiveness of organisations in addressing sustainability issues.
- Coalescence of previous work experience and knowledge, concepts and theories creatively to enhance corporate sustainability policy and practice.
- Development of student capabilities to manage complex sustainability agendas and apply them in a practical and pragmatic way within a specific organisational context.
- Enhancement of lifelong learning through the development of management, sustainability, communication, team working, negotiation, project planning capabilities and self-direction, so students acquire the necessary high-level skills employers favour for making contributions to business, public service and society.

This is a predominantly pre-work experience programme intended for graduates from a wide range of backgrounds who are interested in developing a sustainability management related career. This course may also appeal to candidates with first degrees that are not in a business academic discipline but, have some relevant sustainability experience and would benefit from obtaining a post-graduate qualification as a developmental step in their career.

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 understanding of the principles of management and how these apply to corporate sustainability. D
- ILO 2. Use new management skills to support decision making in the development of corporate sustainability strategy. U
- ILO 3. Identify the appropriate sustainability management frameworks and methodologies to address specific sustainability issues.
- ILO 4. Show ability for independent learning and an interest in advancing knowledge and understanding.
- ILO 5. Demonstrate transferrable skills, including:- time management, general communication, negotiation, 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 6. Integrate their learning from the PgCert.
- ILO 7. Critically review the application of current corporate responsibility and sustainability management research and evaluate its relevance to organisational practice.
- ILO 8. Exhibit originality and self-direction in the application of knowledge, including data and information collected by the student.
- ILO 9. Comprehensively appraise leading corporate responsibility and sustainability academic literature.
- ILO 10. Demonstrate additional transferrable skills, including; effective communication, consultancy, 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 11. Integrate their learning from the PgCert and PgDip and apply it to a research project.
- ILO 12. Independently and confidently apply management and corporate sustainability theories, tools/techniques to a variety of situations including case studies, business simulations and the individual project.
- ILO 13. Demonstrate the ability to create and adapt appropriate sustainability 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 synthesise and evaluate the academic research within and from related sustainability management disciplines.
- ILO 17. Undertake independent study (including empirical work) on a relevant corporate sustainability domain, demonstrating the ability to plan, manage and execute an industrial (private, public or charitable sectors) or research based project with specified time scales.
- ILO 18. Produce a thesis and critically evaluate the interpretations of the findings.

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. 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 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
 - Understanding and managing people and organisations
 - Management consulting
- 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:	
Six modules from 1-12 which must include 2 of the following: <ul style="list-style-type: none"> • Managing Corporate Sustainability (9) • Creating Sustainable Organisations (10)* • Sustainability in Practice (11)* • Applied Science and Technology for Environmental Sustainability (12) * Modules 10 and 11 share an integrated assessment and therefore both must be taken to be considered towards the Award.	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
Module 13	0
Thesis (14)	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 $\geq 50\%$;
- An average mark of $\geq 50\%$ 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);^{3 4}

³ 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 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 $\geq 50\%$ 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 $\geq 50\%$ (where they exist);
- **For the thesis**, a mark of $\geq 50\%$ in order to receive a pass (where it exists).

6. How is the course structured?

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.

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 out assessments.

The majority of the course modules will be taught as a series of lectures within 1 or 2 week blocks within the first 3 terms of the 4 term framework. The integrating Research Methods course will be taught in term 3. The international study tour is also planned for term 3 (yet to be confirmed). The individual thesis project is undertaken during terms 3 and 4. Please note there may be some variation to module dates due to the scheduling of timetables across a number of academic programmes.

⁴ 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
1	M-T/MST	Marketing Strategy	Dr Emma MacDonald	25		10	Y		02/10/17	15/12/17	40	ICW	100				08/12/17	
2	M-T/MPO	Managing People and Organisations	Dr Richard Kwiatkowski	25		10	Y		02/10/17	15/12/17	40	ICW	100				27/11/17	
3	M-T/MPL	Managing Profitability, Liquidity and Asset Utilisation	Dr Simon Templar	25		10	Y		02/10/17	15/12/17	40	EX	100				15/12/17	

⁵ Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

⁶ Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

⁷ 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 $\geq 50\%$. This will be at the Board of Examiners discretion.

⁸ For **independent assessments** please record type and weighting of each separate piece of assessment individually.

⁹ For **multi-part assessments** please record the overall weighting of module which should be 100%.

¹⁰ 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.

¹¹ 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
4	M-T/IDQ	Improving Decision Quality with Management Science	Dr Benny Tjahjono	25		10	Y		02/10/17	15/12/17	40	EX	100				15/12/17	
5	M-T/ECM	Economics for Managers	Dr Catarina Figueira	25		10	Y		02/10/17	15/12/17	40	EX	100				15/12/17	
6	M-T/MNO	Managing Operations	Dr Abdelkade Aoufi	25		10	Y		02/10/17	15/12/17	40	ICW	100				12/10/17	
7	M-T/STG	Strategic Management	Dr Richard Schoenberg	25		10	Y		08/01/18	23/03/18	40	EX	100				23/03/18	
8	M-T/MAC	Management Consulting	Dr Monica Franco-Santos	25		10	Y		09/04/18	22/06/18	40 40	GPRES ICW	50 50				TBC TBC	
9	M-T/MCS	Managing Corporate Sustainability	?	25	5	10	Y		08/01/18	23/03/18	40	ICW	100				16/03/18	
10	M-C/CSO	Creating Sustainable Organisations	Prof David Grayson	25		10	N		08/01/18	23/03/18	40			MULTI – Integrated Assessment	GPRES GCW ICW	25 50 25		
11	M-C/SIP	Sustainability in Practice	?	25		10	N		09/04/18	22/06/18								
12	M-C/AST	Applied Science and Technology for	Dr Phil Longhurst	25		10	N		08/01/18	23/03/18	50	ICW	100				09/02/18	

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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
		Environmental Sustainability																
13	M-T/RMS	Research Methods and Statistics	Ian Crawford	25		0	Y		09/04/18	22/06/18	N/A	AO	N/A				N/A	
14	M-C/THS	Thesis	Prof Hugh Wilson (module convenor) + Supervisors drawn from faculty and visiting fellows/ registered teachers	10		80	N		25/06/18	31/08/18		THESIS	100				31/08/18	

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 used by another existing course.

<u>Module code</u>	<u>Module title</u>	<u>Course that owns the module</u>	<u>Course(s)/programme(s) that share the module</u>
M-T/MST	Marketing Strategy	Management	Management, Management and Entrepreneurship
M-T/MPO	Managing People and Organisations	Management	Management, Management and Entrepreneurship
M-T/MPL	Managing Profitability, Liquidity and Asset Utilisation	Management	Management, Management and Entrepreneurship
M-T/IDQ	Improving Decision Quality with Management Science	Management	Management
M-T/ECM	Economics for Managers	Management	Management
M-T/MNO	Managing Operations	Management	Management, Management and Entrepreneurship
M-T/STG	Strategic Management	Management	Management, Management and Entrepreneurship
M-T/MAC	Management Consulting	Management	Management
M-T-MCS	Managing Corporate Sustainability	Management	Management
M-T/RMS	Research Methods and Statistics	Management	Management, Management and Entrepreneurship

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 3 written examinations, 13 pieces of assessment by submitted work and one assessment by presentation (although there are formative assessment by presentation and debate) or no assessment by viva.

This mixed approach of assessment combined with examinations has been adopted in order to adopt a range of assessment with presentations which are not formally assessed.

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	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	ILO 16	ILO 17	ILO 18
Module No.																		
	Postgraduate Certificate					Postgraduate Diploma					MSc							
1	√				√	√				√								
2	√				√	√				√								
3	√				√	√				√								
4	√				√	√				√								

5	√				√	√				√								
6	√				√	√				√								
7	√				√	√				√								
8	√	√		√	√	√		√		√								
9	√		√		√	√	√		√	√								
10	√		√		√	√	√		√	√								
12	√	√	√	√	√	√	√	√	√	√								
11	√	√	√		√	√	√		√	√								
13														√	√	√		√
14		√	√	√			√	√	√	√	√	√	√	√	√	√	√	√

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

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

Title	Modules Covered	Assessment	
		Type	Weight (%)
Integrated Assignment 1	<ul style="list-style-type: none"> Module 10 - Creating Sustainable Organisations Module 11 - Sustainability in Practice 	Team Presentation	25%
• Team Presentation			
• Group Report		Team Report	50%
• Individual Reflection		Individual Reflection	25%

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 and integrated understanding/knowledge of sustainability management with the practical skill set commensurate with entry to a first line managerial post. As such, many of the students may pursue graduate entry schemes but will equally be attractive to large and SME commercial, public sector and charitable sectors where the managerial component will add value to the student's technology based or single disciplined first degree. Evidence from current recruitment patterns for our young MSc students (on specialist MSc) already shows the trend toward graduate entry schemes and many companies transferring their talent search to post-graduates rather than fresh graduates alone.

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: February 2017

1. What is the course?

Course information

Course Title	MSc in Management and Entrepreneurship
Course code	MSMERFTC, PDMERFTC, PCMERFTC, MSMEOPTC, MSMEOFTC
Academic Year	2017-18
Valid entry routes	MSc
Additional exit routes	PgDip, PgCert
Mode of delivery	Full-time, Part-time (Muscat only)
Location(s)¹ of Study	Cranfield Campus and Muscat University, Oman
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
Is this an AP Contract course?²	No
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 (Muscat only)
Course Start Month(s)	September

¹ If any part of this course is delivered at another site, please note which one(s) here

² AP Contract courses are provided by Cranfield University to the MoD as part of the Academic Provider contract

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 pursuing 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.

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. 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 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 lectures, 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:

Management and Entrepreneurship (Cranfield) (Full-time only)

A. MSc

An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
Modules 1–9	90
Module 13 and 14	10
Thesis 15	80
ELECTIVE MODULES:	
Module 10, 11 or 12	20
TOTAL:	200

Management and Entrepreneurship (Muscat) (Full-time and Part-time)

B. MSc

An MSc will be awarded on successful completion of 200 credits as outlined below:

Description	Credits
COMPULSORY MODULES:	
Modules 1-9	90
Module 11-13	30
Module 14	0
Thesis 15	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 $\geq 50\%$;
- An average mark of $\geq 50\%$ 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);^{3 4}
- **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 $\geq 50\%$ 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 $\geq 50\%$ (where they exist);
- **For the thesis**, a mark of $\geq 50\%$ 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.

³ 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).

⁴ 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%).

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 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.

Management and Entrepreneurship (Cranfield)

Module Number	Module code	Title	Module Leader	Contact hours ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
1	M-T/MST	Marketing Strategy	Dr Emma MacDonald	25		10	Y		02/10/17	15/12/17	40	ICW	100				08.12.17	
2	M-T/MPO	Managing People and Organisations	Dr Richard Kwiatkowski	25		10	Y		02/10/17	15/12/17	40	ICW	100				27.11.17	
3	M-T/MPL	Managing Profitability, Liquidity and Asset Utilisation	Dr Simon Templar	25		10	Y		02/10/17	15/12/17	40	EX	100				15/12/17	

⁵ Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

⁶ Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

⁷ 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.

⁸ For **independent assessments** please record type and weighting of each separate piece of assessment individually.

⁹ For **multi-part assessments** please record the overall weighting of module which should be 100%.

¹⁰ 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.

¹¹ 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

Management and Entrepreneurship COURSE SPECIFICATION

QA&E USE ONLY: Version 4.0 July 2017

Course / SAS Version:

Module Number	Module code	Title	Module Leader	Contact hours ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
4	M-T/ENT	Entrepreneurship	Dr Maarten Van der Kamp	25		10	Y		02/10/17	15/12/17	40	ICW	100				17.11.17	
5	M-E/ENF	Entrepreneurial Finance	Dr Stephanie Hussels	25		10	Y		02/10/17	15/12/17	40 40	EX GCW	50 50				15/12/17	
6	M-E/MBG	Managing Business Growth	Dr Shailendra Vyakarnam	25		10	Y		08/01/18	23/03/18	40	ICW	100				02.02.17	
7	M-T/MNO	Managing Operations	Dr Bob Lillis	25		10	Y		02/10/17	15/12/17	40	ICW	100				12.10.17	
8	M-T/STG	Strategic Management	Dr Richard Schoenberg	25		10	Y		08/01/18	23/03/18	40	EX	100				23/03/18	
9	M-T/DIN	Disruptive Innovation	Dr Clive Savory	25		10	Y		08/01/18	23/03/18	40			100 MULTI	GCW ICW	40 60	23.02.18	
10	I-CTE-ACT	Accelerating the Commercialisation of Technology	Dr Maarten van der Kamp	25		10	Y		08/01/18	23/03/18	40 40	GCW GPRES	50 50				09.02.18	
11	M-E/CEN	Corporate Entrepreneurship	Dr Oksana Koryak	25		10	N		08/01/18	23/03/18	40 40	ICW GPRES	70 30				26.02.18 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
12	M-E/FBM	Family Business Management	Dr Stephanie Hussels	25		10	N		08/01/18	23/03/18	40 40	GCW EX	50 50				16.2.18 23/03/18	
13	M-E/SEM	Social Enterprise and Intrapreneurism	Dr Maarten Van der Kamp	25		10	N		09/04/18	22/06/18	40			100 MULTI	GPRES RP	50 50	TBC	
14	M-T/RMSM	Research Methods and Statistics	Ian Crawford	25		0	Y		09/04/18	22/06/18	N/A	AO	N/A				N/A	
15	M-E/THS	Thesis (Business Plan)	Supervisors drawn from faculty and visiting fellows/ registered teachers	10		80	N		09/04/18	31/08/18		THESIS	100				31/08/18	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPAC – 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

Management and Entrepreneurship (Muscat)

Module Number	Module code	Title	Module Leader	Contact hours ¹²	Total hours delivered by Visiting Lecturers ¹³	Credits	Is the module shared? Y/N	Calendar			Assessment						
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ¹⁴ - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates	
												Type of Assessment	Weighting within module ¹⁵ (%) of independent assessments weighting within module of multi-part assessments ¹⁶ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁷	Assessment Submission and/or exam date ¹⁸	Assessment / Exam Retake date
1	M-T/MST Occ B	Marketing Strategy	Dr Emma MacDonald	25		10	Y		FT/PT 26/11/17	FT/PT 30/11/17	40	ICW	100			14/12/17	
2	M-T/MPO Occ B	Managing People and Organisations	Dr Richard Kwiatkowski	25		10	Y		FT/PT 12/11/17	FT/PT 16/11/17	40	ICW	100			01/12/17	
3	M-T/MPL Occ B	Managing Profitability, Liquidity and Asset Utilisation	Dr Simon Templar	25		10	Y		FT/PT 14/01/18	FT/PT 18/01/18	40	EX	100			Exam Week	
4	M-T/ENT Occ C	Entrepreneurship	Dr Maarten Van der Kamp	25		10	Y		FT/PT 09/10/17	FT/PT 12/10/17	40	ICW	100			29/10/17	

¹² Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

¹³ Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

¹⁴ 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.

¹⁵ For **independent assessments** please record type and weighting of each separate piece of assessment individually.

¹⁶ For **multi-part assessments** please record the overall weighting of module which should be 100%.

¹⁷ 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.

¹⁸ 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

Management and Entrepreneurship COURSE SPECIFICATION

QA&E USE ONLY: Version 4.0 July 2017

Course / SAS Version:

Module Number	Module code	Title	Module Leader	Contact hours ¹²	Total hours delivered by Visiting Lecturers ¹³	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ¹⁴ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ¹⁵ (%) of independent assessments ¹⁶ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁷	Assessment Submission and/or exam date ¹⁸	Assessment / Exam Retake date	
5	M-E/ENF Occ C	Entrepreneurial Finance	Dr Stephanie Hussels	25		10	Y		FT/PT 04/02/18	FT/PT 08/02/18	40 40	EX GCW	50 50				Exam week 25/02/17	
6	M-E/MBG Occ C	Managing Business Growth	Dr Shailendra Vyakarnam	25		10	Y		FT 29/10/17	FT 02/11/17	40	ICW	100				20/11/17	
7	M-T/MNO Occ B	Managing Operations	Dr Abdelkader Aoufi	25		10	Y		FT 15/10/17	FT 19/10/17	40	ICW	100				06/11/17	
8	M-T/STG Occ B	Strategic Management	Dr Richard Schoenberg	25		10	Y		FT/PT 22/04/18	FT/PT 27/04/18	40	EX	100				Exam week	
9	M-T/DIN Occ B	Disruptive Innovation	Dr Clive Savory	25		10	y		FT 21/01/18	FT 25/01/18	40			100 MULTI	GCW ICW	40 60	25/01/18 11/02/18	
10	I-CTE-ACT	Accelerating the Commercialisation of Technology	Dr Maarten van der Kamp	25		10	Y		Not running for Muscat		40 40	GCW GPRES	50 50					
11	M-E/CEN Occ B	Corporate Entrepreneurship	Dr Oksana Koryak	25		10	N		FT 25/02/18	FT 01/03/18	40 40	ICW GPRES	70 30				20/03/18 01/03/18	
12	M-E/FBM Occ B	Family Business Management	Dr Stephanie Hussels	25		10	N		FT 11/02/18	FT 15/02/18	40 40	GCW EX	50 50				04/03/18 Exam week	
13	M-E/SEM Occ B	Social Enterprise and Intrapreneurism	Dr Maarten Van der Kamp	25		10	N		FT/PT 04/03/18	FT/PT 08/03/18	40			100 MULTI	GPRES RP	50 50	08/03/18 03/04/18	
14	M-T/RMSM	Research Methods and Statistics	Ian Crawford	25		0	Y		FT/PT 15/04/18	FT/PT 19/14/18	N/A	AO	N/A				13/05/18	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRACT – 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 ¹²	Total hours delivered by Visiting Lecturers ¹³	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ¹⁴ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ¹⁵ (%) of independent assessments weighting within module of multi-part assessments ¹⁶ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁷	Assessment Submission and/or exam date ¹⁸	Assessment / Exam Retake date	
	Occ B																	
15	M-E/THS Occ B	Thesis (Business Plan)	Supervisors drawn from faculty and visiting fellows/ registered teachers	10		80	N		FT 15/04/18	FT 07/09/18		THESIS	100				06/09/18	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRACT – 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.

<u>Module code</u>	<u>Module title</u>	<u>Course that owns the module</u>	<u>Other course(s)/ programme(s) that use the module</u>
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/ENT	Entrepreneurship	Management	Management, Management and Economics (not currently running), Cleantech Entrepreneurship
M-E/ENF	Entrepreneurial Finance	Management and Entrepreneurship	Cleantech Entrepreneurship
M-E/MBG	Managing Business Growth	Management and Entrepreneurship	Cleantech Entrepreneurship
M-T/MNO	Managing Operations	Management	Management and Corporate Sustainability, Management
M-T/STG	Strategic Management	Management	Management and Corporate Sustainability, Management, Management and Economics (not currently running)
M-T/DIN	Disruptive Innovation	Management	Management
I-CTE-ACT	Accelerating the Commercialisation of Technology	Cleantech Entrepreneurship	Cleantech Entrepreneurship
M-T/RMSM	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	√	√	√	√	√	√	√	√							
5	√	√	√	√	√	√	√	√							
6	√	√	√	√	√	√	√	√							

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.	ILO 12.	ILO 13.	ILO 14.	ILO 15.
7	√	√	√	√	√										
8	√	√	√	√	√										
9	√	√	√	√	√		√								
10						√	√	√	√	√	√				
11						√	√	√	√	√	√				
12						√	√	√	√	√	√				
13						√	√	√	√	√	√				

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.	ILO 9.	ILO 10.	ILO 11.	ILO 12.	ILO 13.	ILO 14.	ILO 15.
14	NOT ASSESSED														
15	√				√	√	√	√	√		√	√	√	√	√

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.

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.

New Partnership arrangements are considered in two stages:

1. The University Executive is responsible for ensuring appropriate due diligence has been undertaken in respect of the University's legal, financial, reputational and ethical responsibilities.
2. A Partnership Delivery Approval Panel then considers whether the proposal meets the expectations and indicators of sound practice of the QAA Quality Code Chapter B10: Managing Higher Education Provision with Others, with regards to the management and operation of the partnership and that the academic standards and the quality of the student experience are assured in line with the remaining chapters of the QAA Quality Code. The delivery of new partnership provision is ultimately approved by the University's Education Committee, on behalf of Senate.

Year one partnership reviews are undertaken one year after the initiation of a new partnership involving academic (award bearing) provision. The aim is to provide a supportive framework to assist the Sponsoring School and its new Partner Institution to work collaboratively to

ensure that: the learning and teaching provision and associated student experiences are of a high standard; and that those responsible for delivering the provision are undertaking their respective roles and responsibilities in an appropriate way.

As part of the regular monitoring procedures for established collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focused Review which looks at each partnership in depth. Occasional site inspection visits are also made.

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 manage 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	2017/18
Valid entry routes	MSc, PgDip, PgCert
Additional exit routes	Not Applicable
Mode of delivery	Full-time, Part-time
Location(s)¹ 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
Is this an AP Contract course?²	No
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

¹ If any part of this course is delivered at another site, please note which one(s) here

² AP Contract courses are provided by Cranfield University to the MoD as part of the Academic Provider contract

	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. What are the aims of the course?

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 $\geq 50\%$;
- An average mark of $\geq 50\%$ 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);^{3 4}
- **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 $\geq 50\%$ 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

³ 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).

⁴ 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%).

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 $\geq 50\%$ (where they exist);
- **For the thesis**, a mark of $\geq 50\%$ 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.

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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
1	I-MAN-INWK	Induction	Dr Konstantinos Salonitis	22		0	Y		02/10/17	06/10/17	N/A	AO	N/A				N/A	
2	I-MNU-A1031	Enterprise Systems	Dr Essam Shehab	32		10	Y		09/10/17	13/10/17	40	EX	100				wc 27/11/17	Manufacturing resit exams will be during week commencing 18/09/17

⁵ Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

⁶ Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

⁷ 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.

⁸ For **independent assessments** please record type and weighting of each separate piece of assessment individually.

⁹ For **multi-part assessments** please record the overall weighting of module which should be 100%.

¹⁰ 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.

¹¹ 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
3	I-MNU-A1034	Operations Management	Prof Charalampos (Harris) Makatsoris	32		10	Y		16/10/17	20/10/17	40	EX	100				Wc 06/11/17	Manufacturing resit exams will be during week commencing 18/09/17
4	I-MNU-A1074	Business Process Analysis and Engineering	Dr Ip-Shing Fan	32		10	N		30/10/17	03/11/17	40	ICW	100				01/12/17	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		13/11/17	17/11/17	40	EX	100				Wc 02/01/18	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		20/11/17	24/11/17	40	ICW	100				08/01/18	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		45/12/17	08/12/17	40	ICW	100				22/01/18	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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
																		Course Director and Module Leader as/when required.
8	I-KME-A1037	Enterprise Modelling	Dr John Ahmet Erkoyuncu	32		10	Y		15/01/18	19/01/18	40			100 MULTI	ICW GCW	60 40	29/01/18	Re-assessment 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	N		22/01/18	26/01/18	40 40			100 MULTI	GCW ICW	30 70	02/02/18	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
10a	I-MAT-GRPP	Group Project for Full Time Students	Dr David Ayre	20		40	Y		0202/18	25/04/18				80 MULTI 20 MULTI	GPRES GPROJ ICW observed behaviour	16 64 10 10	25/04/18	
10b	I-MAT-DISS	Dissertation for Part Time Students	Dr Konstantinos Salonitis	20		40	Y		31/01/18	30/08/18		ICW	100				30/08/18	

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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment								
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates		
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date	
11	I-MNU-THESIS	Individual Research Project	Dr Yuchun Xu	20		80	Y		07/05/18	05/09/18		THESIS OR	90 10					05/09/18	

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 used by another existing course.

<u>Module code</u>	<u>Module title</u>	<u>Course that owns the module</u>	<u>Other course(s)/ programme(s) that use the module</u>
I-MAN-INWK	Induction	Engineering and Management of Manufacturing Systems	Engineering & Management of Manufacturing Systems, Knowledge Management for Innovation (not currently running), 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 (not currently running)
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, Aerospace Manufacturing, Cyber-Secure 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, Knowledge Management for Innovation (not currently running), Engineering & Management of Manufacturing Systems
I-KME-A1037	Enterprise Modelling	Management and Information Systems	Knowledge Management for Innovation (not currently running), Global Product Development and Management
I-MAT-DISS	Dissertation for Part Time Students	Manufacturing Technology and Materials Programme	Advanced Materials, Aerospace Materials, Applied Nanotechnology, Manufacturing Technology & Management, Aerospace Manufacturing, Engineering & Management of Manufacturing Systems, Knowledge Management for Innovation (not currently running), Global Product Development and Management, Cyber-Secure Manufacturing, Welding Engineering
I-MAT-GRPP	Group Project for Full Time Students	Manufacturing Technology and Materials Programme	Advanced Materials, Aerospace Materials, Applied Nanotechnology, Manufacturing Technology & Management,

			Engineering & Management of Manufacturing Systems, Knowledge Management for Innovation (not currently running), Aerospace Manufacturing, Global Product Development and Management, Cyber-Secure Manufacturing, Welding Engineering
I-MNU-THESIS	Individual Research Project	Aerospace Manufacturing	Engineering & Management of Manufacturing Systems, Knowledge Management for Innovation (not currently running), Global Product Development and Management, Cyber-Secure Manufacturing, Advanced Materials, Aerospace Materials, Applied Nanotechnology, Manufacturing Technology and Management, Welding Engineering

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

Award ILOs Module No.	ILO 1.	ILO 2.	ILO 3.	ILO 4.	ILO 5.
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

Award ILOs Module No.	ILO 1.	ILO 2.	ILO 3.	ILO 4.	ILO 5.	ILO 6.	ILO 7.	ILO 8
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 Technology and Management

Date of first publication/latest revision: May 2017

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	2017/18
Valid entry routes	MSc, PgDip, PgCert
Additional exit routes	Not Applicable
Mode of delivery	Full-time, Part-time
Location(s)¹ 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
Is this an AP Contract course?²	N/A
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

¹ If any part of this course is delivered at another site, please note which one(s) here

² AP Contract courses are provided by Cranfield University to the MoD as part of the Academic Provider contract

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, where the research interests include Manufacturing Technology and Materials Engineering. Specific areas of expertise include:

Enhanced Composites and Advanced Structures
Surface Engineering and Nanotechnology
Welding Engineering and Laser Processing
Precision Engineering
Through Life Engineering Services
Additive Manufacturing

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 Virtual 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 $\geq 50\%$;
- An average mark of $\geq 50\%$ 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);^{3 4}
- **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 $\geq 50\%$ 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 $\geq 50\%$ (where they exist);
- **For the thesis**, a mark of $\geq 50\%$ 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.

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.

³ 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).

⁴ 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
1	I-MTM-A2028	Introduction to Manufacturing, Materials and Research Techniques	Dr Sue Impey	25		10	Y		02/10/17	06/10/17	40 40			100 MULTI	GCW GPRES	80 20	17/11/17	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		09/10/17	13/10/17	40	EX	100				03/01/18	Manufacturing resit exams will be during week commencing 18/09/17

⁵ Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

⁶ Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

⁷ 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.

⁸ For **independent assessments** please record type and weighting of each separate piece of assessment individually.

⁹ For **multi-part assessments** please record the overall weighting of module which should be 100%.

¹⁰ 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.

¹¹ 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment						
								'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
											Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
3	I-ICI-A1020	Managing Innovation and New Product Development	Dr Clive Savory	35		10	Y	30/10/17	03/11/17	40	GCW	100				25/11/17	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	20/11/17	24/11/17	40	EX	100				05/01/18	Manufacturing resit exams will be during week commencing 18/09/17
5	I-MAT-A1013	Composites Manufacturing for High Performance Structures	Andrew Mills	35		10	Y	13/11/17	17/11/17	40	ICW	100				01/12/17	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	08/01/18	12/01/18	40	ICW	100				29/01/18	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	20/11/17	24/11/17	40	ICW	100				11/12/17	Re-assessment date to be set by agreement of Course Director and Module

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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment						
								'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
											Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
																	Leader as/when required.
8	I-MSN-A1068	Nanotechnology	Dr Sameer Rahatekar	32		10	N	08/01/18	12/01/18	40	ICW	100				29/01/18	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	27/11/17	01/12/17	40	EX	100				05/02/18	Manufacturing resit exams will be during week commencing 18/09/17
10	I-MSN-A1048	Engineering Microdevices	Dr Paul Kirby	32		10	Y	23/10/17	27/10/17	40	ICW	100				20/11/17	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	23/10/17	27/10/17	40			100 MULTI	ICW GPRES	70 30	10/11/17	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

Module Number	Module code	Title	Module Leader	Contact hours ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
12	I-MAT-A1016	Surface Science and Engineering	Prof John Nicholls	30		10	Y		22/01/18	26/01/18	40	ICW	100				09/02/18	Re-assessment date to be set by agreement of Course Director and Module Leader as/when required.
13	I-UPT-A1186	Functional Coatings and Thin Films	Dr Jose Endrino Armenteros	32		10	Y		22/01/18	25/01/18	40	ICW	100				09/02/18	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		04/12/17	08/12/17	40			100 MULTI	ICW ICW	40 60	19/01/18	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		16/10/17	20/10/17	40	ICW	100				17/11/17	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

Module Number	Module code	Title	Module Leader	Contact hours ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment						
								'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
											Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
16	I-MNU-A1034	Operations Management	Prof Charalampos (Harris) Makatsoris	32		10	Y	16/10/17	20/10/17	40	EX	100				10/11/17	Manufacturing resit exams will be during week commencing 18/09/17
17	I-UPT-A1182	Metrology and Optical Testing	Dr Saurav Goel/ Paul Morantz	30		10	Y	06/11/17	10/11/17	40	ICW	100				08/12/17	Re-assessment date to be set by 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	05/02/18	20/04/18				80 MULTI 20 MULTI	GPRES GPROJ ICW observed behaviour	16 64 10 10	04/05/18	
18b	I-MAT-DISS	Dissertation for Part Time Students	Dr Sue Impey/ Dr David Ayre	20		40	Y	01/02/18	30/08/18		ICW	100				30/08/18	
19	I-MNU-THESIS	Individual Research Project	Dr Yuchun Xu	20		80	Y	30/04/18 [†]	03/09/18 [†]		THESIS OR	90 10				03/09/18 [†]	

† 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 used by another existing course.

<u>Module code</u>	<u>Module title</u>	<u>Course that owns the module</u>	<u>Other course(s)/ programme(s) that use the module</u>
I-MTM-A2028	Introduction to Manufacturing, Materials and Research Techniques	Manufacturing Technology and Management	EngD in Sustainable Manufacturing Systems, MRes in Precision Engineering
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, MRes in Manufacturing
I-MNU-A1018	General Management	Engineering and Management of Manufacturing Systems	Applied Nanotechnology, Global Product Development and Management, Management and Information Systems, Knowledge Management for Innovation (not currently running), 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
I-UPT-A1182	Metrology and Optical Testing	Manufacturing Technology and Management	MRes in Manufacturing
I-MNU-A1034	Operations Management	Engineering and Management of Manufacturing Systems	Engineering and Management of Manufacturing Systems, Aerospace Manufacturing, Global Product Development and Management, Management and Information Systems, Cyber-Secure Manufacturing
I-MAT-GRPP	Group Project for Full Time Students	Manufacturing Technology and Materials Programme	Advanced Materials, Aerospace Materials, Applied Nanotechnology, Aerospace Manufacturing, Engineering and Management of Manufacturing Systems, Global Product Development and Management, Knowledge Management for Innovation (not currently running), Management and Information Systems, Cyber-Secure Manufacturing, Welding Engineering
I-MAT-DISS	Dissertation for Part Time Students	Manufacturing Technology and Materials Programme	Advanced Materials, Aerospace Materials, Applied Nanotechnology, Aerospace Manufacturing, Engineering and Management of Manufacturing Systems, Global Product Development and Management, Knowledge Management for Innovation (not currently running), Management and Information Systems, Cyber-Secure Manufacturing, Welding Engineering
I-MNU-THESIS	Individual Research Project	Aerospace Manufacturing	Cyber-Secure Manufacturing, Engineering and Management of Manufacturing Systems, Global Product Development and Management, Knowledge Management for Innovation (not currently running), Management and Information Systems, Advanced Materials, Aerospace Materials, Applied Nanotechnology, Welding Engineering

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.)

A. Postgraduate Certificate

Award ILOs Module No.	ILO 1	ILO 2	ILO 3	ILO 4
1	ICW		ICW	ICW
2	EX		EX	EX
3	GCW	GCW	GCW	GCW
4			EX	EX
5	ICW	ICW	ICW	ICW
6	ICW		ICW	ICW
7	ICW	ICW	ICW	ICW
8				
9	EX	EX	EX	EX
10	ICW	ICW	ICW	ICW
11	ICW GPRES	ICW GPRES	ICW GPRES	ICW GPRES
12	ICW	ICW	ICW	ICW
13	ICW	ICW	ICW	ICW
14	ICW ICW	ICW ICW		ICW ICW
15	ICW	ICW	ICW	ICW
16	EX	EX	EX	EX
17	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 5	ILO 6	ILO 7	ILO 8

Award ILOs Module No.	ILO 5	ILO 6	ILO 7	ILO 8
1	ICW	ICW	ICW	ICW
2		EX	EX	
3	GCW	GCW	GCW	
4		EX	EX	
5	ICW	ICW	ICW	ICW
6		ICW	ICW	ICW
7		ICW	ICW	
8				
9		EX	EX	EX
10		ICW	ICW	
11		ICW GPRES	ICW GPRES	ICW GPRES
12		ICW	ICW	
13		ICW	ICW	
14		ICW ICW	ICW ICW	
15		ICW	ICW	
16		EX	EX	
17		ICW	ICW	
18a	GPRES GPROJ ICW	GPRES GPROJ ICW	GPRES GPROJ ICW	GPRES GPROJ ICW
18b	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 9
19	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 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



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: Master of Business Administration

Date of first publication/latest revision: May 2017

1. What is the course?

Course information

Course Title	Master of Business Administration Master of Business Administration (Energy)
Course code	MBFTMFTC, (Energy Route: ENEF)
Academic Year	2017-18
Valid entry routes	MBA
Additional exit routes	PgCert in Business Administration PgDip in Business Administration
Mode of delivery	Full-time
Location(s)¹ of Study	Cranfield University
School(s)	School of Management
Theme	Leadership and Management
Centre	Centre for Management
Course Director	Dr Andrew Angus
Awarding Body	Cranfield University
Is this an AP Contract course?²	No
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	<ul style="list-style-type: none">• 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. <p>If you are an international student you will need to provide evidence that you have achieved a satisfactory test result in an English</p>

¹ If any part of this course is delivered at another site, please note which one(s) here

² AP Contract courses are provided by Cranfield University to the MoD as part of the Academic Provider contract

	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 the Association to Advance Collegiate Schools of Business (AACSB) and the Association of MBAs (AMBA). It is also accredited by the European Quality Improvement System (EQUIS).

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. Have 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, managerial and ethical ambiguities and risks 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.

Students following the Energy pathway will also be able to contextualise the above ILOs from an Energy perspective.

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 learning 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
COMPULSORY MODULES:	
Module 1, 14	40
Modules 2-12	110
Modules 13, 15	20
ELECTIVE MODULES:	
70 credits from Modules 16-43	70
TOTAL:	240

B. MBA (Energy)

Description	Credits
COMPULSORY MODULES:	
Module 1, 14	40
Modules 2-12	110
Modules 13, 15	20
Modules 38-43	60
ELECTIVE MODULES:	
10 credits from Modules 16-34, 36	10
TOTAL:	240

C. MBA (Chilean Collaboration) – not running in 2017-18

Description	Credits
COMPULSORY MODULES:	
Credits awarded for University of Chile (APL)	80
Modules 8-13, 14a-15, 34	90
ELECTIVE MODULES:	
70 credits from Modules 16-33, 35-42	70
TOTAL:	240

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 (Energy) - The pass criterion for the MBA (Energy) is the same as the MBA above except that MBA (Energy) students have to select modules 38 to 43.

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 80 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 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 Data Analytics and Decision Making 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 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 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 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
PART ONE																		
1	M-M/OBL	Organisational Behaviour: Developing Leadership	Dr Richard Kwiatkowski	40		20	N		02/10/17	07/12/17		IPROJ	100				07/12/17	
2	M-M/ACC	Accounting	Dr Matthias Nnadi	20		10	N		12/10/17	30/11/17		ICW EX	30 70				17 11- 15/12/17	

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	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 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
3	M-M/OPS	Strategic Operations Management	Prof Marek Szwajczewski	20		10	N		24/10/17	13/11/17				100 MULTI	GPRES GCW	40 60	13/11/17 20/11/17	
4	M-M/MKT	Strategic Marketing	Dr Stan Maklan	20		10	N		11/10/17	21/11/17		ICW	50	50 MULTI	GCW GPRES	30 20	8/12/17 6/11/17 1/11/17	
5	M-M/EOS	Economics of Organisations and Strategy	Dr Catarina Figueira	20		10	N		09/10/17	16/11/17		EX	100				Exam Week	
6	M-M/ENT	Entrepreneurship and New Venture Creation	Dr Shai Vyakarnam	20		10	Y		09/10/17	10/11/17		GCW	100				30/11/17	
7	M-M/ESB	Entrepreneurial Finance for Early Stage Businesses	Dr Stephanie Hussels	20		10	Y		27/11/17	01/12/17				100 MULTI	GCW GPRES GCW GPRES	30 25 25 20	30/11/17 01/12/17 01/12/17 01/12/17	
8	M-M/FIN	Financial Management	Dr Andrea Moro	20		10	N		15/01/18	22/02/18		ICW EX	30 70				17/02/18 19-23/03/18	
9	M-M/STG	Strategic Management	Dr Richard Schoenberg	20		10	Y		08/01/18	21/02/18		GPRES ICW	50 50				28/02/18 13/03/18	

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 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 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
10	M-M/PMI	Project Management Introduction	John Algar	20		10	Y		08/01/18	12/01/18		EX	40	60 MULTI	GCW GPRAC GPRES	10 30 20	19 - 23/03/18 12/01/18	
11	M-M/GME	Global Macroeconomics and Business Environment	Prof Joe Nellis	20		10	Y		09/01/18	20/02/18		GCW	100				06/03/18	
12	M-M/MPCS	Challenges for Leaders: Managing People, Change and Sustainability	Prof Clare Kelliher	20		10	Y		09/01/18	13/02/18		EX	100				19- 23/03/18	
PART 2																		
13	M-M/IBA	International Business Assignment	David Simmons	20		10	Y					ICW GCW	20 80				20/07/18 20/07/18	
14	M-M/DMDA	Data Analytics and Decision Making	Dr Andy Angus	40		20	Y		31/10/17	27/02/18		EX GPROJ	30 70				Exam Week 06/07/18	
14a	M-M/DMDAC	Decision Making and Data Analytics (Chilean students only) – supplemented by APL	Dr Catarina Figueira	20		10	N	NOT RUNNING IN 2017/18				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 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 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
15	M-M/LIA	Leadership in Action	Dr Anne Laure Humber	20		10	N		02/03/18	25/07/18		ICW	100				24/08/18	
ELECTIVES																		
16	M-M/EFI	Entrepreneurial Finance for Later Stage Businesses	Chris Ansell	20		10	Y		18/05/18	10/08/18		ICW ICW	60 40				08/06/18 06/07/18	
17	M-M/IST	International Strategy	Prof Patrick Reinmoeller	20		10	Y		22/05/18	25/05/18		GCW ICW	80 20				29/06/18 29/06/18	
18	M-M/MMA	Managing International Mergers and Acquisitions	Dr Richard Schoenberg	20		10	Y		05/06/18	11/07/18		GCW GPRES	70 30				13/07/18 27/07/18	
19	M-M/CFS	Corporate Financial Strategy	Abdul Mohammed	20		10	Y		10/04/18	19/04/18		EX	100				18/05/18	
20	M-M/CFT	Corporate Finance Transactions	Prof Ruth Bender	20		10	N		02/05/18	23/05/18		ICW GCW	10 90				25/06/18 25/06/18	
21	M-M/SCC	Strategizing in Challenging Contexts	Dr Richard Schoenberg	20		10	Y		09/04/18	20/04/18		GPRES GCW	20 80				01/05/18 29/05/18	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPAC – 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			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 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
22	M-M/SHR	Strategic Human Resource Management in the 21 st Century	Prof Frank Horwitz	20		10	Y		27/06/18	03/08/18		ICW	100				06/08/18	
23	M-M/DVSC	Driving Value Through the Supply Chain	Dr Heather Skipworth	20		10	Y		18/07/18	20/07/18		ICW	100				28/08/18	
24	M-M/NBO	Negotiating in Business and Organisations	Dr Ian Speakman	20		10	Y		25/06/18	12/07/18		ICW	100				27/07/18	
25	M-M/MSI	Managing Strategic Innovation	Prof Keith Goffin	20		10	N		23/05/18	29/05/18		GCW	100				28/09/18	
26	M-M/BL	Business Law	Ian Stirk	20		10	Y		26/07/18	03/08/18		ICW	100				17/08/18	
27	M-M/IHN	Identifying (Customers') Hidden Needs	Prof Keith Goffin	20		10	N		04/07/18	06/07/18		GCW	100				03/08/18	
28	M-M/IRM	Investment and Risk Management	Dr Peter Yallup	20		10	N		02/05/18	17/05/18		EX	100				30/05/18	
29	M-M/LSO	Leading Sales and Customer Management Organisations	Dr Javier Marcos	20		10	Y	NOT RUNNING 2017/18				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 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 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
30	M-M/CPPM	Major Critical Projects and Programme Management – a Sectoral Approach	Dr Edward Ochieng	20		10	Y		23/07/18	26/07/18				100 MULTI	GPRES GCW	30 70	31/08/18	
31	M-M/LMF	Leading and Managing the Family Enterprise	Dr Stephanie Hussels	20		10	Y		31/07/18	06/08/18		GCW	100				29/08/18	
32	M-M/SQM	Strategic Quality Management	Dr Abdelkader Aouf	20		10	Y		07/08/18	13/08/18				100 MULTI	GPRES GCW	40 60	13/08/18 20/08/18	
33	M-M/TM	Technology Management	Dr Clive Savory	20		10	N		25/06/18	27/08/18				100 MULTI	GCW ICW	40 60	27/08/18	
34	M-M/IP	Independent Project	Various			10	Y		25/06/18	27/08/18		ICW	100				24/08/18	
34a	M-M/IP1	Independent Project	Various			10	Y		25/06/18	27/08/18		ICW	100				24/08/18	
35	M-M/IP2	Independent Project	Various			20	Y		25/06/18	27/08/18		ICW	100				24/08/18	
36	M-M/GP1	Group Project	Various			10	Y		25/06/18	27/08/18		GCW	100				24/08/18	
37	M-M/GP2	Group Project	Various			20	Y		25/06/18	27/08/18		GCW	100				24/08/18	

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPAC – 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			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 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
MBA (Energy)																		
38	M-E/EMEP	Energy Markets. An Executive Perspective	Prof Feargal Brennan	20		10	N		09/04/18	27/08/18				100 MULTI	ICW GCW	50 50	27/08/18	
39	M-E/SCET	Sustainable and Conventional Energy Technologies	Prof Gioia Falcone	20		10	N		09/04/18	27/08/18				100 MULTI	ICW GCW	50 50	27/08/18	
40	M-E/FPEC	Value Chain of Fuels Production and Energy Conversion	Prof Gary Leeke	20		10	N		09/04/18	27/08/18				100 MULTI	ICW GCW	50 50	27/08/18	
41	M-E/RMDM	Risk Management, Technology Qualification and Decision Making in Energy Investments	Dr Athanasios Kolios	20		10	N		09/04/18	27/08/18				100 MULTI	ICW GCW	50 50	27/08/18	
42	M-E/RMS	Resource Management Strategy	Prof Phil Longhurst	20		10	N		09/04/18	27/08/18				100 MULTI	ICW GCW	50 50	27/08/18	
43	M-E/SECP	Specialised Energy Consultancy Project	Dr Athanasios Kolios	10		10	N		09/04/18	27/08/18		ICW	100				27/08/18	

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 used by another existing course.

<u>Module code</u>	<u>Module title</u>	<u>Course that owns the module</u>	<u>Other course(s)/ programme(s) that use the module</u>
M-M/ENT	Entrepreneurship and New Venture Creation	Master of Business Administration	Executive Master of Business Administration
M-M/ESB	Entrepreneurial Finance for Early Stage Businesses	Master of Business Administration	Executive Master of Business Administration
M-M/STG	Strategic Management	Master of Business Administration	Executive Master of Business Administration
M-M/PMI	Project Management Introduction	Master of Business Administration	Design Strategy and Leadership, Digital Design and Strategic Communication, Innovation and Creativity in Industry
M-M/GME	Global Macroeconomics and Business Environment	Master of Business Administration	Executive Master of Business Administration
M-M/MPCS	Challenges for Leaders: Managing People, Change and Sustainability	Master of Business Administration	Executive Master of Business Administration
M-M/IBA	International Business Assignment	Master of Business Administration	Executive Master of Business Administration
M-M/DMDA	Data Analytics and Decision Making	Master of Business Administration	Executive Master of Business Administration
M-M/EFI	Entrepreneurial Finance for Later Stage Businesses	Master of Business Administration	Executive Master of Business Administration
M-M/IST	International Strategy	Master of Business Administration	Executive Master of Business Administration
M-M/MMA	Managing International Mergers and Acquisitions	Master of Business Administration	Executive Master of Business Administration
M-M/CFS	Corporate Financial Strategy	Master of Business Administration	Executive Master of Business Administration
M-M/SCC	Strategizing in Challenging Contexts	Master of Business Administration	Executive Master of Business Administration
M-M/SHR	Strategic Human Resource Management in the 21st Century	Master of Business Administration	Executive Master of Business Administration
M-M/DVSC	Driving Value Through the Supply Chain	Master of Business Administration	Executive Master of Business Administration
M-M/NBO	Negotiating in Business and Organisations	Master of Business Administration	Executive Master of Business Administration
M-M/BL	Business Law	Master of Business Administration	Executive Master of Business Administration
M-M/LSO	Leading Sales and Customer Management Organisations	Master of Business Administration	Executive Master of Business Administration
M-M/CPPM	Major Critical Projects and Programme Management – a Sectoral Approach	Master of Business Administration	Executive Master of Business Administration
M-M/LMF	Leading and Managing the Family Enterprise	Master of Business Administration	Executive Master of Business Administration
M-M/SQM	Strategic Quality Management	Master of Business Administration	Executive Master of Business Administration

M-M/IP M-M/IP1 M-M/IP2	Independent Project	Master of Business Administration	Executive Master of Business Administration
M-M/GP1 M-M/GP2	Group Project	Master of Business Administration	Executive Master of Business Administration

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	MULTI	MULTI	MULTI	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	GCW			GCW	GCW	GCW					
12	EX					EX		EX			EX
13	GCW		ICW	GCW	ICW / GCW		GCW	GCW		GCW	
14					EX / GPROJ		GPROJ				
14a	ICW	ICW				ICW				ICW	

Award ILOs Module No.	ILO1.	ILO2.	ILO3.	ILO4.	ILO5.	ILO6.	ILO7.	ILO8.	ILO9.	ILO10.	ILO11.
15	ICW							ICW	ICW		ICW
16					ICW / ICW		ICW	ICW			ICW
17			ICW / GCW	ICW			GCW	GCW			
18			GPRES	GPRES /GCW	GCW			GPRES			
19	EX		EX		EX						
20	ICW / GCW	ICW			GCW		GCW	GCW			
21			GPRES /GWC	GWC	GWC		GPRES /GWC	GWC			
22	ICW	ICW								ICW	ICW
23	ICW	ICW			ICW						ICW
24	GPRAC				ICW		ICW				
25				GWC	GWC		GWC	GWC			
26	ICW				ICW					ICW	
27				GWC			GWC	GWC		GWC	
28				EX	EX						EX
29	NOT RUNNING IN 2017/18										
30		GPRES GCW	GPRES GCW	GPRES GCW	GPRES GCW		GCW	GPRES GCW			
31		GWC	GWC	GWC	GWC			GWC	GWC		
32		GWC	GWC		GWC			GWC			
33			MULTI		MULTI			MULTI			
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
38			ICW GCW	ICW GCW	ICW GCW		ICW GCW	ICW GCW			
39			ICW GCW	ICW GCW	ICW GCW		ICW GCW	ICW GCW			
40			ICW GCW	ICW GCW	ICW GCW		ICW GCW	ICW GCW			
41			ICW GCW	ICW GCW	ICW GCW		ICW GCW	ICW GCW			
42			ICW GCW	ICW GCW	ICW GCW		ICW GCW	ICW GCW			
43	ICW	ICW	ICW	ICW	ICW	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.

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.

New Partnership arrangements are considered in two stages:

1. The University Executive is responsible for ensuring appropriate due diligence has been undertaken in respect of the University's legal, financial, reputational and ethical responsibilities.
2. A Partnership Delivery Approval Panel then considers whether the proposal meets the expectations and indicators of sound practice of the QAA Quality Code Chapter B10: Managing Higher Education Provision with Others, with regards to the management and operation of the partnership and that the academic standards and the quality of the student experience are assured in line with the remaining chapters of the QAA Quality Code. The delivery of new partnership provision is ultimately approved by the University's Education Committee, on behalf of Senate.

Year one partnership reviews are undertaken one year after the initiation of a new partnership involving academic (award bearing) provision. The aim is to provide a supportive framework to assist the Sponsoring School and its new Partner Institution to work collaboratively to ensure that: the learning and teaching provision and associated student experiences are of a high standard; and that those responsible for delivering the provision are undertaking their respective roles and responsibilities in an appropriate way.

As part of the regular monitoring procedures for established collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focused Review which looks at each partnership in depth. Occasional site inspection visits are also made.

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.

COURSE TITLE: Executive Master of Business Administration

Date of first publication/latest revision: May 2017

1. What is the course?

Course information

Course Title	Executive Master of Business Administration Executive Master of Business Administration (Defence) Executive Master of Business Administration (Mastership)
Course code	MBEXMPTC, MBCMDPTR (Defence)
Academic Year	2017/18
Valid entry routes	MBA
Additional exit routes	PgCert in Business Administration PgDip in Business Administration
Mode of delivery	Part-time
Location(s)¹ 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
Is this an AP Contract course?²	Defence only
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	<ul style="list-style-type: none">• 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.

¹ If any part of this course is delivered at another site, please note which one(s) here

² AP Contract courses are provided by Cranfield University to the MoD as part of the Academic Provider contract

	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)	September and 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). It is also accredited by the European Quality Improvement System (EQUIS).

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. Have 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, managerial and ethical ambiguities and risks 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.

Students following the Defence pathway will also be able to contextualise the above ILOs from an Defence perspective.

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 learning 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 240 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Module 1, 12	40
Modules 2-11, 13-14	120
ELECTIVE MODULES:	
80 credits from Modules 15-35	80
TOTAL:	240

B. MBA (Mastership)

The accumulation of 240 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	
Module 1, 12	40
Modules 2-11, 13-14, 21, 24, 25, 32	160
ELECTIVE MODULES:	
40 credits from Modules 15-20, 22, 23, 26-31, 33-35	40
TOTAL:	240

C. MBA (Defence)

The accumulation of 240 credits (or more) through the assessment of taught modules as detailed below:

Description	Credits
COMPULSORY MODULES:	

Module 1, 12	40
Modules 2-11, 13-14, 23-24, 36-40	190
ELECTIVE MODULES:	
10 credits from Modules 15-22, 25-35	10
TOTAL:	240

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 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 23, 24, 36 to 40.

MBA (Mastership) The pass criterion for the MBA(M) is the same as MBA above except that MBA(M) students have to select modules 21, 24, 25 and 32.

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 September or January and are expected to complete the course within 2 years.

The MBA programme is in two parts. Part I lasts for six months 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 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 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 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	MXMPPF	Organisational Behaviour: Personal and Professional Foundations of Leadership and Change	Dr Richard Kwiatkowski	32		20	N	[[	28/09/17	27/01/18		I PROJ	100				[[[[
2	MXM/ACT	Accounting	Prof Ruth Bender/Andy Mack	16		10	N	[[	24/11/17	16/12/17		EX	100				TBC 25/01/18	[[

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	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 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
3	MXM/SOM	Strategic Operations Management	Prof Marek Szwejczewski	16		10	N	[[	28/09/17	28/10/17		ICW	100				[[[[
4	MXM/MKT	Strategic Marketing	Prof Emma Macdonald	16		10	N	[[	29/09/17	27/10/17		GPRES ICW	50 50				[[[[
5	MXM/ECBS	Economics and Business Strategy	Dr Catarina Figueira	16		10	N	[[	23/11/17	16/12/17		EX	100				25/01/18	[[
6	M-M/ENT Occ B	Entrepreneurship and New Venture Creation	Dr Shailendra Vyakarnum	16		10	Y	[[	23/02/18	24/03/18		GCW	100				[[[[
7	MXM/FM	Financial Management	Dr Andrea Moro	16		10	N	[[	23/02/18	24/03/18		EX	100				26/04/18	[[
8	M-M/STG Occ B	Strategic Management	Prof Mark Jenkins	16		10	Y	[[	24/05/18	26/07/18		GPRES ICW	50 50				[[[[
9	MXM/P2M	Programme and Project Management	John Algar	16		10	N	26/04/18	25/05/18	26/05/18		EX	40	60 MULTI	GCW GPRAC GPRES	10 30 20	23/06/18	[[
10	M-M/GME Occ B	Global Macroeconomics and Business Environment	Prof Joe Nellis	16		10	Y	[[	27/04/18	21/06/18		GCW	100				[[[[
11	M-M/ MPCS Occ B	Challenges for Leaders: Managing People, Change and	Prof Clare Kelliher / Prof David Grayson	16		10	Y	[[	22/03/18	28/04/18		EX	100				[[[[

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			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 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
		Sustainability																
12	M-M/DMDA Occ B	Data Analytics and Decision Making	Dr Andy Angus	32		20	Y	[[	26/10/17	27/01/18		EX GPROJ	30 70				22/02/18 TBC]	[[
13	MXM/New Code	Leading with Impact	Prof Elisabeth Kelan	16		10	N	[[	[[	[[		ICW	100				[[[[
14	M-M/ESB Occ B	Entrepreneurial Finance for Early Stage Businesses	Dr Stephanie Hussels	16		10	Y	[[	[[	[[				100 MULTI	GCW GPRES GCW GPRES	30 25 25 20	[[[[
15	M-M/IBA Occ B	International Business Assignment	David Simmons	20		10	Y	[[	[[	[[		ICW GCW	20 80				[[[[
16	M-M/EFI Occ B	Entrepreneurial Finance for Later Stage Businesses	Chris Ansell	16		10	Y	[[	[[	[[		ICW ICW	60 40				[[[[
17	M-M/IST Occ B	International Strategy	Prof Patrick Reinmoeller	16		10	Y	[[	[[	[[		GCW ICW	80 20				[[[[
18	M-M/MMA Occ B	Managing International Mergers and Acquisitions	Dr Richard Schoenberg	16		10	Y	[[	[[	[[		GCW GPRES	70 30				[[[[

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			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 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
19	M-M/CFS Occ B	Corporate Financial Strategy	Abdul Mohammed	16		10	Y	[[	[[	[[		EX	100				[[[[
20	MXM/New Code	Corporate Finance Transactions	Prof Ruth Bender	16		10	N	[[	[[	[[		ICW GCW	10 90				[[[[
21	M-M/SCC Occ B	Strategizing in Challenging Contexts	Dr Richard Schoenberg	16		10	Y	[[	[[	[[		GPRES GCW	20 80				[[[[
22	M-M/SHR Occ B	Strategic Human Resource Management in the 21 st Century	Prof Frank Horwitz	16		10	Y	[[	[[	[[		ICW	100				[[[[
23	M-M/DVSC Occ B	Driving Value Through the Supply Chain	Michael Bernon	16		10	Y	[[	[[	[[		ICW	100				[[[[
24	M-M/NBO Occ B	Negotiating in Business and Organisations	Dr Ian Speakman	16		10	Y	[[	[[	[[		ICW	100				[[[[
25	MXM/New Code	Managing Strategic Innovation	Dr Clive Savory	16		10	N	[[	[[	[[		GCW	100				[[[[
26	M-M/BL Occ B	Business Law	Ian Stirk	16		10	Y	[[	[[	[[		ICW	100				[[[[
27	M-M/LSO Occ B	Leading Sales and Customer Management Organisations	Dr Javier Marcos	16		10	Y	[NOT RUNNING IN 2017/18]				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 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 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
28	M-M/CPPM Occ B	Major Critical Projects and Programme Management – a Sectoral Approach	Dr Edward Ochieng	16		10	Y	[[	[[	[[				100 MULTI	GPRES GCW	30 70	[[[[
29	M-M/LMF Occ B	Leading and Managing the Family Enterprise	Dr Stephanie Hussels	16		10	Y	[[	[[	[[		GCW	100				[[[[
30	M-M/SQM Occ B	Strategic Quality Management	Dr Abdelkader Aouf	16		10	Y	[[	[[	[[				100 MULTI	GPRES GCW	40 60	[[[[
31	New Module	Challenges in Creating Organisational Cyber Resilience	Prof Paul Baines/Kev Brier	16		10	N	[[	[[	[[		ICW	100				[[[[
32	M-M/IP Occ B	Independent Project	Various			10	Y	[[	[[	[[		ICW	100				[[[[
32a	M-M/IP1 Occ B	Independent Project	Various			10	Y	[[	[[	[[		ICW	100				[[[[
33	M-M/IP2 Occ B	Independent Project	Various			20	Y	[[	[[	[[		ICW	100				[[[[
34	M-M/GP1 Occ B	Group Project	Various			10	Y	[[	[[	[[		GCW	100				[[[[
35	M-M/GP2 Occ B	Group Project	Various			20	Y	[[	[[	[[		GCW	100				[[[[

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			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 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
[MBA (Defence)]																		
36	MXM/LCM	Leading Change Management in Defence		20		10	N	[]	[]	[]		GPRES ICW	50 50				[]	[]
37	MXM/DPPM	Defence Portfolio and Programme Management		20		10	N	[]	[]	[]		ICW	100				[]	[]
38	MXM/DE	Defence Economics and Finance		20		10	N	[]	[]	[]		ICW	100				[]	[]
39	MXM/RDM	Risk and Defence Management		20		10	N	[]	[]	[]		ICW	100				[]	[]
40	MXM/IRP	Independent Research Project		0		10	N	[]	[]	[]		ICW	100				[]	[]

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPAC – Individual Practical; GPAC – 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.

<u>Module code</u>	<u>Module title</u>	<u>Course that owns the module</u>	<u>Other course(s)/ programme(s) that use the module</u>
M-M/ENT	Entrepreneurship and New Venture Creation	Master of Business Administration	Master of Business Administration
M-M/STG	Strategic Management	Master of Business Administration	Master of Business Administration
M-M/GME	Global Macroeconomics and Business Environment	Master of Business Administration	Master of Business Administration
M-M/ MPCS	Challenges for Leaders: Managing People, Change and Sustainability	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	Data Analytics and Decision Making	Master of Business Administration	Master of Business Administration
M-M/ESB	Entrepreneurial Finance for Early Stage Businesses	Master of Business Administration	Master of Business Administration
M-M/EFI	Entrepreneurial Finance for Later Stage Businesses	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/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
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/BL	Business Law	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	IPROJ	IPROJ	
02	EX	EX			ICW						
03		ICW	ICW	ICW							
04	ICW	ICW	GPRES ICW	GPRES ICW	GPRES ICW		GPRES	GPRES			
05		EX	EX	EX	EX					EX	
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				GCW	GCW		GCW				
11	EX					EX		EX			EX
12					EX GPROJ			GPROJ			
13	ICW							ICW	ICW		ICW
14				MULTI	MULTI		MULTI	MULTI			MULTI
15			ICW GCW	ICW			GCW	GCW			
16					ICW		ICW	ICW			ICW
17			ICW GCW	ICW			GCW	GCW			
18	GPRES GCW				GPRES GCW		GPRES GCW	GPRES GCW			
19	EX		EX		EX						

Award ILOs Module No.	ILO1.	ILO2.	ILO3.	ILO4.	ILO5.	ILO6.	ILO7.	ILO8.	ILO9.	ILO10.	ILO11.
20		ICW GCW	ICW GCW	ICW GCW	ICW GCW		ICW GCW	ICW GCW			
21			GPRES GCW	GCW	GCW		GCW GPRES	GCW			
22	ICW	ICW								ICW	ICW
23	ICW	ICW			ICW						ICW
24	ICW	ICW			ICW						ICW
25		GCW	GCW		GCW						
26	ICW				ICW					ICW	
27				ICW	ICW		ICW				
28				MULTI	MULTI						
29			GCW	GCW	GCW			GCW	GCW	GCW	
30		MULTI	MULTI	MULTI						MULTI	
31				ICW	ICW						
32/32a/ 33		ICW	ICW	ICW	ICW	ICW			ICW		ICW
34/35		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.
36			ICW GPRES	ICW GPRES	ICW GPRES		ICW GPRES	ICW GPRES			
37			ICW			ICW			ICW	ICW	
38	ICW	ICW	ICW	ICW	ICW						
39		ICW	ICW	ICW				ICW		ICW	
40	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.

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.

New Partnership arrangements are considered in two stages:

1. The University Executive is responsible for ensuring appropriate due diligence has been undertaken in respect of the University's legal, financial, reputational and ethical responsibilities.
2. A Partnership Delivery Approval Panel then considers whether the proposal meets the expectations and indicators of sound practice of the QAA Quality Code Chapter B10: Managing Higher Education Provision with Others, with regards to the management and

operation of the partnership and that the academic standards and the quality of the student experience are assured in line with the remaining chapters of the QAA Quality Code. The delivery of new partnership provision is ultimately approved by the University's Education Committee, on behalf of Senate.

Year one partnership reviews are undertaken one year after the initiation of a new partnership involving academic (award bearing) provision. The aim is to provide a supportive framework to assist the Sponsoring School and its new Partner Institution to work collaboratively to ensure that: the learning and teaching provision and associated student experiences are of a high standard; and that those responsible for delivering the provision are undertaking their respective roles and responsibilities in an appropriate way.

As part of the regular monitoring procedures for established collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focused Review which looks at each partnership in depth. Occasional site inspection visits are also made.

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.

COURSE TITLE: MSc in Military Aerospace and Airworthiness

Date of first publication/latest revision: 22/06/2017

1. What is the course?

Course information

Course Title	Military Aerospace and Airworthiness
Course code	MSMAAPTR, PDMAAPTR, PCMAAPTR, SPMAAPTR
Academic Year	2017-2018
Valid entry routes	MSc, PgDip, PgCert
Exit routes	MSc, PgDip, PgCert
Mode of delivery	Part-time
Location(s)¹ of Study	Shrivenham and Bedford
School(s)	Cranfield Defence and Security
Theme	N/A
Centre	Centre for Defence Engineering: Aeromechanical Systems
Course Director	Dr John Economou
Awarding Body	Cranfield University
Is this an AP Contract course?²	Yes
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	A first or Second honours degree in a relevant mathematics, science or engineering discipline; 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

¹ If any part of this course is delivered at another site, please note which one(s) here

² AP Contract courses are provided by Cranfield University to the MoD as part of the Academic Provider contract

Registration Period(s) available	A student who registers for the PgCert will have a registration period of three years. For the PgDip this will be four years, and for the MSc five years.
Course Start Month(s)	September and January

Institutions delivering the course

This course is delivered by Cranfield Defence and Security (Shrivenham Campus) and the School of Aerospace, Transport and Manufacturing (Cranfield Campus).

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 up to, and including, academic year 2021/22.

2. What are the aims of the course?

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.

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

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. All lecture material, together with a non-assessed online mathematics self-taught module, 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 chosen from 05-09, 11-17, 23-25	10
TOTAL:	60

FAE³ 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

FAE³ QUALIFIED CANDIDATES ONLY

Description	Credits
APCL MODULES	
21, 22	20
COMPULSORY MODULES:	
00 03, 04, 18, 20	0 40

³ Fundamentals of Aeronautical Engineering (FAE) is a five-week, 20-credit short course.

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:

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

FAE³ 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 $\geq 50\%$;
- An average mark of $\geq 50\%$ 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);^{4 5}

- **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 $\geq 50\%$ 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 $\geq 50\%$ (where they exist);
- **For the thesis**, a mark of $\geq 50\%$ 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 compulsory 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.

⁴ 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).

⁵ 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 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.

F AE-Qualified Students

Students who have successfully passed the Fundamentals of Aeronautical Engineering (FAE) Short Course for Credit may 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 complete the three compulsory airworthiness and aviation safety modules:

- 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) plus 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 compulsory modules in the first year with either start date. The course duration is expected to be:

Minimum period of registration

- PgCert: One year
- PgDip: One year
- MSc: Two years

Maximum period of registration

- PgCert: Three years
- PgDip: Four years
- MSc: Five 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.

MAA Module Number	Module code	Title	Module Leader	Contact hours ⁶	Total hours delivered by Visiting Lecturers ⁷	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁸ - 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 ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
00	R-MAA-SS	Study Skills and Registration		12		0	N	[04/09/17 08/01/18]	[04/09/17 08/01/18]	[06/09/17 10/01/18]	N/A	AO					[N/A]	[]
03	R-MAA-AMA	Airworthiness of Military Aircraft		30		10	N	[06/11/17 12/03/18 04/06/18]	[04/12/17 09/04/18 02/07/18]	[08/12/17 13/04/18 06/07/18]	50 50 50	EX ICW	30 70				[08/12/17 12/02/18 13/04/18 11/06/18 06/07/18 AY 18-19	[13/04/18 11/06/18 06/07/18 09/09/18

⁶ Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

⁷ Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

⁸ 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 $\geq 50\%$. This will be at the Board of Examiners discretion.

⁹ For **multi-part assessments** please record the overall weighting of module which should be 100%.

¹⁰ 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.

¹¹ 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

MAA Module Number	Module code	Title	Module Leader	Contact hours ⁶	Total hours delivered by Visiting Lecturers ⁷	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁸ - 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 ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
											50	ICW	70				03/09/18	AY 18-19
04	N-SAI-ISMS	Aviation Safety Management		30		10	Y	[04/09/17	[04/09/17	[08/09/17	50	ICW	100				[06/11/17	[
								16/04/18]	16/04/18]	20/04/18]	50	ICW	100				18/06/18]]
05	N-AW-ATEMO	Air Transport Engineering – Maintenance Operations		30	8	10	Y	[12/02/18]	[12/02/18]	[16/02/18]	40			100	EX ICW	30 70	[16/02/18 16/04/18]	[AY18-19]
06	N-HFS-AAI	Aircraft Accident Investigation and Response		30		10	Y	[09/04/18]	[09/04/18]	[13/04/18]	40	ICW	100				[11/06/18]	[AY 18-19]
07	R-MAA-AS	Aircraft Survivability		35		10	N	[05/03/18]	[05/03/18]	[09/03/18]	40	ICW	100				[14/05/18]	[AY 18-19]
08	N-AW-ICAS	Design Durability and Integrity of Composite Aircraft		35		10	Y	[09/07/18]	[09/07/18]	[13/07/18]	40	ICW	100				[10/09/18]	[AY 18-19]

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

MAA Module Number	Module code	Title	Module Leader	Contact hours ⁶	Total hours delivered by Visiting Lecturers ⁷	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁸ - 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 ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
		Structures																
09	N-AW-FAEC	Fundamentals of Aircraft Engine Control		30		10	Y	[12/03/18]	[12/03/18]	[16/03/18]	40	ICW	100				[14/05/18]	[AY 18-19]
11	R-MAA-GW	Guided Weapons		32		10	Y	[15/01/18]	[15/01/18]	[19/01/18]	40	ICW	100				[19/03/18]	[AY 18-19]
12	N-AEN-ASC	Introduction to Aircraft Structural Crashworthiness		25		10	Y	[02/07/18]	[02/07/18]	[06/07/18]	40	ICW	100				[03/09/18]	[AY 18-19]
13	R-MAA-IHF	Introduction to Human Factors		40		10	N	[21/05/18]	[21/05/18]	[25/05/18]	40 40	GPRES ICW	20 80				[25/05/18 23/07/18]	[AY18-19 AY18-19]
14	N-AW-MIGT	Mechanical Integrity of Gas Turbines		30		10	Y	[23/04/18]	[23/04/18]	[27/04/18]	40	ICW	100				[25/06/18]	[AY18-19]
15	R-MAA-MAS	Military Aircraft Systems		35		10	N	[04/06/18]	[04/06/18]	[08/06/18]	40 40	EX ICW	50 50				[09/07/18 06/08/18]	[AY18-19 AY18-19]

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

MAA Module Number	Module code	Title	Module Leader	Contact hours ⁶	Total hours delivered by Visiting Lecturers ⁷	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁸ - 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 ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
16	R-MAA-MA	Military Avionics – STA, Communications and Navigation		32		10	N	[22/01/18]	[22/01/18]	[26/01/18]	40	ICW	100				[26/03/18]	[AY18-19]
17	N-AW-RA	Practical Reliability		30	10	10	Y	[16/10/17]	[16/10/17]	[20/10/17]	40	ICW	100				[18/12/17]	[AY18-19]
18	N-AW-SAAS	Safety Assessment of Aircraft Systems		35	12	10	Y	[13/11/17]	[13/11/17]	[17/11/17]	50			100	ICW GPRES	70 30	[15/01/18 17/11/17]	[28/08/18 29/06/18]
								25/06/18]	25/06/18]	29/06/18]	50			100	ICW GPRES	70 30	28/08/18 29/06/18]	AY18-19 AY18-19]
19	R-MAA-DISS	Research Project		20		80	N	[01/08/17]	[31/07/18]	[]	50	THESIS OR	80 20				[End of Registrat ion]	[]
20	R-MAA-FAE	FAE Top-Up		6		10	N	[07/09/17]	[07/09/17]	[07/09/17]	50	ICW	100				[03/11/17]	[AY18-19]
21	R-MAA-FWA	Fixed-Wing Aeromechan ics		33		10	N	[18/09/17]	[18/09/17]	[22/09/17]	50 50	EX ICW	50 50				[23/10/17 20/11/17]	[AY18-19 AY18-19]

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

MAA Module Number	Module code	Title	Module Leader	Contact hours ⁶	Total hours delivered by Visiting Lecturers ⁷	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁸ - 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 ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
22	R-MAA-PS	Propulsion Systems		28		10	N	[04/12/17]	[04/12/17]	[08/12/17]	50 50	EX ICW	50 50				[15/01/18 12/02/18]	[AY18-19 AY18-19]
23	R-MAA-RWA	Rotary-Wing Aeromechanics		30		10	N	[06/11/17]	[06/11/17]	[10/11/17]	40 40	EX ICW	50 50				[11/12/17 15/01/18]	[AY18-19 AY18-19]
24	N-AW-AFDT	Aircraft Fatigue and Damage Tolerance		30		10	Y	[11/06/18]	[11/06/18]	[15/06/18]	40	ICW	100				[13/08/18]	[AY18-19]
25	N-HFS-HFAM	Human Factors in Aviation Maintenance		30		10	Y	[19/03/18]	[19/03/18]	[23/03/18]	40 40	ICW GPRES	90 10				[21/05/18 23/03/18]	[AY18-19 AY18-19]

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.

<u>Module code</u>	<u>Module title</u>	<u>Course that owns the module</u>	<u>Other course(s)/ programme(s) that use the module</u>
N-SAI-ISMS	MAA04: Aviation Safety Management	Safety and Human Factors in Aviation	<ul style="list-style-type: none"> • Airworthiness • Air Transport Management • Safety and Accident Investigation (Air Transport) • Military Aerospace and Airworthiness
N-AW-ATEMO	MAA05: Air Transport Engineering – Maintenance Operations	Airworthiness	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Airworthiness • Forensic Engineering and Science • Military Aerospace and Airworthiness
N-AW-ICAS	MAA08: Design Durability and Integrity of Composite	Aircraft Engineering	<ul style="list-style-type: none"> • Military Aerospace and Airworthiness • Airworthiness • Advanced Materials
N-AW-FAEC	MAA09: Fundamentals of Aircraft Engine Control	Airworthiness	<ul style="list-style-type: none"> • Military Aerospace and Airworthiness • Thermal Power
N-AEN-ASC	MAA12: Introduction to Aircraft Structural Crashworthiness	Aircraft Engineering	<ul style="list-style-type: none"> • Airworthiness • Military Aerospace and Airworthiness • Safety and Accident Investigation
N-AW-MIGT	MAA14: Mechanical Integrity of Gas Turbines	Airworthiness	<ul style="list-style-type: none"> • Military Aerospace and Airworthiness
N-AW-RA	MAA17: Practical Reliability	Airworthiness	<ul style="list-style-type: none"> • Military Aerospace and Airworthiness
N-AW-SAAS	MAA18: Safety Assessment of Aircraft Systems	Airworthiness	<ul style="list-style-type: none"> • Military Aerospace and Airworthiness • Safety and Accident Investigation (Air Transport)
N-HFS-AFDT	MAA24: Aircraft Fatigue and Damage Tolerance	Airworthiness	<ul style="list-style-type: none"> • Military Aerospace and Airworthiness
N-HFS-HFAM	MAA25: Human Factors in Aircraft Maintenance	Safety and Human Factors in Aviation	<ul style="list-style-type: none"> • Military Aerospace and Airworthiness • Safety and Accident

			Investigation (Air Transport)
R-MAA-GW	MAA11: Guided Weapons	Military Aerospace and Airworthiness	<ul style="list-style-type: none"> • 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 and a viva voce examination. 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			

Award ILOs Module No.	ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
18	ICW					ICW
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 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.

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.

New Partnership arrangements are considered in two stages:

1. The University Executive is responsible for ensuring appropriate due diligence has been undertaken in respect of the University's legal, financial, reputational and ethical responsibilities.
2. A Partnership Delivery Approval Panel then considers whether the proposal meets the expectations and indicators of sound practice of the QAA Quality Code Chapter B10: Managing Higher Education Provision with Others, with regards to the management and operation of the partnership and that the academic standards and the quality of the

student experience are assured in line with the remaining chapters of the QAA Quality Code. The delivery of new partnership provision is ultimately approved by the University's Education Committee, on behalf of Senate.

Year one partnership reviews are undertaken one year after the initiation of a new partnership involving academic (award bearing) provision. The aim is to provide a supportive framework to assist the Sponsoring School and its new Partner Institution to work collaboratively to ensure that: the learning and teaching provision and associated student experiences are of a high standard; and that those responsible for delivering the provision are undertaking their respective roles and responsibilities in an appropriate way.

As part of the regular monitoring procedures for established collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focused Review which looks at each partnership in depth. Occasional site inspection visits are also made.

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: 07/02/17

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 (June 2017)
Valid entry routes	MSc
Additional exit routes	PgDip, PgCert
Mode of delivery	Part-time
Location(s)¹ of Study	Royal School of Military Engineering, Chatham
School(s)	Cranfield Defence and Security
Theme	Engineering
Centre	Centre for Defence Engineering
Course Director	Lt Col S Whitticase
Awarding Body	Cranfield University
Is this an AP Contract course?²	No
Teaching Institution	Royal School of Military Engineering (RSME) in conjunction with MKC Training Services Ltd (MKC TS)
Admissions body	Cranfield University and Royal School of Military Engineering
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.

¹ If any part of this course is delivered at another site, please note which one(s) here

² AP Contract courses are provided by Cranfield University to the MoD as part of the Academic Provider contract

	A 1 st or 2 nd 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 1st Commandant of the RSME. The awards of the MSc, PgDip and PgCert 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:

	<u>Renewal Date</u>
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 and competent 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 one credit typically 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	8
Com 2	5
Com 3	5
C1–C7	62
ELECTIVE MODULES:	
N/A	N/A
TOTAL:	80

Description	Credits
COMPULSORY MODULES: ELECTRICAL & MECHANICAL:	
Com 1-3	8
Com 2	5
Com 3	5
E1–E8	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	8
Com 2	5
Com 3	5
C1 – C7	62
Com 4–Com 7	60
ELECTIVE MODULES:	
N/A	N/A
TOTAL:	140

Description	Credits
COMPULSORY MODULES: ELECTRICAL & MECHANICAL	
Com 1-3	8
Com 2	5
Com 3	5
E1–E8	62
Com 4–Com 7	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	8
Com 2	5
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 $\geq 50\%$;
- An average mark of $\geq 50\%$ 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);^{3 4}

- **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 $\geq 50\%$ 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 $\geq 50\%$ (where they exist);
- **For the thesis**, a mark of $\geq 50\%$ in order to receive a pass (where it exists).

6. How is the course structured?

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.

³ 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).

⁴ 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
PHASE 1 –RSME																		
CIVIL STREAM																		
C1	R-MCE-STRU C	Structural Analysis		51	0	8	N	[]	[25 Jul 17	[11 Sep 17]	50	EX	100				[11 Sep 17]	[]

⁵ Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

⁶ Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

⁷ 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.

⁸ For **independent assessments** please record type and weighting of each separate piece of assessment individually.

⁹ For **multi-part assessments** please record the overall weighting of module which should be 100%.

¹⁰ 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.

¹¹ 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
C2	R-MCE-APPSTR	Applied Structures		63	0	8	N	[]	[29 Aug 17]	[2 Feb 18]	40 40	EX GCW	40 60				[29 Jan 18]	[]
C3	R-MCE-SD	Steel Design		60	6	10	N	[]	[7 Aug 17]	[6 Oct 17]	40	ICW	100				[2 Oct 17]	[]
C4	R-MCE-CD	Concrete Design		57		10	N	[]	[26 Sep 17]	[17 Nov 17]	40	ICW	100				[14 Nov 17]	[]
C5	R-MCE-ASM	Applied Soil Mechanics		69		10	N	[]	[10 Oct 17]	[8 Dec 17]	40	ICW	100				[4 Dec 17]	[]
C6	R-MCE-FE	Applied Foundation Engineering		21		8	N	[]	[24 Jan 18]	[15 Feb 18]	40	GCW	100				[12 Feb 18]	[]
C7	R-MCE-RPD	Roads, Drainage and Survey		33		8	N	[]	[8 Dec 17]	[12 Jan 18]	40	ICW	100				[8 Jan 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
[ELECTRICAL AND MECHANICAL STREAM]																		
E1	R-MCE-ME	Mechanical Engineering		66		5	N	[]	[25 Jul 17	[30 Oct 17]	50	EX	100				[30 Oct 17]	[]
E2	R-MCE-EE	Electrical Engineering		54		5	N	[]	[25 Jul 17	[13 Nov 17]	50	EX	100				[13 Nov 17]	[]
E3	R-MCE-MBS	Mechanical Building Services		69		8	N	[]	[5 Oct 17	[5 Jan 18]	40	ICW	100				[2 Jan 18]	[]
E4	R-MCE-EBS	Electrical Building Services		66		10	N	[]	[4 Dec 17	[24 Jan 18]	40	ICW	100				[22 Jan 18]	[]
E5	R-MCE-WF	Water and Wastewater		30		8	N	[]	[15 Sep 17]	[5 Oct 17	40	ICW	100				[2 Oct 17]	[]
E6	R-MCE-EPD	Electrical Power Distribution		72		10	N	[]	[11 Jan 18]	[16 Feb 18]	40	ICW	100				[14 Feb 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
E7	R-MCE-EAC	Electronics and Controls		60		8	N	[]	[6 Nov 17	[24 Nov 17]	40 40	EX GCW	25 75				[22 Nov 17]	[]
E8	R-MCE-FDP	Final Design Project		0		8	N	[]	[18 Sep 17]	[9 Mar 18]	40	GCW	100				[5 Mar 18]	[]
[COMMON MODULES]																		
Com 1-1	R-MCE-INTR O	Foundation Introduction		84		0	N	[]	[05 Jun17]	[14 Jul17]	N/A	AO	N/A	N/A	N/A	N/A	[N/A]	[]
Com 1-2	R-MCE-EMD	Electrical and Mechanical Design		45		8	N	[]	[16 Jun 17]	[12 Jul 17	40	GCW	100				[13 Jul 17]	[]
Com 1-3	R-MCE-CSD	Civil & Structural Design		45		8	N	[]	[14 Jun 17]	[11 Jul 17]	40	GCW	100				[13 Jul 17]	[]
Com2	R-MCE-PPO	Project Procurement and Organisation		27		5	N	[]	[24 Jul 17	[1 Sep 17	40	EX	100				[1 Sep 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 ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
Com3	R-MCE-PCM	Project and Contract Management		30		5	N	[]	[30 Oct 17]	[27 Nov 17]	50	EX	100				[27 Nov 17]	[NK]
[PHASE 2 & 3 -ATTACHMENTS ¹²]																		
Com4	R-MCE-TMR1	Technical and Managerial Reports		0		15	N	[]	[02 Apr 18]	[21 May 18]	50	ICW	100				[]	[]
Com5	R-MCE-TMR2	Technical and Managerial Reports		0		15	N	[]	[28 May 18]	[13 Aug 18]	50	ICW	100				[]	[]
Com6	R-MCE-TMR3	Technical and Managerial Reports		0		15	N	[]	[20 Aug 18]	[08 Oct 18]	50	ICW	100				[]	[]
Com7	R-MCE-TMR4	Technical and Managerial Reports		0		15	N	[]	[15 Oct 18]	[04 Feb 19]	50	ICW	100				[]	[]

¹² 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	Module Leader	Contact hours ⁵	Total hours delivered by Visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
Com8	R-MCE-DISS	Thesis		0		60	N	[]	[16 Apr 18]	[06 May 19]	50	THESIS	100				[]	[]

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.

<u>Module code</u>	<u>Module title</u>	<u>Course that owns the module</u>	<u>Other course(s)/ programme(s) that use the module</u>

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	ICW	ICW	ICW	ICW	

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	GCW	GCW	GCW	GCW	
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, normally within the first week 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

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: 04/09/2017

1. What is the course?

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	2017/2018
Valid entry routes	MSc, PgDip, PgCert
Additional Exit routes	PgDip, PgCert
Mode of delivery	Full-time and Part-time
Location(s)¹ of Study	Shrivenham
School(s)	Cranfield Defence and Security
Theme	Defence and Security
Centre	Electronic Warfare and Information Centre (EWIC)
Course Director	Dr David James
Awarding Body	Cranfield University
Is this an AP Contract course?²	Yes
Teaching Institution	Cranfield University
Admissions body	Cranfield University
Entry requirements	Standard University entry requirements
UK Qualifications Framework Level	QAA FHEQ level 7 (Masters)
Benchmark	N/A

¹ If any part of this course is delivered at another site, please note which one(s) here

² AP Contract courses are provided by Cranfield University to the MoD as part of the Academic Provider contract

Statement(s)	
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
- 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 6. Critically analyse the threat from Electronic Surveillance (ES) and Electronic Attack (EA) to typical military sensor 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 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

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 11. 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 12. Propose strategies involving Electronic Defence (ED) mechanisms to such threats
- ILO 13. Investigate and evaluate current and proposed ED methods and techniques to the threats previously defined
- ILO 14. 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 15. Assess quantitatively the performance of such systems in a hostile EW environment
- ILO 16. 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

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 17. Implement and document an extended research project in the field of EW requiring elements of information retrieval, modelling, experimentation and theoretical analysis
- ILO 18. 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 6. 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	10
11 Information Networks	10
15 Communications Electronic Warfare	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	10
5 Radar Principles	10
7 Electro-optics and Infrared Systems 1	10
ELECTIVE MODULES:	
Modules to the value of 60 credits selected from:	
6 Radar Electronic Warfare	10
8 Electro-optics and Infrared Systems 2	10
9 Advanced Sensor Data Processing	10
10 Advanced Radar	10
11 Information Networks	10
13 Foundations of Modelling and Simulation <i>Non-MOD only</i>	10
14 Autonomy of Systems <i>Non- MOD only</i>	10
15 Communications Electronic Warfare	10
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	10
5 Radar Principles	10
7 Electro-optics and Infrared Systems 1	10
12. Project	80
ELECTIVE MODULES:	
Modules to the value of 60 credits selected from:	
6 Radar Electronic Warfare	10
8 Electro-optics and Infrared Systems 2	10
9 Advanced Sensor Data Processing	10
10 Advanced Radar	10
11 Information Networks	10
13 Foundations of Modelling and Simulation <i>Non-MOD only</i>	10
14 Autonomy of Systems <i>Non-MOD only</i>	10
15 Communications Electronic Warfare	10
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 $\geq 50\%$;
- An average mark of $\geq 50\%$ 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);^{3 4}

³ 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).

⁴ 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%

- **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 $\geq 50\%$ 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 $\geq 50\%$ (where they exist);
- **For the thesis**, a mark of $\geq 50\%$ in order to receive a pass (where it exists).

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.

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.

(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 ⁵	Total hours delivered by visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
1	R-MES-EPD	Electromagnetic Propagation and Devices		45	0	10	N	[04/09/17]	[04/09/17]	15/09/17]	50	ICW	100				[13/10/17(F T & PT)]	[22/12/17]
2	R-MES-SPSA	Signal Processing, Statistics and Analysis		30	0	10	Y	[25/09/17]	[25/09/17]	[29/09/17]	50			100	ICW ICW	50 50	[27/10/17(F T & PT) 27/10/17 (FT & PT)]	[12/01/18]

⁵ Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

⁶ Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

⁷ 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 $\geq 50\%$. This will be at the Board of Examiners discretion.

⁸ For **independent assessments** please record type and weighting of each separate piece of assessment individually.

⁹ For **multi-part assessments** please record the overall weighting of module which should be 100%.

¹⁰ 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.

¹¹ 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	Module Leader	Contact hours ⁵	Lectures ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of Independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
3	R-MES-CP	Communication Principles		30	0	10	N	[30/10/17]	[30/10/17]	[03/11/17]	50			100	ICW ICW	60 40	[01/12/17 (FT & PT) 01/12/17 (FT & PT)]	[16/02/18 16/02/18]
4	R-MES-CS	Communication Systems		60	0	10	N	[13/11/17]	[13/11/17]	[17/11/17]	50	ICW	100				[15/12/17 (FT & PT)]	[02/03/18]
5	R-MES-RP	Radar Principles		30	0	10	Y	[27/11/17]	[27/11/17]	[01/12/17]	50	ICW	100				[05/01/18 (FT & PT)]	[16/03/18]
13	R-AMOR-FMS Occ B	Foundations of Modelling and Simulation		30	0	10	Y	[15/01/18]	[15/01/18]	[19/01/18]	40	ICW	100				[26/02/18 (FT & PT)]	[30/07/18]
6	R-MES-REW	Radar Electronic Warfare		30	0	10	Y	[22/01/18]	[29/01/18]	[02/02/18]	50	ICW	100				[02/03/18 (FT & PT)]	[18/05/18]
7	R-MES-EOIS1	Electro-optics and Infrared Systems I		32	0	10	Y	[09/10/17]	[09/10/17]	[13/10/17]	50	EX	100				[20/12/17 (FT & PT)]	[21/02/18]
8	R-MES-EOIS2	Electro-optics and Infrared Systems II		32	0	10	Y	[08/01/18]	[08/01/18]	[12/01/18]	50	ICW	100				[09/02/18 (FT & PT)]	[27/04/18]
9	R-MES-ASDP	Advanced Sensor Data Processing		30	0	10	N	[12/03/18]	[12/03/18]	[16/03/18]	40			100	ICW ICW	60 40	[20/04/18 (FT & PT) 20/04/18 (FT & PT)]	[29/06/18]

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 SUP – Supervisor's assessment

Module Number	Module code	Title	Module Leader	Contact hours ⁵	Total hours delivered by visiting Lecturers ⁶	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	'Residential' Start Date	'Residential' End Date	Minimum Mark ⁷ - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module ⁸ (%) of independent assessments	Weighting within module of multi-part assessments ⁹ (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment ¹⁰	Assessment Submission and/or exam date ¹¹	Assessment / Exam Retake date
14	R-MES-AOS	Autonomy of Systems		32	0	10	N	[05/02/18]	[05/02/18]	[09/02/18]	50	ICW	100				[(FT & PT) 09/03/18]	[25/05/18]
15	R-MES-CEW	Communications Electronic Warfare		30	0	10	N	[12/02/18]	[12/02/18]	[16/02/18]	50	ICW	100				[(FT & PT) 26/03/18]	[16/05/18]
10	R-MES-AR	Advanced Radar		30	0	10	N	[26/02/18]	[26/02/18]	[02/03/18]	40			100	ICW ICW	60 40	[06/04/18 (FT & PT) 06/04/18 (FT & PT)]	[15/06/18 15/06/18]
11	R-MES-IN	Information Networks		30	0	10	N	[05/03/18]	[05/03/18]	[09/03/18]	40	ICW	100				[13/04/18 (FT & PT)]	[22/06/18]
12	R-MES-DISS	Project		50	0	80	N	[07/05/18]	[07/05/18]	[11/05/18]	50			100	THESIS SUP OR	50 25 25	[24/7/18 24/7/18 03/8/18]	[]

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 SUP – Supervisor's assessment

	MODULE	PgCert CEW	PgCert SEW	PgDip MESE	MSc MESE		Marketed as short course	Joint with another MSc
1	EPD	C	C	C	C		NO	
2	SPSA	C	C	C	C		YES	GWS
3	CP	C		C	C		YES	
4	CS	C		C	C		YES	
5	RP		C	C	C		YES	GWS
6	REW		C	E	E		YES	GWS
7	EOIS1		C	C	C		YES	GWS
8	EOIS2		C	E	E		YES	GWS
9	ASDP			E	E		YES	
10	AR			E	E		YES	
11	IN	C		E	E		YES	
12	DIS				C		NO	
13	FMS			E	E		SHARED	AMOR (DSM)
14	AOS			E	E		YES	
15	CEW	C		E	E		YES	

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

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

<u>Module code</u>	<u>Module title</u>	<u>Course that owns the module</u>	<u>Other course(s)/ programme(s) that use the module</u>
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
R-AMOR-FMS	Foundations of Modelling and Simulation	Applied Mathematics and Operational Research	Military Electronic Systems Engineering

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

A. Postgraduate Certificate in Communications Electronic Warfare

Award ILOs Module No.	ILO 1	ILO 2	ILO 3	ILO 4	ILO 5
1	ICW				
2		ICW	ICW	ICW	ICW
3	ICW	ICW		ICW	
4	ICW	ICW	ICW	ICW	
11	ICW		ICW	ICW	ICW
15		ICW	ICW	ICW	ICW

B. Postgraduate Certificate in Sensors Electronic Warfare

Award ILOs Module No.	ILO 6	ILO 7	ILO 8	ILO 9	ILO 10
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. PgDip in Military Electronic Systems Engineering

Award ILOs Module No.	ILO 11	ILO12	ILO 13	ILO 14	ILO 15	ILO16
9	ICW	ICW	ICW	ICW	ICW	ICW
10	ICW	ICW	ICW	ICW	ICW	ICW
13	ICW	ICW	ICW	ICW	ICW	ICW
14	ICW	ICW	ICW	ICW	ICW	ICW

D. 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 17	ILO 18
9	ICW	ICW
12	THESIS SUP OR	THESIS SUP 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.

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.

New Partnership arrangements are considered in two stages:

1. The University Executive is responsible for ensuring appropriate due diligence has been undertaken in respect of the University's legal, financial, reputational and ethical responsibilities.
2. A Partnership Delivery Approval Panel then considers whether the proposal meets the expectations and indicators of sound practice of the QAA Quality Code Chapter B10: Managing Higher Education Provision with Others, with regards to the management and operation of the partnership and that the academic standards and the quality of the student experience are assured in line with the remaining chapters of the QAA Quality

Code. The delivery of new partnership provision is ultimately approved by the University's Education Committee, on behalf of Senate.

Year one partnership reviews are undertaken one year after the initiation of a new partnership involving academic (award bearing) provision. The aim is to provide a supportive framework to assist the Sponsoring School and its new Partner Institution to work collaboratively to ensure that: the learning and teaching provision and associated student experiences are of a high standard; and that those responsible for delivering the provision are undertaking their respective roles and responsibilities in an appropriate way.

As part of the regular monitoring procedures for established collaborative partnerships, in addition to the Annual Reflective Review there is an Annual Operating Statement and a 5 year review known as a Focused Review which looks at each partnership in depth. Occasional site inspection visits are also made.

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.