



# Course Libraries 2020/21

## Courses G – M

Course	Pages
Geographical Information Management	3 – 15
Global Product Development and Management	16 – 30
Guided Weapon Systems	31 – 47
Information Capability Management	48 – 61
Investment Management	62 - 75
Logistics and Supply Chain Management	76 – 89
Logistics and Supply Chain Management (Muscat)	90 – 102
Maintenance Engineering and Asset Management	103 – 118
Management	119 - 132
Management and Corporate Sustainability	133 – 144
Management and Entrepreneurship	145 – 161
Management and Information Systems	162 – 177
Management and Leadership (December)	178 – 189
Management and Leadership (September)	190 – 201
Manufacturing Technology and Management	202 – 222

Master of Business Administration	223 – 242
Metal Additive Manufacturing	243 – 257
Military Aerospace and Airworthiness	258 - 275
Military Electronic Systems Engineering	276 - 290

**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.

**Date of first publication/latest revision:** 06/07/21

**1. What is the course?**

**Course information**

<b>Course Title</b>	Geographical Information Management
<b>Course code</b>	MSGIMFTC, MSGIMPTC, PDGIMFTC, PDGIMPTC, PCGIMFTC, PCGIMPTC
<b>Academic Year</b>	2020/21
<b>Valid entry routes</b>	MSc, PgDip, PgCert
<b>Additional exit routes</b>	PgDip, PgCert
<b>Mode of delivery</b>	Full-time, Part-time
<b>Location(s)<sup>1</sup> of Study</b>	Cranfield
<b>School(s)</b>	School of Water, Energy and Environment
<b>Theme</b>	Environment & Agrifood
<b>Centre</b>	Cranfield Soil and Agrifood Institute
<b>Course Director</b>	Dr Daniel Simms
<b>Awarding Body</b>	Cranfield University
<b>Is this an AP Contract course?<sup>2</sup></b>	No
<b>Is this course offered as a Cranfield Mastership?</b>	No
<b>Apprenticeship Standard the course is mapped to</b>	N/A
<b>Is the Degree apprenticeship integrated or non-integrated?</b>	N/A
<b>Is the Mastership offered as an open and/or closed course?</b>	N/A
<b>Teaching Institution</b>	Cranfield University

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

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

<b>Admissions body</b>	Cranfield University
<b>Entry requirements</b>	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
<b>UK Qualifications Framework Level</b>	QAA FHEQ Level 7 (Masters)
<b>Benchmark Statement(s)</b>	N/A
<b>Registration Period(s) available</b>	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
<b>Course Start Month(s)</b>	October: Full-time Part-time: Typically an October start

### **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, Natural England, Centre for Ecology and Hydrology, Ordnance Survey.

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) and the Institution of Civil Engineering Surveyors. 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 8. 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
<b>COMPULSORY MODULES:</b>	
Induction Week	0
<b>ELECTIVE MODULES:</b>	
GIS Fundamentals	10
Spatial Data Management	10
Aerial Photography and Digital Photogrammetry	10
Applied Remote Sensing	20
Advanced GIS Methods	10
Environmental Resource Survey	10
Web Mapping	10
<b>TOTAL:</b>	60

### B. **Postgraduate Diploma**

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

Description	Credits
<b>COMPULSORY MODULES:</b>	

Induction Week	0
GIS Fundamentals	10
Spatial Data Management	10
Aerial Photography and Digital Photogrammetry	10
Applied Remote Sensing	20
Advanced GIS Methods	10
Environmental Resource Survey	10
Web Mapping	10
Group Project (Full Time Students)	40
<b>ELECTIVE MODULES:</b>	
Part Time Students:	
Group Project	40
OR	
Dissertation	40
<b>TOTAL:</b>	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
<b>COMPULSORY MODULES:</b>	
Induction Week	0
GIS Fundamentals	10
Spatial Data Management	10
Aerial Photography and Digital Photogrammetry	10
Applied Remote Sensing	20
Advanced GIS Methods	10
Environmental Resource Survey	10
Web Mapping	10
Group Project (Full Time Students)	40
Thesis	80
<b>ELECTIVE MODULES:</b>	
Part Time Students:	
Group Project	40
OR	
Dissertation	40
<b>TOTAL:</b>	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);<sup>3</sup>
- **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  $\geq 40$  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 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.

## 7. Course Level Assessment Strategy<sup>4</sup>

The course assessment tasks enable students to demonstrate a full range of skills and attributes. The modules GIS fundamentals and Spatial Data Management will introduce students to the fundamentals of mapping and working with spatial datasets and will be assessed through the production of maps integrating sources of geospatial data and short reports. These will be of varying lengths, recognising that writing articles to a short length can be more challenging and can develop skills relevant to professional practice. Modules Aerial Photography and Digital Photogrammetry

<sup>3</sup> 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 ( $< 50\%$ ).

<sup>4</sup> Guidance to aid colleagues writing or updating a course-level assessment strategy for inclusion in the Course Specification can be found as Appendix K in either the Senate Handbook on Setting up a New Taught Course or the Senate Handbook on Managing Taught Courses  
<https://intranet.cranfield.ac.uk/EducationServices/Pages/SenateHandbooksA-Z.aspx>

and Applied Remote Sensing will assess the operation of image processing systems and the application of the physical principles of remote sensing to specific environmental problems through the production of short reports involving the processing and analysis of image data. The length of each assessment task is clearly stated within the module descriptor and clearly addressed to the module level ILOs. Specific award ILOs apply to different aspects of each of the taught modules,

### **Group Project and Thesis Project**

Students then have opportunities to develop their communication skills, as they are required to give a group presentations within several modules (formative assessment) and individual presentation (summative: Thesis Poster). The ability to work effectively in groups is a highly desirable skill that has translated into all ILOs. Feedback is given immediately after any group presentations. Modules are supported by a number of formative tasks including group discussion, case studies, and oral presentations. Formative feedback is given verbally within the classroom following discussions, and oral feedback provided by the tutor and peers for presentations. Students will also engage with an interactive learning activity that incorporates formative feedback. For all modules peer review informs practice and tutorials guide progress, students are generally encouraged to support each other by asking and answering questions via the VLE. The taught components precede the research project, so assessment can be used to develop skills required for the individual research project. Students are generally expected to be more self-directed in their learning during Group Projects and Thesis Project and guidance will be provided through supervisors and induction workshops.

## 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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
1	I-ENV-INWK	Induction Week	M Rivas Casado	33		0	Y		05/10/20	09/10/20	N/A	AO	N/A				N/A	
2	I-GIM-A1131	GIS Fundamentals	T Brewer	42		10	N		12/10/20	16/10/20	40	ICW	100				FT 24/10/20 PT 07/11/20	05/21
3	I-GIM-A1134	Spatial Data Management	S Hallett	33		10	N		26/10/20	30/10/20	40	ICW	100				FT 07/11/20 PT 21/11/20	05/21

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

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

<sup>7</sup> 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  $\geq 50\%$ .

<sup>8</sup> For **independent assessments** please record type and weighting of each separate piece of assessment individually. 10 credit modules should be designed to allow assessment through a single independent summative assessment. Deviations will require approval by the School Director of Education

<sup>9</sup> For **multi-part assessments** please record the overall weighting of module which should be 100%. Multipart assessments should only be included in courses where there is a clear androgogical reason and where each element forms part of a continuous learning and assessment experience for students.

<sup>10</sup> 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.

<sup>11</sup> 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

**Geographical Information Management** course specification: Version 1.0 April 2020

Module Number	Module code	Title	Module Leader	Contact hours <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8,9,10</sup>	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
4	I-GIM-A1135	Aerial Photography & Digital Photogrammetry	T Brewer	50		10	N		09/11/20	13/11/20	40	ICW	100				FT 21/11/20 PT 05/12/20	05/21
5	I-GIM-A1130	Applied Remote Sensing	D Simms	55		20	N		23/11/20	18/12/20	40	ICW	100				FT 04/01/21 PT 25/01/21	05/21
6	I-GIM-A1132	Advanced GIS Methods	T Brewer	35		10	N		11/01/21	15/01/21	40	ICW	100				FT 23/01/21 PT 06/02/21	05/21
7	I-GIM-A1133	Environmental Resource Survey	T Waine	40	3	10	N		25/01/21	29/01/21	40	ICW	100				FT 06/02/21 PT 20/02/21	05/21
8	I-GIM-A1136	Web mapping	S Hallett	36.5		10	N		08/02/21	12/02/21	40	ICW	100				FT 20/02/21 PT 06/03/21	05/21
9	I-ENV-GRPP	Group Project	Monica Rivas Casado	16		40	Y		01/03/2021	07/05/21	50 50 50 50	GCW GPRES ICW RP	64 16 10 10				05/05/21 30/04/21 08/05/21 N/A	
10	I-ENV-DISS	Dissertation for part time students	Monica Rivas Casado	10		40	N		01/03/21	24/09/21	50	IPROJ IPRES	80 20				24/09/21 w/c 20/09/21	

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

**Geographical Information Management** course specification: Version 1.0 April 2020

Module Number	Module code	Title	Module Leader	Contact hours <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8,9,10</sup>	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date	
11	I-ENV-THESIS	Individual Research Project	Monica Rivas Casado	20		80	Y		10/05/21	10/09/21	50	THESIS	90				06/09/21	
												OR	10				w/c 23/08/21-30/08/21	

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

**Geographical Information Management** course specification: Version 1.0 April 2020

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>

### 8. How are the ILOs assessed?

The following assessment types are utilised:

Students on the MSc will have seven taught modules assessed as individual coursework, 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 in a range of environments.

### Assessment and ILO Mapping

#### A. Postgraduate Certificate

<b>Award ILOs Module No.</b>	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
5	ICW	ICW	ICW		ICW	ICW
6	ICW	ICW	ICW	ICW	ICW	ICW
7	ICW	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:

<b>Award ILOs Module No.</b>	ILO 7.
8	GPROJ/ICW
9	IPROJ/IPRES

#### C. MSc

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

<b>Award ILOs</b>	ILO 8.	ILO 9.
<b>Module No.</b>		
10	THESIS	OR

**CROSS-MODULAR ASSESSMENT**

Title	Modules Covered	Assessment	
		Type	Weight (%)

**9. 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 provides authoritative guidance on policy and procedure to the Panel. Proposals are reviewed in line with the UK Quality Code for Higher Education. 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 guiding principles to meet the Expectations and Core Practices of the UK Quality Code for Higher Education. 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.

**Geographical Information Management** course specification: Version 1.0 April 2020

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 UK Quality Code for Higher Education. The delivery of new partnership provision is ultimately approved by the Universities 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.

#### **10. 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.

**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.

**Date of first publication/latest revision:** August 2020

**1. What is the course?**

**Course information**

<b>Course Title</b>	MSc in Global Product Development and Management
<b>Course code</b>	MSGPDFTC, MSGPDPTC, PDGPDFTC, PDGPDPTC, PCGPDFTC, PCGPDPTC
<b>Academic Year</b>	2020
<b>Valid entry routes</b>	MSc, PgDip, PgCert
<b>Additional exit routes</b>	PgDip, PgCert
<b>Mode of delivery</b>	Full-time, Part-time
<b>Location(s)<sup>1</sup> of Study</b>	Cranfield University
<b>School(s)</b>	School of Aerospace, Transport and Manufacturing
<b>Theme</b>	Manufacturing
<b>Centre</b>	Sustainable Manufacturing Systems Centre
<b>Course Director</b>	Dr Ahmed Al-Ashaab
<b>Awarding Body</b>	Cranfield University
<b>Is this an AP Contract course?<sup>2</sup></b>	No
<b>Is this course offered as a Cranfield Mastership?</b>	No
<b>Apprenticeship Standard the course is mapped to</b>	No
<b>Is the Degree apprenticeship integrated or non-integrated?</b>	N/A
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<b>Teaching Institution</b>	Cranfield University
<b>Admissions body</b>	Cranfield University

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

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

<b>Entry requirements</b>	Standard University entry requirements
<b>UK Qualifications Framework Level</b>	QAA FHEQ Level 7 (Masters)
<b>Benchmark Statement(s)</b>	Not Applicable
<b>Registration Period(s) available</b>	One year full-time, three years part-time
<b>Course Start Month(s)</b>	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
- Industry 4.0

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, and Royal Aeronautical Society (RAeS) up to and including Academic year 2019-20.

## **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 by 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 8. 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
<b>COMPULSORY MODULES:</b>	
Modules 2-9 (Select 6)	60
<b>ELECTIVE MODULES:</b>	
None	
<b>RECOMMENDED MODULE:</b>	
Induction	0
<b>TOTAL:</b>	60

**B. Postgraduate Diploma**

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

**FULL TIME STUDENTS**

Description	Credits
<b>COMPULSORY MODULES:</b>	
Modules 2-9	80
Group Project (10a)	40
<b>ELECTIVE MODULES:</b>	
None	
<b>RECOMMENDED MODULE:</b>	
Induction	0
<b>TOTAL:</b>	120

**PART TIME STUDENTS**

Description	Credits
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<b>COMPULSORY MODULES:</b>	
Modules 2-9	80
<b>ELECTIVE MODULES:</b>	
Group Project (10a) or Dissertation (10b)	40
<b>RECOMMENDED MODULE:</b>	
Induction	0
<b>TOTAL:</b>	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:

#### FULL TIME STUDENTS

Description	Credits
<b>COMPULSORY MODULES:</b>	
Modules 2-9	80
Group Project (10a) Individual Research Project (11)	40 80
<b>ELECTIVE MODULES:</b>	
None	
<b>RECOMMENDED MODULE:</b>	
Induction	0
<b>TOTAL:</b>	200

#### PART TIME STUDENTS

Description	Credits
<b>COMPULSORY MODULES:</b>	
Modules 2-9	80
Individual Research Project (11)	80
<b>ELECTIVE MODULES:</b>	
Group Project (10a) or Dissertation (10b)	40
<b>RECOMMENDED MODULE:</b>	
Induction	0
<b>TOTAL:</b>	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);<sup>3</sup>

- **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  $\geq 40$  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 Group Project or Dissertation in year 1 and the remainder of the modules plus the Thesis in year two and/or year 3.

## 7. Course Level Assessment Strategy<sup>4</sup>

The assessment tasks are focused on assessing the learning outcomes of the modules whilst building evidence of the application of skills and understanding of the students. Both formative and summative assessment is utilised in the taught modules.

The assessments are usually based on industrial case studies to align with the purpose of the course – to have hands-on experiences create new generation of product developers who can implement the best practices in their current or future work environment. Taught module assessments are between 3000 and 4000 words depending on the nature and content of the assignment. The students have around six weeks to complete the assessment after module completion. Where relevant, formative feedback is provided verbally during class discussion of module related aspects. Formative assessment is also provided as part of in-module activity that requires individual and group presentation of findings to the class.

The group project is industrial sponsored project dealing with real life issues and challenges that requires the students to work in a team of 5-8 students to deliver a group based report and presentation. The

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<sup>3</sup> 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 ( $< 50\%$ ).

<sup>4</sup> Guidance to aid colleagues writing or updating a course-level assessment strategy for inclusion in the Course Specification can be found as Appendix K in either the Senate Handbook on Setting up a New Taught Course or the Senate Handbook on Managing Taught Courses <https://intranet.cranfield.ac.uk/EducationServices/Pages/SenateHandbooksA-Z.aspx>

group project also has an individual component that self-gauges the skill development during the course of the project.

The individual project is aligned with the module ILOs which could be an industrial sponsored project or research based one. Students are generally expected to be more self-directed in their learning during this research project with good level of further reading via reviewing the related literature. The individual research project takes the form of a Thesis and students are expected to illustrate and defend their work orally at the end of the project.

## 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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
1	I-MAN-INWK	Induction	Prof Konstantinos Salonitis	18		0	Y	28/09/20	29/09/20	02/10/20	N/A	AO	N/A				N/A	
2	I-ICI-A1019	Design Technology and Prototyping	Mr Paul Lighterness	37		10	N	02/11/20	02/11/20	06/11/20	40	ICW	100				30/11/20	Re-assessment date to be set by agreement of the Module Leader as/when required.

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

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

<sup>7</sup> 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  $\geq 50\%$ .

<sup>8</sup> For **independent assessments** please record type and weighting of each separate piece of assessment individually. 10 credit modules should be designed to allow assessment through a single independent summative assessment. Deviations will require approval by the School Director of Education

<sup>9</sup> For **multi-part assessments** please record the overall weighting of module which should be 100%. Multipart assessments should only be included in courses where there is a clear andragogical reason and where each element forms part of a continuous learning and assessment experience for students.

<sup>10</sup> 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.

<sup>11</sup> 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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent Assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
3	I-MNU-A1034	Operations Management	John Patsavellas	32		10	Y	05/10/20	05/10/20 Occ A	09/11/20	40	EX	100				14/12/20	Manufacturing resit exams will be during week commencing: 17/05/21
4	I-MNU-A1038	Supply Chain Management	Dr Ahmed Al-Ashaab	32		10	Y	11/01/21	11/01/21	15/01/21	40	GCW	100				08/02/21	Re-assessment date to be set by agreement of the Module Leader as/when required.
5	I-KME-A1022	Design Driven Innovation Processes	Dr Ahmed Al-Ashaab	32		10	Y	19/10/20	19/10/20	23/10/20	40	GCW	100				16/11/20	Re-assessment date to be set by agreement of the Module Leader as/when required.
6	I-MNU-A1018	General Management	Mr Matthew Caffrey	32		10	Y	30/11/20	30/11/20	04/12/20	40	EX	100				08/01/21	Manufacturing resit exams will be during week commencing: 17/05/21

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; MULTI – Multi-part Assessment

Module Number	Module code	Title	Module Leader	Contact hours <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
7	I-GPD-A1505	Lean Product Development	Dr Ahmed Al-Ashaab	32		10	Y	18/01/21	18/01/21	22/01/21	40	GCW	100				15/02/21	Re-assessment date to be set by agreement of the Module Leader as/when required.
8	I-KME-A1037	Enterprise Modelling	Dr John Ahmet Erkoyuncu	32		10	Y	23/11/20	23/11/20	27/11/20	40			100 MULTI	ICW GCW	60 40	11/01/21 04/01/21	Re-assessment date to be set by agreement of the Module Leader as/when required.
9	I-GPD-A1507	Digital Engineering	Dr John Erkoyuncu	32		10	N	09/11/20	09/11/20	13/11/20	40	ICW	100				07/12/20	
10a	I-MAT-GRPP	Group Project	Dr David Ayre	20		40	Y	01/02/21	01/02/21 Occ A FT	27/04/21 FT	50	GCW	80		GPRES GPROJ ICW Observed behaviour	20 80 50 50	27/04/21 04/05/21 04/05/21 04/05/21	
			Dr Supriyo Ganguly						01/02/21 Occ B PT	27/08/21 PT		50	GCW ICW		80 20	GPRES GPROJ ICW Observed behaviour	20 80 50 50	

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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
10b	I-MAT-DISS	Dissertation for Part Time Students	David Ayre/ Dr Sue Impey	20		40	Y	08/02/21	08/02/21	31/08/21	50	ICW	100				27/08/21	
11	I-MNU-THESIS	Individual Research Project	Dr Muhammad Khan	20		80	Y	08/02/21	Occ A = PT 08/02/21	PT 27/08/21	50	THESIS OR	90 10				27/08/21 01/09/21	
			Dr Muhammad Khan					30/04/21	Occ B = FT 30/04/21	FT 27/08/21	50	THESIS OR	90 10				27/08/21 01/09/21	

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.

<b><u>Module code</u></b>	<b><u>Module title</u></b>	<b><u>Course that owns the module</u></b>	<b><u>Other course(s)/ programme(s) that use the module</u></b>
I-MAN-INWK	Induction	Manufacturing Systems and Management Programme	Engineering & Management of Manufacturing Systems, Management and Information Systems, Aerospace Manufacturing, Cyber-Secure Manufacturing, Maintenance Engineering & Asset Management
I-GPD-A1505	Lean Product Development	Global Product Development and Management	Manufacturing Technology and Management, Engineering Competence, Water – WIRE CDT
I-MNU-A1034	Operations Management	Engineering and Management of Manufacturing Systems	Management and Information Systems, Manufacturing, Cyber-Secure Manufacturing, Aerospace Management, Engineering Competence
I-MNU-A1038	Supply Chain Management	Engineering and Management of Manufacturing Systems	Aerospace Management, Management and Information Systems
I-KME-A1022	Design Driven Innovation Processes	Global Product Development Management	Engineering Competence
I-MNU-A1018	General Management	Engineering and Management of Manufacturing Systems	Advanced Materials, Manufacturing Technology and Management, Management and Information Systems, Metal Additive Manufacturing, Engineering Competence
I-KME-A1037	Enterprise Modelling	Management and Information Systems	Management and Information Systems
I-MAT-DISS	Dissertation for Part Time Students	Advanced Materials	Aerospace Materials, Manufacturing Technology & Management, Aerospace Manufacturing, Engineering & Management of Manufacturing Systems, Management and Information Systems, Cyber-Secure Manufacturing, Welding Engineering, Metal Additive Manufacturing, Maintenance Engineering & Asset Management
I-MAT-GRPP	Group Project	Advanced Materials	Aerospace Materials, Manufacturing Technology & Management, Engineering & Management of Manufacturing Systems, Management and Information Systems, Aerospace Manufacturing, Cyber-Secure Manufacturing, Welding Engineering, Metal

			Additive Manufacturing, Maintenance Engineering & Asset Management
I-MNU-THESIS	Individual Research Project	Advanced Materials	Engineering & Management of Manufacturing Systems, Management and Information Systems, Cyber-Secure Manufacturing, Aerospace Materials, Manufacturing Technology & Management, Welding Engineering, Metal Additive Manufacturing, Aerospace Manufacturing, Maintenance Engineering & Asset Management

## 8. How are the ILOs assessed?

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

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

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

### Assessment and ILO Mapping

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

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

#### A. Postgraduate Certificate

Award ILOs Module No.	ILO 1	ILO 2	ILO 3	ILO 4	ILO 5
2		ICW	ICW	ICW	
3	EX				EX
4	GCW	GCW	GCW		GCW
5	GCW	GCW	GCW		GCW
6	EX				
7	GCW	GCW	GCW		GCW
8	ICW	ICW		ICW	
9	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 6	ILO 7	ILO 8	ILO 9	ILO 10	ILO 11	ILO 12
10a	GPRES GPROJ ICW						
10b	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						

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

Title	Modules Covered	Assessment	
		Type	Weight (%)

### 9. 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 provides authoritative guidance on policy and procedure to the Panel. Proposals are reviewed in line with the UK Quality Code for Higher Education. 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 guiding principles to meet the Expectations and Core Practices of the UK Quality Code for Higher Education. 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 UK Quality Code for Higher Education. The delivery of new partnership provision is ultimately approved by the Universities 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.

## **10. 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).

**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.

**Date of first publication/latest revision:** September 2020

**1. What is the course?**

**Course information**

<b>Course Title</b>	Guided Weapon Systems
<b>Course code</b>	MSGWSFTR, PDGWSFTR, PCGWSFTR, MSGWSPTR, PDGWSPTR, PCGWSPTR, SPGWSPTR
<b>Academic Year</b>	2020/21
<b>Valid entry routes</b>	MSc, PgDip, PgCert
<b>Additional exit routes</b>	PgDip, PgCert
<b>Mode of delivery</b>	Full-time/Part time
<b>Location(s)<sup>1</sup> of Study</b>	Shrivenham
<b>School(s)</b>	Cranfield Defence & Security
<b>Theme</b>	Defence and Security
<b>Centre</b>	Centre for Defence Engineering
<b>Course Director</b>	Dr David Galvão Wall
<b>Awarding Body</b>	Cranfield University
<b>Is this an AP Contract course?<sup>2</sup></b>	Yes
<b>Is this course offered as a Cranfield Mastership?</b>	No
<b>Apprenticeship Standard the course is mapped to</b>	N/A
<b>Is the Degree apprenticeship integrated or non-integrated?</b>	N/A
<b>Is the Mastership offered as an open and/or closed course?</b>	N/A
<b>Teaching Institution</b>	Cranfield University
<b>Admissions body</b>	Cranfield University

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

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

<b>Entry requirements</b>	Standard University entry requirements; additionally an IELTS score of 7.0 is usually required by students for whom English is not a first language.
<b>UK Qualifications Framework Level</b>	QAA FHEQ level 7 (Masters)
<b>Benchmark Statement(s)</b>	N/A
<b>Registration Period(s) available</b>	1 year Full-time, 5 years Part-time
<b>Course Start Month(s)</b>	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)**

This course is accredited formally by RAeS until 2021.

## **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 70<sup>th</sup> 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. Demonstrate in depth knowledge and understanding of the key technical disciplines required for guided weapon analysis.
  
- ILO 2. Numerically analyse missile subsystems and evaluate their capabilities/performance as part of a guided weapon.
  
- ILO 3. Design experiments/simulations to test both theoretical knowledge and physical systems and evaluate the results.

##### **B. Postgraduate Diploma**

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

- ILO 4. Analyse specific target and threat types to justify appropriate strategies and inform missile subsystem selection criteria.
  
- ILO 5. Evaluate the interlinked constraints between disciplines to analyse the design drivers and trade-offs between missile subsystems.
  
- ILO 6. Defend and justify design decisions using appropriate numerical analysis, both in written and oral form.

##### **C. MSc**

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

- ILO 7. Critically evaluate existing methods and techniques in missile design, analysis and operation both at system and subsystem level.

- ILO 8. Synthesise new tools and methods for missile or missile subsystem design, analysis and operation.
- 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?**

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
<b>COMPULSORY MODULES:</b>	

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
<b>ELECTIVE MODULES:</b>	
Plus, EITHER two modules from List A OR one module from List A and one module from List B.	
List A:	
Module 7. GW Applications - Control & Guidance - must be taken after pre-requisite modules 5 and 6	10
Module 8. GW - Propulsion & Aerodynamics Applications - must be taken after prerequisite module 5	10
Module 11. GW Warheads, Explosives & Materials	10
Module 12. GW Structures, Aeroelasticity & Power Supplies	10
List B:	
Module 2. Signal Processing, Statistics & Analysis	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
<b>TOTAL:</b>	<b>60</b>

## B. Postgraduate Diploma

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

Description	Credits
<b>COMPULSORY MODULES:</b>	
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 modules 5 and 6	10
Module 8. GW - Propulsion & Aerodynamics Applications - 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
<b>ELECTIVE MODULES:</b>	
N/A	
<b>TOTAL:</b>	<b>130</b>

### 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
<b>COMPULSORY MODULES:</b>	
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 modules 5 and 6	10
Module 8. GW - Propulsion & Aerodynamics Applications - 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. Research Project	70
<b>ELECTIVE MODULES:</b>	
N/A	
<b>TOTAL:</b>	<b>200</b>

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);<sup>3</sup>
- **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:

<sup>3</sup> 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 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  $\geq 40$  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” 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 and GW Propulsion & Aerodynamics Theory are pre-requisites for GW Applications - Control & Guidance.
- GW Propulsion & Aerodynamics Theory is a pre-requisite for GW - Propulsion & Aerodynamics Applications
- Both GW - Applications Control and Guidance and GW Propulsion & Aerodynamics Applications 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, either two modules from List A, OR one module from List A and one module from List B:

List A:

Module 7. GW Applications - Control & Guidance - must be taken after pre-requisite

Modules 5 and 6

Module 8. GW - Propulsion & Aerodynamics Applications - must be taken after prerequisite module 5

Module 11. GW Warheads, Explosives & Materials

Module 12. GW Structures, Aeroelasticity & Power Supplies

List B:

Module 2. Signal Processing, Statistics & Analysis

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

### **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 5: GW Propulsion & Aerodynamics Theory (September)
  - Module 7: GW Applications - Control & Guidance (February)
- Year 2:
  - Module 4: Radar Principles (November)
  - Module 6: GW Control Theory (November)
  - Module 8: GW - Propulsion & Aerodynamics Applications (January)
- Year 3:
  - Module 3:EO & IR Systems 1 (September)
  - Module 10: EO & IR Systems 2 (January)

### **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 5: GW Propulsion & Aerodynamics Theory (September)
  - Module 4: Radar Principles (November)
  - Module 11: GW Warheads, Explosives & Materials (December)
  - Module 12: GW Structures, Aeroelasticity & Power Supplies (March)
- Year 2:
  - Module 2: Signal Processing, Statistics & Analysis (October)
  - Module 6: GW Control Theory (November)
  - Module 7: GW Applications - Control & Guidance (February)
  - Module 8: GW - Propulsion & Aerodynamics Applications (January)
- Year 3:
  - Module 3: EO & IR Systems 1 (September)
  - Module 9: Radar EW (February)
  - Module 10: EO & IR Systems 2 (January)
- Year 4:
  - Commence Individual Project (Jan to July)
  - Module 13: Parametric Study (March)
  - Module 14: GW Systems (April)
- Year 5:
  - Thesis workshop (Sept)
  - Complete Individual Project (Jan to July)

## **7. Course Level Assessment Strategy**

Because Guided Weapon Systems is a multidisciplinary programme, and therefore each module relates to a different discipline, it is not possible for different modules to target specific ILOs. Rather, each module assesses the student on several of the ILOs, but relating to the specific content. The course uses a variety of different assessment methods which are challenging and enable students to demonstrate a full range of skills and attributes. Several of the modules require submission of a written piece of work as a technical report or an essay. These will be of varying lengths, recognising that writing articles to a short length can be more challenging for some and can develop different skills relevant to professional practice. The length of each assessment task is clearly stated within the module descriptor. This allows the student to develop their critical thinking and presentation of arguments in a written mode, as well as developing their practice at presenting information in a practical and scientific way for both expert and non-expert audiences. This type of assessment is used to assess a student's competence in relation to lab-based activities, numerical analysis and also research of existing and future technologies and approaches. In general, the submission of reports and essays is required to address ILOs 1 to 6 in various different modules.

Modules 5, 6 and 14 are assessed by oral exam, or viva voce. These assessments are intended to develop the student's communication skills. Through practice prior to the examinations and through formative feedback alongside the summative assessment, students will develop their practice in expressing complex, scientific and technical concepts clearly and succinctly in high pressure situations, and, again, to both expert and non-expert audiences. This is a relevant professional skill to many of the job roles students are required to take upon graduation from the programme. Modules 3, 7, 8 and 12 are assessed by written exam. This mode of assessment is used primarily as a rigorous certification of a

student's knowledge of a subject, and their ability to handle significant time pressures. Both the oral exams and written exams are intended to assess ILOs 1 and 2. In the case of module 11, ILOs 1 to 5 are assessed via coursework and in the case of module 12, ILOs 1, 2 and 5 are assessed by coursework and written exam.

Students have further opportunity to develop their communication skills, as they are required to give both a group presentation for module 13 and an individual presentation for module 15. The ability to work effectively in groups is a highly desirable skill though it is not being directly assessed as part of the course. The parametric study module is a numerical exercise in design of a complete missile system. Since this type of activity is a significant undertaking, requiring a deep understanding of all the required engineering disciplines and has large time requirements, it is impractical as an individual assessment, therefore the activity is assessed as a group. Formative feedback is given immediately after the group presentation, which can be used to enhance the group report submissions. All modules are supported by a number of formative tasks including group discussion, case studies, oral presentations. Formative feedback is given verbally within the classroom following discussions, via a written summary from the module leader in the case of written work leader and oral feedback provided by the tutor and peers for presentations. Some modules have the requirement of compulsory written coursework submissions which are not assessed summatively, but are used to provide formative feedback and serve as enhanced pre-work for later modules.

The research project addresses ILOs 7 to 9 and takes the form of a Thesis, which incorporates ongoing formative feedback in the form of one-to-one supervisory interactions between student and advisor, and some limited advice when writing the Thesis document.

## 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 <sup>4</sup>	Total hours delivered by Visiting Lecturers <sup>5</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>6</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>7</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>8</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>9</sup>	Assessment Submission and/or exam date <sup>10</sup>	Assessment / Exam Retake date
1	R-GWS-IFS	Introductory and Foundation Studies	Dr D Galvão Wall	20		0	N	07/09/20	07/09/20	11/09/20	N/A	AO	N/A				N/A	
2	R-MES-SPSA	Signal Processing, Statistics & Analysis	Dr P Barker	30		10	Y	12/10/20	12/10/20	16/10/20	50	ICW	100			100	13/11/20 (FT & PT)	TBC
3	R-MES-EOIS1	Electro-Optics & Infrared Systems 1	Dr D B James	32		10	Y	28/09/20	28/09/20	02/10/20	50	EX	100				18/12/20 (FT & PT)	18/03/21

<sup>4</sup> Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

<sup>5</sup> Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

<sup>6</sup> 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  $\geq 50\%$ .

<sup>7</sup> For **independent assessments** please record type and weighting of each separate piece of assessment individually. 10 credit modules should be designed to allow assessment through a single independent summative assessment. Deviations will require approval by the School Director of Education

<sup>8</sup> For **multi-part assessments** please record the overall weighting of module which should be 100%. Multipart assessments should only be included in courses where there is a clear androgogical reason and where each element forms part of a continuous learning and assessment experience for students.

<sup>9</sup> 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.

<sup>10</sup> 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; 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 <sup>4</sup>	Total hours delivered by Visiting Lecturers <sup>5</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>6</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>7</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>8</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>9</sup>	Assessment Submission and/or exam date <sup>10</sup>	Assessment / Exam Retake date
4	R-MES-RP	Radar Principles	Dr A Balleri	30		10	Y	02/11/20	02/11/20	06/11/20	50	ICW	100				04/12/20 (FT & PT)	TBC
5	R-GWS-GWPAT	Guided Weapons Propulsion & Aerodynamics Theory	Dr D Bray	28		10	N	14/09/20	14/09/20	18/09/20	50	OR	75				11-12/11/20 (FT & PT)	25/01/21
											50	ICW	25				19/10/20 (FT) 09/11/20 (PT)	TBC
6	R-GWS-GWCT	Guided Weapons Control Theory	Dr D Galvão Wall	30		10	N	16/11/20	16/11/20	20/11/20	50	OR	75				16-17/12/20 (FT & PT)	26/02/21
											50	ICW	25				27/11/20 (FT) 18/12/20 (PT)	TBC
7	R-GWS-GWACG	Guided Weapons Applications – Control & Guidance	Dr J T Economou	30		10	N	15/02/21	15/02/21	19/02/21	50	EX	100				22/03/21 (FT & PT)	13/05/21
8	R-GWS-GWAPA	Guided Weapons Propulsion & Aerodynamics Applications	Dr D Bray	28		10	N	18/01/21	18/01/21	22/01/21	50	EX	100				22/02/21 (FT & PT)	04/06/21

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 <sup>4</sup>	Total hours delivered by Visiting Lecturers <sup>5</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>6</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>7</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>8</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>9</sup>	Assessment Submission and/or exam date <sup>10</sup>	Assessment / Exam Retake date
9	R-MES-REW	Radar Electronic Warfare	Mr I Vagias	30		10	Y	01/02/21	01/02/21	05/02/21	50	ICW	100				05/03/21 (FT & PT)	TBC
10	R-MES-EOIS2	Electro-Optics and Infrared Systems 2	Dr D B James	32		10	Y	11/01/21	11/01/21	15/01/21	50	ICW	100				12/02/21 (FT & PT)	TBC
11	R-GWS-GWA	Guided Weapons Warheads, Explosives & Materials	Dr G Kister	30		10	N	07/12/20	07/12/20	11/12/20	50	ICW	100				08/01/21 (FT) 29/01/21 (PT)	TBC
12	R-GWS-GWA2	Guided Weapons Structures, Aeroelasticity and Power Supplies	Dr A J Saddington	29		10	N	01/03/21	01/03/21	05/03/21	50	EX	75				12/04/21 (FT & PT)	27/05/21
											50	ICW	25				09/04/21 (FT) 30/04/21 (PT)	TBC
13	R-GWS-PS	Parametric Study	Dr A J Saddington	34		5	N	15/03/21	15/03/21	19/03/21	50	GCW	100				26/04/21 (FT&PT)	TBC
14	R-GWS-GWLSA	Guided Weapon Systems	Dr D Bray	48		15	N	12/04/21	12/04/21	23/04/21	50	OR	50				19-20/05/21 (FT & PT)	08/07/21
											50	ICW	50				24/05/21 (FT)	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; MULTI – Multi-part Assessment

Module Number		Module code	Title	Module Leader	Contact hours <sup>4</sup>	Total hours delivered by Visiting Lecturers <sup>5</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
									Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>6</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
													Type of Assessment	Weighting within module <sup>7</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>8</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>9</sup>	Assessment Submission and/or exam date <sup>10</sup>	Assessment / Exam Retake date
15		R-GWS-THESIS	Research Project	Dr D Galvão Wall	3		70	N	04/01/21 (FT & PT)	04/01/21 (FT & PT)	30/07/21 (FT & PT)	50	THE SIS	100				14/06/21 (PT)	30/07/21 (FT & PT)

Assessment Types: AO – Attendance only; ICW – Individual Coursework; GCW – Group Coursework; IPRES – Individual Presentation; GPRES – Group Presentation; IPRAC – Individual Practical; GPRAC – Group Practical; IPROJ – Individual Project (>20 credits); GPROJ – Group Project (>20 credits); EX – Examination; RP – Reflective Portfolio; OR- Viva Voce examination; THESIS – Thesis; 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-MES-SPSA	Signal Processing, Statistics & Analysis	Military Electronic Systems Engineering	Guided Weapon Systems
R-MES-EOIS1	Electro-Optics & Infrared Systems 1	Military Electronic Systems Engineering	Guided Weapon Systems
R-MES-RP	Radar Principles	Military Electronic Systems Engineering	Guided Weapon Systems
R-MES-REW	Radar Electronic Warfare	Military Electronic Systems Engineering	Guided Weapon Systems
R-MES-EOIS2	Electro-Optics & Infrared Systems 2	Military Electronic Systems Engineering	Guided Weapon Systems

### 8. How are the ILOs assessed?

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

### Assessment and ILO Mapping

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

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

### 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				
3	EX	EX				
4	ICW	ICW	ICW			
5	OR &	ICW	ICW			

	PgCert			PgDip		
Award ILOs Module No.	ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
	ICW					
6	OR & ICW	ICW	ICW			
7	EX	EX		EX		
8	EX	EX			EX	
9	ICW	ICW		ICW		
10	ICW	ICW		ICW		
11	ICW	ICW	ICW	ICW	ICW	
12	EX & ICW	EX & ICW			EX & ICW	
13	GCW	GCW	GCW		GCW	GCW
14	OR & ICW	ICW		OR & ICW	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	THESIS	THESIS	THESIS

## 9. 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 provides authoritative guidance on policy and procedure to the Panel. Proposals are reviewed in line with the UK Quality Code for Higher Education. 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 guiding principles to meet the Expectations and Core Practices of the UK Quality Code for Higher Education. 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 UK Quality Code for Higher Education. The delivery of new partnership provision is ultimately approved by the Universities 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.

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

Nearly all students in recent years have been directly sponsored to undertake the course with a subsequent specific weapons-related position in mind. It is envisaged that this will remain the case in the foreseeable near and mid-terms, though the availability of PgCert and PgDip exit routes, and the possibility for taking the course on a Part-Time basis, may eventually change the nature of the student profile. The field of guided weapon systems technology is ever-changing and there are many opportunities within industrial companies (such as Thales and MBDA in the UK) for successful GWS students.

**Cranfield University: Course Specifications**

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

**Date of first publication/latest revision:** February 2020

**1. What is the course?**

**Course information**

<b>Course Title</b>	Information Capability Management
<b>Course code</b>	MSICMFTR – PDICMFTR – PCICMFTR – MSICMPTR - PDICMPTR- PCICMPTR - SPICMPTR
<b>Academic Year</b>	2020/21
<b>Valid entry routes</b>	MSc, PgDip, PgCert
<b>Additional exit routes</b>	PgDip, PgCert
<b>Mode of delivery</b>	Full time, part time and short course for credit
<b>Location(s)<sup>1</sup> of Study</b>	Shrivenham
<b>School(s)</b>	Cranfield Defence and Security
<b>Theme</b>	Defence and Security
<b>Centre</b>	Centre for Cyber Security and Information Systems
<b>Course Director</b>	Mr Ross Harris
<b>Awarding Body</b>	Cranfield University
<b>Is this an AP Contract course?<sup>2</sup></b>	Yes
<b>Is this course offered as a Cranfield Mastership?</b>	No
<b>Apprenticeship Standard the course is mapped to</b>	N/A
<b>Is the Degree apprenticeship integrated or non-integrated?</b>	N/A
<b>Is the Mastership offered as an open and/or closed course?</b>	N/A
<b>Teaching Institution</b>	Cranfield University
<b>Admissions body</b>	Cranfield University

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

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

<b>Entry requirements</b>	Standard University entry requirements
<b>UK Qualifications Framework Level</b>	QAA FHEQ level 7 (Masters)
<b>Benchmark Statement(s)</b>	Benchmarked against QAA Master's Benchmark Statements for Computing
<b>Registration Period(s) available</b>	A Full time student will have a registration period of 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.
<b>Course Start Month(s)</b>	Full-time & Part-time – September Part-time - January

### **Institutions delivering the course**

This course is delivered by Cranfield Defence and Security, Centre for Electronic Warfare Information & Cyber where the research interests include:

Information Management, Human Factors, Information Systems (IS) and Systems Thinking

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) entry 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
<b>COMPULSORY MODULES:</b>	
Foundations of IS	10
<b>ELECTIVE MODULES:</b>	
5 modules chosen from 2-12	50
<b>TOTAL:</b>	<b>60</b>

### B. Postgraduate Diploma

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

Description	Credits
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<b>COMPULSORY MODULES:</b>	
Modules 1-12	120
<b>ELECTIVE MODULES:</b>	
N/A	
<b>TOTAL:</b>	<b>120</b>

### 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
<b>COMPULSORY MODULES:</b>	
Modules 1–12	120
Module 13 (Thesis)	80
<b>ELECTIVE MODULES:</b>	
N/A	
<b>TOTAL:</b>	<b>200</b>

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);<sup>3</sup>
- **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);

<sup>3</sup> 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  $\geq 40$  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, one 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).

## 7. Course Level Assessment Strategy<sup>4</sup>

The varied assessment tasks are challenging and enable students to demonstrate a full range of skills and attributes. The pre-requisite module, Foundations, will introduce students to masters level study, research techniques and academic writing and will be assessed through an essay. Assessments will be of varying lengths, recognising that writing articles to a short length can be more challenging for some and can develop different skills relevant to professional practice. The length and type of each assessment task is clearly stated within the module descriptor. Students will produce employability relevant policy briefing documents, reports, posters, and presentations to equip them with the skills they require to succeed in Information Capability Management and to address the specific award ILOs [1-14]. Students have opportunities to develop their communication skills, as they are required to presentations. The ability to work effectively in groups is a highly desirable skill which has translated into ILOs [9 and 11]. Feedback is given immediately after the group presentation. Modules are supported by a number of formative tasks including group discussion, case studies, oral presentations. Formative feedback is given verbally/written within the classroom/on the Virtual Learning Environment (VLE) following discussions from the module leader and oral feedback provided by the tutor and peers for presentations. Students are generally encouraged to support each other by asking and answering questions via the VLE. For the Cyber Security & Information Assurance module peer review is used. The taught components precede the dissertation, so assessment can be used to develop skills required for the individual research project. This is further supported by a dissertation workshop. Students are generally expected to be more self-directed in their learning during this research project and guidance will be provided through materials on the VLE and their supervisor. The research project specifically addresses ILOs 15 and 16 and takes the form of a Thesis.

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<sup>4</sup> Guidance to aid colleagues writing or updating a course-level assessment strategy for inclusion in the Course Specification can be found as Appendix K in either the Senate Handbook on Setting up a New Taught Course or the Senate Handbook on Managing Taught Courses <https://intranet.cranfield.ac.uk/EducationServices/Pages/SenateHandbooksA-Z.aspx>

## 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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
1	R-SISD-F	Foundations of IS (A) Foundations of IS (B)	Ross Harris	30		10	Y		07/09/20 11/01/21	11/09/20 15/01/21	40	ICW	100				21/09/20 FT 05/10/20 PT 08/02/21 PT(B)	AY 21/22
2	R-SISD-PI	Professional Issues+	Nikki Williams	10		10	N	07/09/20		18/12/20 end of online module	40	ICW	100				18/12/20 FT/PT	AY 21/22

+ Distance learning module

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

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

<sup>7</sup> 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  $\geq 50\%$ .

<sup>8</sup> For **independent assessments** please record type and weighting of each separate piece of assessment individually. 10 credit modules should be designed to allow assessment through a single independent summative assessment. Deviations will require approval by the School Director of Education

<sup>9</sup> For **multi-part assessments** please record the overall weighting of module which should be 100%. Multipart assessments should only be included in courses where there is a clear androgogical reason and where each element forms part of a continuous learning and assessment experience for students.

<sup>10</sup> 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.

<sup>11</sup> 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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>8</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
3	R-SISD-PM	Programme and Project Management for Information Systems	Simon Renfrey	30		10	Y	07/09/19 PT 21/09/20 FT	28/09/20	02/10/20	40	ICW	100				12/10/20 FT 26/10/20 PT	AY 21/22
4	R-SISD-MT	Methods and Tools for Information Systems Development	Ian Owens	30		10	Y	19/10/20 PT 02/11/20 FT	09/11/20	13/11/20	40 40	GPR ES ICW	25 75				13/11/20 FT/PT 23/11/20 FT 07/12/20 PT	AY 21/22
5	R-SISD-SE	Software Engineering	Pathmeswaran Raju	30		10	Y	28/09/20 PT 12/10/20 FT	19/10/20	23/10/20	40 40	GCW ICW	25 75				23/10/20 FT/PT 02/11/20 FT 16/11/20 PT	AY 21/22
6	R-SISD-ISA	Systems Architecture	Rick Adcock	30		10	N	09/11/20 PT 23/11/20 FT	30/11/20	04/12/20	40 40	GCW ICW	25 75				04/12/20 FT/PT 14/12/20 FT 06/01/21 PT	AY 21/22
7	R-SISD-SAIS	Digital Business Strategy	Ross Harris/ Ian Owens	30		10	N	05/04/21 PT 19/01/21 FT	26/04/21	30/04/21	40 40	GCW ICW	25 75				30/04/21 FT/PT 10/05/21 FT 24/05/21 PT	AY 21/22
8	R-SISD-ETM	Emerging Technology Monitoring+	Ian Owens	7		10	Y	11/01/21	1 Day residential 03/03/21	14/05/21 end of online	40	ICW	100				14/05/21 FT/PT	AY 21/22

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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
									module									
9	R-SISD-STOV	Systems Thinking for Organisational Viability	Jeremy Hilton	35		10	Y	A 14/09/20 B 08/03/21 PT 22/03/21 FT	05/10/20 29/03/21	09/10/20 01/04/21	40	ICW	100				02/11/20 PT 14/04/21 FT 28/04/21 PT	AY 21/22
10	R-SISD-IAS	Cyber Security & Information Assurance	Darren Lawrence	30		10	N	15/02/21 PT 01/03/21 FT	08/03/21	12/03/21	40 40	GCW ICW	25 75				12/03/21 FT/PT 22/03/21 FT 07/04/21 PT	AY 21/22
11	R-SISD-DMSM	Data Modelling, Storage and Management	Richard Munslow	30		10	N	04/01/21 PT 18/01/21 FT	25/01/21	29/01/21	40 40	GCW ICW	25 75				29/01/21 FT/PT 08/02/21 FT 22/02/21 PT	AY 21/22
12	R-SISD-DLDS	Data-led Decision Support & Artificial Intelligence	Adam Zagorecki	30		10	Y	25/01/21 PT 08/02/21 FT	15/02/21	19/02/21	40	ICW	100				01/03/21 FT 15/03/21 PT	AY 21/22
13	R-ICM-THESIS	Thesis <sup>12</sup>	Antoinette Caird-Daley	48		80	N	Workshop: A 17/05/21	14/12/20 21/06/21	16/12/20 23/06/21	50	Thesis	100				A 30/07/21 FT	

<sup>12</sup> Occurrence A is for Full time students. Occurrences B & C 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

Module Number	Module code	Title	Module Leader	Contact hours <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates	
												Type of Assessment	Weighting within module <sup>8</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>
								B 30/09/20 C 31/03/21								B 30/09/21 PT C 31/03/22 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

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 & Artificial Intelligence	ICM MSC	Defence Cyber Masters Programme Defence and Security Programme
R-SISD-ETM	Emerging Technology Monitoring	ICM MSC	Defence Cyber Masters Programme Defence and Security Programme
R-SISD-PM	Programme and Project Management for Information Systems	ICM MSC	Defence and Security Programme
R-SISD-SE	Software Engineering	ICM MSC	Defence and Security Programme
R-SISD-MT	Methods and Tools for Information Systems Development	ICM MSC	Defence and Security Programme
R-SISD-F	Foundations of Information Systems	ICM MSC	Defence Cyber Masters Programme
R-SISD-STOV	Systems Thinking for Organisational Viability	ICM MSC	Defence Cyber Masters Programme Defence and Security Programme

## **8. 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. 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 GPRES	ICW GPRES			ICW GPRES			ICW GPRES	ICW GPRES		ICW GPRES		ICW GPRES	ICW GPRES	ICW GPRES	ICW GPRES
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				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								ICW					ICW	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.	ILO15	ILO16
13	THESIS	THESIS

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

Title	Modules Covered	Assessment	
		Type	Weight (%)

## 9. 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 provides authoritative guidance on policy and procedure to the Panel. Proposals are reviewed in line with

the UK Quality Code for Higher Education. 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 guiding principles to meet the Expectations and Core Practices of the UK Quality Code for Higher Education. 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 UK Quality Code for Higher Education. The delivery of new partnership provision is ultimately approved by the Universities 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.

**10. 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.

**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.

**Date of first publication/latest revision:** August 2020

### 1. What is the course?

#### Course information

<b>Course Title</b>	MSc in Investment Management
<b>Course code</b>	MSIVMFTC, PDIVMFTC, PCIVMFTC
<b>Academic Year</b>	2020/21
<b>Valid entry routes</b>	MSc
<b>Additional exit routes</b>	PgDip, PgCert
<b>Mode of delivery</b>	Full-time
<b>Location(s)<sup>1</sup> of Study</b>	Cranfield Campus
<b>School(s)</b>	School of Management
<b>Theme</b>	Leadership and Management
<b>Centre</b>	Finance and Economics
<b>Course Director</b>	Dr Nemanja Radić and Dr Matthias Nnadi (Deputy)
<b>Awarding Body</b>	Cranfield University
<b>Is this an AP Contract course?<sup>2</sup></b>	No
<b>Is this course offered as a Cranfield Mastership?</b>	No
<b>Apprenticeship Standard the course is mapped to</b>	N/A
<b>Is the Degree apprenticeship integrated or non-integrated?</b>	N/A
<b>Is the Mastership offered as an open and/or closed course?</b>	N/A
<b>Teaching Institution</b>	Cranfield University
<b>Admissions body</b>	Cranfield University

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

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

<b>Entry requirements</b>	Standard University entry requirements
<b>UK Qualifications Framework Level</b>	QAA FHEQ Level 7 (Masters)
<b>Benchmark Statement(s)</b>	N/A
<b>Registration Period(s) available</b>	Full-time MSc – one year
<b>Course Start Month(s)</b>	September

### **Institutions delivering the course**

This course will primarily be delivered by Finance and Accounting group in School of Management. The course shares 80 credits on the core modules and 20 credits of specialism in core modules, with 20 credits being completed through 4 electives.

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

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

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 and other sources.
3. To enrich student learning experience by offering an opportunity to do independent research 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
- 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 8. 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
<b>COMPULSORY MODULES:</b>	
6 modules from 1-10 including 20 credits from modules 7, 8 or 9	60
<b>ELECTIVE MODULES:</b>	
N/A	N/A
<b>TOTAL:</b>	60

## B. Postgraduate Diploma

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

Description	Credits
<b>COMPULSORY MODULES:</b>	
Modules 1-10	100
<b>ELECTIVE MODULES:</b>	
4 modules from 11-21	20
<b>TOTAL:</b>	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
<b>COMPULSORY MODULES:</b>	
Modules 1-10	100
Thesis 22	80
<b>ELECTIVE MODULES:</b>	
4 modules from 11-21	20
<b>TOTAL:</b>	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);<sup>3</sup>
- **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

<sup>3</sup> 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%).

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  $\geq 40$  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 base 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 the third term. The individual research-based thesis is undertaken during terms 3 and 4.

## 7. Course Level Assessment Strategy<sup>4</sup>

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 course further aims to offer personal and specialist skills development for candidates with extensive industrial experience.

The assessment strategy of this course is challenging and diverse and enable students to demonstrate a full range of skills and attributes.

Summative assessment will include a range of assessment types including the preparation of individual and group reports and written exams.

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.

Written coursework will be of varying lengths, recognising that writing coursework to a short length can be more challenging for some and can develop different skills relevant to professional practice. The length of each assessment task is usually stated within the module descriptor. Students then have opportunities to develop their communication and group working skills, as they are required to give group presentations. Feedback for all assessments is given in a timely fashion, dependent on the type of assessment, but always within 20 working days.

Many modules (and especially electives in term 3) are supported by a number of formative tasks including group discussion, case studies, oral presentations. Formative feedback will be provided through in-class discussion on the conceptual material introduced during each session.

The taught components precede the research project, so assessment can be used to develop skills required for the individual research project. Students are generally expected to be more self-directed in their learning during this research project and guidance will be provided through the [*Research Methods in Finance* module] and meetings with their thesis supervisor.

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<sup>4</sup> Guidance to aid colleagues writing or updating a course-level assessment strategy for inclusion in the Course Specification can be found as Appendix K in either the Senate Handbook on Setting up a New Taught Course or the Senate Handbook on Managing Taught Courses <https://intranet.cranfield.ac.uk/EducationServices/Pages/SenateHandbooksA-Z.aspx>

## Course modules

### Module occ A

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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
1	M-F/COF	Corporate Finance	Dr Yacine Belghitar	20		10	Y	13/10/20	13/10/20	10/12/20	40	EX	100				w/c 04/01/21	TBC
2	M-F/SAF	Statistical Analysis in Finance	Dr Nemanja Radic	20		10	Y	20/10/20	20/10/20	14/12/20	40	EX	100				w/c 04/01/21	TBC
3	M-F/ACC	Accounting	Dr Matthias Nnadi	20		10	Y	16/10/20	16/10/20	15/12/20	40	EX	100				w/c 04/01/21	TBC

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

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

<sup>7</sup> 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  $\geq 50\%$ .

<sup>8</sup> For **independent assessments** please record type and weighting of each separate piece of assessment individually. 10 credit modules should be designed to allow assessment through a single independent summative assessment. Deviations will require approval by the School Director of Education

<sup>9</sup> For **multi-part assessments** please record the overall weighting of module which should be 100%. Multipart assessments should only be included in courses where there is a clear androgogical reason and where each element forms part of a continuous learning and assessment experience for students.

<sup>10</sup> 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.

<sup>11</sup> 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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>8</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
4	M-F/ECO	Economics for Financial Markets	Dr Constantinos Alexiou	20		10	Y	14/10/20	14/10/20	17/12/20	40	EX	100				w/c 04/01/21	TBC
5	M-F/OR G	Organisational Management	Dr Valentina Battista	20		10	Y	12/10/20	12/10/20	18/12/20 20	40	ICW	100				18/01/21	TBC
6	M-F/VFM	Valuation and Financial Modelling	Dr Vineet Agarwal	20		10	Y	11/01/21	11/01/21	18/03/21	40	EX	100				w/c 06/04/21	TBC
7	M-F/FMRE	Financial Markets, Regulation and Ethics	Dr Walter Gontarek	20	20	10	Y	15/01/21	15/01/21	26/02/21	40	IPRAC	100				26/02/21	TBC
8	M-I/IPM	Investment and Portfolio Management	Prof Sunil Poshakwale/ Dr Peter Yallup	20		10	N	13/01/21	13/01/21	10/03/21	40	EX	100				w/c 06/04/21	TBC
9	M-I/DFR	Derivatives and Financial Risk Management	Dr Peter Yallup	20		10	N	14/01/21	14/01/21	19/03/21	40	EX	100				w/c 06/04/21	TBC
10	M-F/RMF	Research Methods in Finance	Dr Vineet Agarwal	20		10	Y	12/01/21	12/01/21	15/03/21	40	ICW	100				01/07/21	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; MULTI – Multi-part Assessment

Module Number	Module code	Title	Module Leader	Contact hours <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>8</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
11	M-F/FEC	Applied Financial Econometrics	Dr Yacine Belghitar Dr Peter Yallup	15		5	Y	13/04/21	13/04/21	19/05/21	40	ICW	100				28/06/21	TBC
12	M-F/BD M	Bigdata Management and Cybersecurity	Dr Andrea Moro	15		5	Y	<b>Not running for 2020/2021</b>										
13	M-F/BCS	Blockchain, Cryptocurrencies, and Smart Contracts	Dr Andrea Moro	15		5	Y	19/04/21	19/04/21	14/05/21	40	GCW	100				04/06/21	TBC
14	M-I/FNM	Fund Management	Jane Vessey	15		5	Y	15/04/21	15/04/21	17/05/21	40	EX	100				WC 07/06/21	TBC
15	M-F/MA D	Mergers and Acquisitions	Dr Andrea Moro	15		5	Y	13/04/21	13/04/21	18/05/21	40	GPRES	100				30/06/21	TBC
16	M-I/FIS	Fixed Interest Securities	Dr Vineet Agarwal	15		5	Y	19/04/21	19/04/21	24/05/21	40	EX	100				WC 07/06/21	TBC
17	M-F/PEQ	Private Equity	Nemanja Radic	15		5	Y	20/04/21	20/04/21	13/05/21	40	ICW	100				01/07/21	TBC
18	M-I/TAT S	Technical Analysis and Trading Systems	Dr Peter Yallup	15		5	Y	14/04/21	14/04/21	18/05/21	40	ICW	100				30/06/21	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; MULTI – Multi-part Assessment

Module Number	Module code	Title	Module Leader	Contact hours <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>8</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
19	M-I/IEM	International Investment and Emerging Markets	Prof Sunil Poshakwale	15		5	Y	13/04/21	13/04/21	06/05/21	40	ICW	100				14/06/21	TBC
20	M-F/CRS	Corporate Restructuring	Dr Yacine Belghitar	15		5	Y	26/04/21	26/04/21	17/05/21	40	ICW	100				11/06/21	TBC
21	M-F/IFF	Infrastructure Finance	Ian Alexander	15		5	Y	<b>Not running for 2020/2021</b>										
22	M-F/ENF	Entrepreneurial Finance	Dr Andrea Moro	15		5	Y	13/04/21	13/04/21	20/05/21	40	GCW	100				24/06/21	TBC
23	M-F/SMA	Strategic Management Accounting and Control	Prof Michael Bourne	15		5	Y	04/05/21	04/05/21	13/05/21	40	ICW	100				17/06/21	TBC
24	M-F/THS	Thesis	Dr Nemanja Radić	50		80	Y	29/04/21	29/04/21	03/09/21		THESIS	100				17/09/21	

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.

<b><u>Module code</u></b>	<b><u>Module title</u></b>	<b><u>Course that owns the module</u></b>	<b><u>Other course(s)/ programme(s) that use the module</u></b>
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	Investment Management Retail and Digital Banking
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/BCS	Blockchain, Cryptocurrencies, and Smart Contracts	Finance and Management	Investment Management
M-F/FEC	Applied Financial Econometrics	Finance and Management	Finance and Management
M/F/BDM	Bigdata Management and Cybersecurity	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

## 8. How are the ILOs assessed?

The course uses a range of assessment types: exams, group and individual assignments and an 80 credit thesis at the end of the programme.

### Assessment and ILO Mapping

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

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

Award ILOs \ Module No.	Postgraduate Certificate				Postgraduate Diploma				MSc					
	ILO1	ILO2	ILO3	ILO4	ILO5	ILO6	ILO7	ILO8	ILO9	ILO10	ILO11	ILO12	ILO13	ILO14
1	✓	✓	✓	✓										
2			✓	✓										
3		✓		✓										
4	✓			✓										
5	✓			✓										
6	✓	✓	✓	✓		✓	✓	✓						
7	✓			✓										
8	✓	✓		✓										
9	✓	✓		✓										
10	✓	✓		✓										
11							✓	✓						
12					✓		✓	✓						
13				✓	✓		✓	✓						
14				✓	✓		✓	✓						
15					✓	✓	✓	✓						
16						✓	✓	✓						
17					✓	✓		✓						
18					✓		✓	✓						
19					✓		✓	✓						
20					✓	✓	✓	✓						
21					✓	✓		✓						
22					✓	✓	✓	✓						
23					✓		✓	✓						
24									✓	✓	✓	✓	✓	✓

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

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

## 9. 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 provides authoritative guidance on policy and

procedure to the Panel. Proposals are reviewed in line with the UK Quality Code for Higher Education. 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 guiding principles to meet the Expectations and Core Practices of the UK Quality Code for Higher Education. 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 UK Quality Code for Higher Education. The delivery of new partnership provision is ultimately approved by the Universities 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.

## **10. 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.

**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.

**Date of first publication/latest revision:** August 2020

**1. What is the course?**

**Course information**

<b>Course Title</b>	MSc in Logistics and Supply Chain Management
<b>Course code</b>	MSLOSFTC, PDLOSFTC, PCLOSFTC
<b>Academic Year</b>	2020/21
<b>Valid entry routes</b>	MSc
<b>Additional exit routes</b>	PgDip, PgCert
<b>Mode of delivery</b>	Full-time (Cranfield only)
<b>Location(s)<sup>1</sup> of Study</b>	Cranfield Campus
<b>School(s)</b>	School of Management
<b>Theme</b>	Leadership and Management
<b>Centre</b>	Centre for Logistics, Procurement and Supply chain Management
<b>Course Director</b>	Dr Denyse Julien
<b>Awarding Body</b>	Cranfield University
<b>Is this an AP Contract course?<sup>2</sup></b>	No
<b>Is this course offered as a Cranfield Mastership?</b>	No
<b>Apprenticeship Standard the course is mapped to</b>	N/A
<b>Is the Degree apprenticeship integrated or non-integrated?</b>	N/A
<b>Is the Mastership offered as an open and/or closed course?</b>	N/A
<b>Teaching Institution</b>	Cranfield University
<b>Admissions body</b>	Cranfield University

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

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

<b>Entry requirements</b>	Standard University entry requirements
<b>UK Qualifications Framework Level</b>	QAA FEHQ Level 7 (Masters)
<b>Benchmark Statement(s)</b>	N/A
<b>Registration Period(s) available</b>	Full-time MSc - one year (Cranfield),
<b>Course Start Month(s)</b>	September

### **Institutions delivering the course**

This course is delivered by the School of Management/ Centre for Logistics, Procurement and Supply 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 annually until August 2021.

## **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 VLE as a means of delivering material to support and augment classroom learning  
Extensive use of the 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 8. 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
<b>COMPULSORY MODULES:</b>	
Module 1	10
50 credits from the taught modules (2-10)	50
<b>ELECTIVE MODULES:</b>	
N/A	N/A
<b>TOTAL:</b>	60

### B. **Postgraduate Diploma**

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

Description	Credits
<b>COMPULSORY MODULES:</b>	
Modules 1 to 10	100
<b>ELECTIVE MODULES:</b>	
4 Modules from 11 to 25	20
<b>TOTAL:</b>	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
<b>COMPULSORY MODULES:</b>	
Modules 1 to 10	100
Module 26	0
Thesis	80

<b>ELECTIVE MODULES:</b>	
4 Modules from 11 to 25	20
<b>TOTAL:</b>	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);<sup>3</sup>
- **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  $\geq 40$  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 in September in the following year.

The course is structured around four eleven week terms. In the first from September to December the students are given a thorough grounding in procurement and supply chain management through a series of six compulsory core elements, including the participation in a supply chain game, which integrates students' learning from the course and develops their team working skills.

In the second term from January to March, students study the remaining four compulsory 10 credit modules, two procurement 5 credit modules and two 5 credit options. The electives allow the students to

<sup>3</sup> 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 ( $< 50\%$ ).

start to specialise and to tailor their learning to their own interests within procurement and supply chain management.

The third and fourth terms are effectively merged and during this period the students undertake an individual thesis project. It is expected that the majority of students will undertake this thesis project within an organisation, which can be in the profit or not for profit sector. Alternatively, students can undertake a Cranfield led research based thesis project.

## 7. **Course Level Assessment Strategy**<sup>4</sup>

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 course further aims to offer personal and specialist skills development for candidates with extensive industrial experience.

The assessment strategy of this course is challenging and diverse and enable students to demonstrate a full range of skills and attributes.

Summative assessment will include a range of assessment types including the preparation of individual and group reports and written exams.

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.

Written coursework will be of varying lengths, recognising that writing coursework to a short length can be more challenging for some and can develop different skills relevant to professional practice. The length of each assessment task is usually stated within the module descriptor. Students then have opportunities to develop their communication and group working skills, as they are required to give group presentations. Feedback for all assessments is given in a timely fashion, dependent on the type of assessment, but always within 20 working days.

Many modules *SCSS, PSP, IOM, NCM, PMI, WHS, BMG, SXS, SOP, CSC* are supported by a number of formative tasks including group discussion, case studies, oral presentations. Formative feedback will be provided through in-class discussion on the conceptual material introduced during each session  
Formative feedback

The taught components precede the research project, so assessment can be used to develop skills required for the individual research project. Students are generally expected to be more self-directed in their learning during this research project and guidance will be provided through the *Evidence-Based Management* module and meetings with their thesis supervisor.

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<sup>4</sup> Guidance to aid colleagues writing or updating a course-level assessment strategy for inclusion in the Course Specification can be found as Appendix K in either the Senate Handbook on Setting up a New Taught Course or the Senate Handbook on Managing Taught Courses <https://intranet.cranfield.ac.uk/EducationServices/Pages/SenateHandbooksA-Z.aspx>

## 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.

### Logistics and Supply Chain Management (Cranfield)

Module Number	Module code	Title	Module Leader	Contact hours <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
1	M-L/SCSS	Supply Chain Strategy and Sustainability	Dr Heather Skipworth	20		10	Y	05/10/20	05/10/20	29/10/20	40	ICW	100				26/11/20	
2	M-L/PSP	Principles of Strategic Procurement	Dr Farooq Habib	20		10	Y	02/11/20	02/11/20	10/12/20	40	ICW	100				13/01/21	
3	M-L/ACF	Accounting and Finance	Dr Simon Templar	20		10	Y	05/10/20	05/10/20	11/12/20	40	EX	100				TBC 14-18/12/20	

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

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

<sup>7</sup> 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%.

<sup>8</sup> For **independent assessments** please record type and weighting of each separate piece of assessment individually. 10 credit modules should be designed to allow assessment through a single independent summative assessment. Deviations will require approval by the School Director of Education

<sup>9</sup> For **multi-part assessments** please record the overall weighting of module which should be 100%. Multipart assessments should only be included in courses where there is a clear pedagogical reason and where each element forms part of a continuous learning and assessment experience for students.

<sup>10</sup> 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.

<sup>11</sup> 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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>8</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
4	M-L/ATS	Analytical Techniques for Supply Chain Management	Prof Emel Aktas	20		10	Y	07/10/20	07/10/20	11/12/20	40	ICW	100				08/02/21	
5	M-L/FRT	Freight Transport	Prof Melvyn Peters	20		10	Y	21/10/20	21/10/20	09/12/20/20	40	ICW	100				20/01/21	
6	M-L/IOM	Inventory and Operations Management	Dr Anurag Tewari	20		10	Y	12/10/20	12/10/20	16/11/20	40	GCW	100				11/12/20	
7	M-L/ISB	Information Systems and e-Business	Dr Abhijeet Ghadge	20		10	Y	11/01/21	11/02/21	05/03/21	40	GCW	100				30/03/21	
8	M-L/PMI	Project Management Introduction	Dr Denyse Julien	20		10	Y	Occ-A 8/02/21	08/02/21	10/02/21	40 40			MULT 100	GCW GPRAC	75 25	10/02/21 10/02/21	
								Occ-C 15/02/21	15/02/21	17/02/21	40 40			MULTI 100I	GCW GPRAC	75 25	17/02/21 17/02/21	
								Occ-D 22/02/21	22/02/21	24/02/21	40 40			MULTI 100	GCW GRPAC	75 25	24/02/21 24/02/21	
9	M-L/PND	Physical Network Design	Dr Nicky Yates	20		10	N	11/01/21	11/01/21	19/02/21	40	ICW	100				12/03/21	
10	M-L/WH S	Warehousing	Dr Hendrik Reefke	20		10	N	01/02/21	01/02/21	25/03/21	40	ICW	100				08/04/21	

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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
11	M-P/BPO	Business Process Outsourcing	Dr Soroosh Saghiri	12		5	Y	18/02/21	18/02/21	02/03/21	40			MULTI	GCW ICW	75 25	23/03/21	
12	M-P/RSC	Designing and Managing Resilient Supply Chains	Dr Uta Jüttne	12		5	Y	22/03/21	22/03/21	24/03/21	40	GCW	100				21/04/21	
13	M-L/OUT	Logistics Outsourcing	Prof Melvyn Peters	12		5	Y	20/01/21	20/01/21	22/01/21	40	ICW	100				19/02/21	
14	M-L/PRR	Planning and Resourcing Road Freight Transport	Prof Melvyn Peters	12		5	Y	15/02/21	15/02/21	17/02/21	40			MULTI	GPRES GCW ICW	10 40 50	17/03/21	
15	M-L/HLR	Humanitarian Logistics	Dr Hendrik Reefke	12		5	Y	08/03/21	08/03/21	10/03/21	40	ICW	100				07/04/21	
16	M-L/SIM	Simulation	Dr Nicky Yates	12		5	Y	10/03/21	10/03/21	12/03/21	40	ICW	100				09/04/21	
17	M-L/SXS	Six Sigma	Dr Hamid Moradlou	12		5	Y	28/01/21	28/01/21	29/01/21	40	GCW	100				26/02/21	
18	M-L/PFM	Performance Measurement in the Supply Chain	Dr Andrey Pavlov	12		5	Y	25/01/21	25/01/21	27/01/21	40	GCW	100				24/02/21	

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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>8</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
19	M-L/SOP	Sales and Operations Planning	Dr Heather Skipworth	12		5	Y	18/03/21	18/03/21	19/03/21	40	ICW	100				12/04/21	
20	M-L/RLO	Retail Logistics	Prof Michael Bourlakis	12		5	Y	25/03/21	25/03/21	26/03/21	40	ICW	100				23/04/21	
21	M-L/SNCC	Social Network Analysis in a Supply Chain Context	Dr Leila Alinaghian	12		5	Y	08/02/21	08/02/21	10/02/21	40	ICW	100				10/03/21	
22	M-L/BMG	Business Model Generation	Dr Denyse Julien	12		5	Y	01/03/21	01/03/21	03/03/21	40	GCW	100				31/03/21	
23	M-P/FDP	Future of Digital Procurement	Dr Farooq Habib	12		5	Y	15/03/21	15/03/21	16/03/21	40	GCW	100				15/04/21	
24	M-L/BDA	Big Data Analytics for Supply Chain Management	Prof Emel Aktas	12		5	Y	03/02/21	03/02/21	05/02/21		ICW	100				05/03/21	
25	M-L/CSC	Circular Supply Chains	Dr Denyse Julien	12		5	Y	18/01/21	18/01/21	19/01/21				MULTI	GCW GPRC	60 40	16/02/21 16/02/21	
26	M-L/RSM	Research Methods	Dr Denyse Julien	12		0	Y	29/03/21	29/03/21	03/09/21	N/A	AO	N/A				N/A	
27	M-L/THS	Thesis	Dr Denyse Julien	0		80	Y	12/04/21	12/04/21	03/09/21	50	THESIS	100				03/09/21	

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.

<b><u>Module code</u></b>	<b><u>Module title</u></b>	<b><u>Course that owns the module</u></b>	<b><u>Other course(s)/ programme(s) that use the module</u></b>
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; Management; Management and Corporate Sustainability; Management and Entrepreneurship; Exec LSCM
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-L/PMI	Project Management Introduction	Logistics and Supply Chain Management	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
M-L/BMG	Business Model Generation	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/FDP	Future of Digital Procurement	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/BDA	Big Data Analytics for Supply Chain Management	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/CSC	Circular Supply Chains	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/RSM	Research Methods	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/THS	Thesis	Logistics and Supply Chain Management	Procurement and Supply Chain Management

**8. 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.

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

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	✓	✓				✓	✓				✓	✓						
16	✓	✓				✓	✓				✓	✓						
17	✓	✓	✓	✓		✓	✓				✓	✓	✓					
18	✓					✓					✓	✓		✓				
19	✓	✓	✓	✓		✓					✓	✓						
20	✓	✓					✓	✓		✓	✓							
21	✓	✓	✓			✓	✓	✓		✓	✓							
22		✓				✓	✓	✓			✓							
23	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓			
24	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓			
25	✓	✓	✓	✓			✓	✓		✓	✓	✓						
26					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
27					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

**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

**9. 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 provides authoritative guidance on policy and procedure to the Panel. Proposals are reviewed in line with the UK Quality Code for Higher Education. 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 guiding principles to meet the Expectations and Core Practices of the UK Quality

Code for Higher Education. 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 UK Quality Code for Higher Education. The delivery of new partnership provision is ultimately approved by the Universities 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.

## **10. 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.

**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.

**Date of first publication/latest revision:** September 2020

**1. What is the course?**

**Course information**

<b>Course Title</b>	MSc in Logistics and Supply Chain Management
<b>Course code</b>	MSLSOFTC, MSLOSPTC, PDLSOFTC, PDLSOPTC, PCLSOFTC, PCLSOPTC
<b>Academic Year</b>	2020/21
<b>Valid entry routes</b>	MSc
<b>Additional exit routes</b>	PgDip, PgCert
<b>Mode of delivery</b>	Full-time/ Part-time
<b>Location(s)<sup>1</sup> of Study</b>	Muscat University
<b>School(s)</b>	School of Management
<b>Theme</b>	Leadership and Management
<b>Centre</b>	Centre for Logistics, Procurement and Supply chain Management
<b>Course Director</b>	Dr Hendrik Reefke
<b>Awarding Body</b>	Cranfield University
<b>Is this an AP Contract course?<sup>2</sup></b>	No
<b>Is this course offered as a Cranfield Mastership?</b>	No
<b>Apprenticeship Standard the course is mapped to</b>	N/A
<b>Is the Degree apprenticeship integrated or non-integrated?</b>	N/A
<b>Is the Mastership offered as an open and/or closed course?</b>	N/A
<b>Teaching Institution</b>	Cranfield University
<b>Admissions body</b>	Cranfield University

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

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

<b>Entry requirements</b>	Standard University entry requirements
<b>UK Qualifications Framework Level</b>	QAA FEHQ Level 7 (Masters)
<b>Benchmark Statement(s)</b>	N/A
<b>Registration Period(s) available</b>	Full-time MSc - one year Part- time MSc – up to three years
<b>Course Start Month(s)</b>	September

### **Institutions delivering the course**

This course is delivered by the School of Management/ Centre for Logistics, Procurement and Supply 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 annually until August 2021.

## **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 VLE as a means of delivering material to support and augment classroom learning
- Extensive use of the 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 8. 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**

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
<b>COMPULSORY MODULES:</b>	
Modules 1 to 14	120
Module 15	0
Thesis 16	80
<b>ELECTIVE MODULES:</b>	
N/A	
<b>TOTAL:</b>	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);<sup>3</sup>
- **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:

<sup>3</sup> 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 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  $\geq 40$  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 in September in the following year.

The course is structured around four eleven week terms. In the first from September to December the students are given a thorough grounding in procurement and supply chain management through a series of six compulsory core elements, including the participation in a supply chain game, which integrates students' learning from the course and develops their team working skills.

In the second term from January to March, students study the remaining four compulsory 10 credit modules, two procurement 5 credit modules and two 5 credit options. The electives allow the students to start to specialise and to tailor their learning to their own interests within procurement and supply chain management.

The third and fourth terms are effectively merged and during this period the students undertake an individual thesis project. It is expected that the majority of students will undertake this thesis project within an organisation, which can be in the profit or not for profit sector. Alternatively, students can undertake a Cranfield led research based thesis project.

## 7. Course Level Assessment Strategy<sup>4</sup>

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 course further aims to offer personal and specialist skills development for candidates with extensive industrial experience.

The assessment strategy of this course is challenging and diverse and enable students to demonstrate a full range of skills and attributes.

Summative assessment will include a range of assessment types including the preparation of individual and group reports and written exams.

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.

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<sup>4</sup> Guidance to aid colleagues writing or updating a course-level assessment strategy for inclusion in the Course Specification can be found as Appendix K in either the Senate Handbook on Setting up a New Taught Course or the Senate Handbook on Managing Taught Courses <https://intranet.cranfield.ac.uk/EducationServices/Pages/SenateHandbooksA-Z.aspx>

Written coursework will be of varying lengths, recognising that writing coursework to a short length can be more challenging for some and can develop different skills relevant to professional practice. The length of each assessment task is usually stated within the module descriptor. Students then have opportunities to develop their communication and group working skills, as they are required to give group presentations. Feedback for all assessments is given in a timely fashion, dependent on the type of assessment, but always within 20 working days.

Many modules *SCSS, PSP, IOM, NCM, PMI, WHS, BMG, SXS, SOP, CSC* are supported by a number of formative tasks including group discussion, case studies, oral presentations. Formative feedback will be provided through in-class discussion on the conceptual material introduced during each session  
Formative feedback

The taught components precede the research project, so assessment can be used to develop skills required for the individual research project. Students are generally expected to be more self-directed in their learning during this research project and guidance will be provided through the *Evidence-Based Management* module and meetings with their thesis supervisor.

## 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.

### Logistics and Supply Chain Management (Muscat) Occ B for all modules

Module Number	Module code	Title	Module Leader	Contact hours <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
1	M-L/SCSS	Supply Chain Strategy and Sustainability	Dr Heather Skipworth	20		10	Y	FT/PT 18/10/20	FT/PT 18/10/20	FT/PT 11/11/20	40	ICW	100				11/11/20	
2	M-L/PSP	Principles of Strategic Procurement	Dr Farooq Habib	20		10	Y	FT/PT 21/02/21	FT/PT 21/02/21	FT/PT 24/02/21	40	ICW	100				21/02/21	
3	M-L/ACF	Accounting and Finance	Dr Simon Templar	20		10	Y	FT/PT 24/01/21	FT/PT 24/01/21	FT/PT 28/01/21	40	EX	100				Exam week 3 TBC	

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

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

<sup>7</sup> 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%.

<sup>8</sup> For **independent assessments** please record type and weighting of each separate piece of assessment individually. 10 credit modules should be designed to allow assessment through a single independent summative assessment. Deviations will require approval by the School Director of Education

<sup>9</sup> For **multi-part assessments** please record the overall weighting of module which should be 100%. Multipart assessments should only be included in courses where there is a clear androgogical reason and where each element forms part of a continuous learning and assessment experience for students.

<sup>10</sup> 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.

<sup>11</sup> 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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
4	M-L/ATSM	Analytical Techniques for Supply Chain Management	Prof Emel Aktas	20		10	Y	FT/PT 25/10/20	FT/PT 25/10/20	FT/PT 09/11/20	40	ICW	100				30/11/20	
5	M-L/FRT	Freight Transport	Prof Melvyn Peters	20		10	Y	FT 01/11/20	FT 01/11/20	FT 04/11/20	40	ICW	100				03/12/20	
6	M-L/IOM	Inventory and Operations Management	Dr Anurag Tewari	20		10	Y	FT 10/01/21	FT 10/01/21	FT 14/01/21	40	GCW	100				04/02/21	
7	M-L/ISBM	Information Systems and e-Business	Dr Abhijeet Ghadge	20		10	Y	FT 14/03/21	FT 14/03/21	FT 17/03/21	40	GCW	100				14/04/21	
8	M-L/PMI	Project Management Introduction	Dr Denyse Julien	20		10	Y	FT/PT 21/03/21	FT/PT 21/03/21	FT/PT 24/03/21	40 40			MULT 100	GCW GPRAC	75 25	31/03/21	
9	M-L/PND	Physical Network Design	Dr Nicky Yates	20		10	N	FT 29/11/20	Ft 29/11/20	FT 02/12/20	40	ICW	100				04/01/21	
10	M-L/WHS	Warehousing	Dr Hendrik Reefke	20		10	N	FT/PT 23/05/21	FT/PT 23/05/21	FT/PT 26/05/21	40	ICW	100				16/06/21	
11	M-L/SXS	Six Sigma	Dr Hamid Moradlou	12		5	Y	FT 11/07/21	FT 11/07/21	FT 13/07/21	40	GCW	100				17/08/21	
12	M-L/PFM	Performance Measurement in the Supply Chain	Dr Andrey Pavlov	12		5	Y	FT/PT 04/07/21	FT/PT 04/07/21	FT/PT 06/07/21	40	GCW	100				03/08/21	

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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
13	M-L/SOP	Sales and Operations Planning	Dr Heather Skipworth	12		5	Y	FT 13/06/21	FT 13/06/21	FT 15/06/21	40	ICW	100				06/07/21	
14	M-L/RLO	Retail Logistics	Prof Michael Bourlakis	12		5	Y	FT/PT 20/06/21	FT/PT 20/06/21	FT/PT 22/06/21	40	ICW	100				20/07/21	
15	M-L/RSM	Research Methods	Dr Denyse Julien	12		0	Y	FT 13/12/20	FT 13/12/20	FT 15/12/20	N/A	AO	N/A				N/A	
16	M-L/THS	Thesis	Dr Denyse Julien	0		80	Y	FT 12/04/21	FT 12/04/21	FT 03/09/21	50	THESIS	100				03/09/21	

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.

<b><u>Module code</u></b>	<b><u>Module title</u></b>	<b><u>Course that owns the module</u></b>	<b><u>Other course(s)/ programme(s) that use the module</u></b>
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; Management; Management and Corporate Sustainability; Management and Entrepreneurship; Exec LSCM
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-L/PMI	Project Management Introduction	Logistics and Supply Chain Management	Procurement and Supply Chain Management, Design Strategy and Leadership, Digital Design and Strategic Communication, Innovation and Creativity in Industry
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/BDA	Big Data Analytics for Supply Chain Management	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/RSM	Research Methods	Logistics and Supply Chain Management	Procurement and Supply Chain Management
M-L/THS	Thesis	Logistics and Supply Chain Management	Procurement and Supply Chain Management

## 8. 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.

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

Award ILOs Module No.	PG Certificate in Supply Chain Management							PG Diploma in Logistics and Supply Chain Management				MSc in Logistics and Supply Chain Management						
	ILO1	ILO2	ILO3	ILO4	ILO5	ILO6	ILO7	ILO8	ILO9	ILO10	ILO11	ILO12	ILO13	ILO14	ILO15	ILO16	ILO17	ILO18
1	✓		✓	✓	✓	✓	✓			✓	✓		✓					
2	✓	✓	✓		✓	✓	✓				✓		✓					
3					✓				✓									
4	✓	✓	✓	✓	✓		✓	✓	✓				✓					
5	✓		✓		✓	✓												
6	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓					
7		✓			✓						✓							
8		✓		✓		✓	✓			✓	✓							
9	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓						
10	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓						
11	✓			✓		✓					✓	✓	✓					
12	✓	✓	✓	✓		✓		✓	✓		✓	✓						
13	✓	✓				✓					✓	✓						
14	✓	✓				✓	✓				✓	✓						
16	✓	✓				✓	✓				✓	✓						
17	✓	✓	✓	✓		✓	✓				✓	✓	✓					
18	✓					✓					✓	✓			✓			
19	✓	✓	✓	✓		✓					✓	✓						
20	✓	✓					✓	✓		✓	✓							
21	✓	✓	✓			✓	✓	✓		✓	✓							
22		✓				✓	✓	✓			✓							
23	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓			
24	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓			✓			
25	✓	✓	✓	✓			✓	✓		✓	✓	✓						
26					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
27					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

### **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

## 9. 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 provides authoritative guidance on policy and procedure to the Panel. Proposals are reviewed in line with the UK Quality Code for Higher Education. 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 guiding principles to meet the Expectations and Core Practices of the UK Quality Code for Higher Education. 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 UK Quality Code for Higher Education. The delivery of new partnership provision is ultimately approved by the Universities 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.

#### **10. 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.



**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.

**Date of first publication/latest revision:** August 2020

**1. What is the course?**

**Course information**

<b>Course Title</b>	Maintenance Engineering and Asset Management
<b>Course code</b>	MSMEAFTC, MSMEAPTC (PDMEAFTC, PDMEAPTC, PCMEAFTC, PCMEAPTC exit routes only)
<b>Academic Year</b>	2020
<b>Valid entry routes</b>	MSc
<b>Additional exit routes</b>	PgDip, PgCert
<b>Mode of delivery</b>	Full Time, Part Time
<b>Location(s)<sup>1</sup> of Study</b>	Cranfield
<b>School(s)</b>	School of Aerospace, Transport and Manufacturing
<b>Theme</b>	Manufacturing
<b>Centre</b>	Through Life Engineering Services (TES)
<b>Course Director</b>	Dr Muhammad Khan
<b>Awarding Body</b>	Cranfield University
<b>Is this an AP Contract course?<sup>2</sup></b>	N/A
<b>Is this course offered as a Cranfield Mastership?</b>	No
<b>Apprenticeship Standard the course is mapped to</b>	No
<b>Is the Degree apprenticeship integrated or non-integrated?</b>	No
<b>Is the Mastership offered as an open and/or closed course?</b>	No
<b>Teaching Institution</b>	Cranfield University
<b>Admissions body</b>	Cranfield University

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

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

<b>Entry requirements</b>	Standard University Entry Requirement
<b>UK Qualifications Framework Level</b>	QAA FHEQ Level 7 (Masters)
<b>Benchmark Statement(s)</b>	N/A
<b>Registration Period(s) available</b>	Full-time MSc - one year, Part-time MSc - up to three years,
<b>Course Start Month(s)</b>	Full-time MSc: October, Part-time: October

### Institutions delivering the course

This course is delivered by School of Aerospace, Transport and Manufacturing/Manufacturing/TES Institute where the research interests include:

- Reliability and Maintainability
- Failure Analysis and Condition Based Maintenance
- Asset Management
- Diagnostics and Prognostics
- Risk Assessment
- Digital Engineering Services

The Through-life Engineering Services Institute (TESI) is among the world leaders in through-life approaches for high-value systems, condition monitoring, damage tolerance and asset management. TESI was developed with the aim to achieve research excellence and address the research problems in the sector of Through-life Engineering services. TESI is providing its excellent academic teaching and research services to industrial clients such as Boeing, BAE Systems, Rolls-Royce, Meggitt, Thales, MOD, Bombardier, QinetiQ, Network Rail, Schlumberger and Alstom.

In the last decade, Cranfield's TES Institute has built world-class critical mass, capability and reputation in the fields of maintenance engineering and asset management. The Institute currently has more than 20 full-time academic staff actively involved in maintenance related academic teaching and research. Most of them are active Fellows or Members of reputed professional organizations such as Institute of Asset Management, British Institute of Non-Destructive Testing, Institute of Mechanical Engineers and Institute of Engineering Technology. The TES Institute has a proud history in successfully running an Executive Master's course in Through-life System Sustainment. The institute will be actively involved in offering the Mastership Program in Through-life Engineering Services.

The unique feature of the proposed course (i.e. Maintenance Engineering and Asset Management) is its applied and practical nature, aimed at the availability of strategic assets. The laboratories in TESI are fully equipped with the state of the art equipment and make it possible to provide a hands-on learning environment during the delivery of the proposed course.

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

Maintenance Engineering, Condition Monitoring, Asset Management, Reliability.

### Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)

It is our intention to seek accreditation from the following bodies:

- Institute of Asset Management (IAM)
- British Institute of Non-Destructive Testing (BINDT)

The course will be designed to meet the requirements of "The Accreditation of Higher Education Programmes" published by the Engineering Council.

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

[This course provides a deep understanding, skills and critical appraisal in maintenance engineering and asset management, so graduates can transform their industry culture in cost-effective maintenance. It enables graduates to create strategic maintenance plans for technologies and management. The course taught content blends with hands-on exercises and covers maintenance from fundamentals to implementation.]

This programme is intended for the following range of students:

[This course is suitable for graduates with engineering or sciences or related degrees keen to pursue careers in industrial maintenance planning, control and management; graduates currently working in industry keen to extend their qualifications; or individuals with other qualifications 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. Assess the regular and sudden failures in machines and structures and determine their root cause.
- ILO 2. Evaluate the suitability of inspection techniques in the context of real operation failures.
- ILO 3. Analyse the potential risks in considered maintenance routines and recommend mitigation activities.
- ILO 4. Assess the impact of technical and financial management on asset availability.
- ILO 5. Evaluate and solve the technical complexities in implementing new methodologies and technologies to develop customized maintenance routines.

### **B. Postgraduate Diploma**

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

- ILO 6. Critically analyze the existing academic and industrial practices in maintenance engineering or closely related disciplines.
- ILO 7. Propose ideas and methodologies to enhance and/or improve the current practices in maintenance engineering or closely related disciplines by means of a written communication or an oral presentation or both.
- ILO 8. Develop the required skills (such as time and team management, presenting technical topics and writing technical document) that ensure successful delivery and/or submission of your own reflections about the current practices in maintenance engineering or closely related disciplines while working individually or in a team.

### **C. MSc**

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

- ILO 9. Formulate a solution to any given academic or industrial research problem in the form of a concisely written thesis project report.
- ILO 10. Deliver a synthesis of the project in the form of an oral examination with reference to a poster that illustrates the research.

#### 4. How is the course taught?

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

The Maintenance Engineering and Asset Management course will deliver the modules through conventional lectures, problem based learning and reflection based learning. One of the key objectives of the proposed course is to inculcate a set of hands-on maintenance skills in the students. These skills will provide a comprehensive understanding of failure mechanisms of real machinery setups and their suitable maintenance routines. Extensive hands-on training sessions will be setup on the existing TESI research facilities and will be delivered as a part of the taught modules

In addition to the teaching methods outlined students will be supported in their learning and personal development by:

1. Comprehensive course materials (provided), as well as a website using the Blackboard™ Virtual Learning Environment (VLE). Part-time students will be supported by distance-learning methods including telephone/conference calls and e-mail interactions for two of their modules: Individual Research Project and Dissertation of Part Time Students.
2. Students are guided through the use of study texts, and the use of interactive exercises. Problem-based/Reflection based learning will be included to promote self-centred learning. The TEL team will be involved in the preparation of some lecturing material.
3. Course directors and module leaders will be available to provide support and advice on an informal basis to student queries. The same support will be provided to part-time students via email and telephone communication.

#### 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
<b>COMPULSORY MODULES:</b>	
Any 6 from modules 1 to 8	60
<b>ELECTIVE MODULES:</b>	
n/a	
<b>TOTAL:</b>	60

##### B. **Postgraduate Diploma**

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

Description	Credits
<b>COMPULSORY MODULES:</b>	
Modules 1 to 8	80
Group Project(FT) or Dissertation (PT)	40
<b>ELECTIVE MODULES:</b>	
n/a	
<b>TOTAL:</b>	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
<b>COMPULSORY MODULES:</b>	
Modules 1 to 8	80
Group Project (FT) or Dissertation (PT)	40
Individual Research Project (10)	80
<b>ELECTIVE MODULES:</b>	
n/a	
<b>TOTAL:</b>	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);<sup>3</sup>
- **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

<sup>3</sup> 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%).

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  $\geq 40$  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 [11] calendar months.

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

[The taught modules and group projects are delivered between October and April, thereafter the full-time students undertake an individual research project. Modules are taught over one week and a second week is provided which is largely free of structured teaching to allow time for more independent learning and reflection.

Part-time students will attend modules with full-time students. However, they can complete their course within 2 or 3 years. The number of modules which they need to select in a year will be dependent on their planned time to complete the course. Indicative timetables are provided here considering two and three years pathways for a part time student:

Part Time Student with two year plan of completion:

Year-1:

Taught Modules: Induction (Sept), Industrial Maintenance (Oct), Failure of Materials and Structures (Oct), Maintenance Planning and Control (Nov), Asset Management (Jan) and Dissertation (Feb - August)

Year-2:

Taught Modules: System availability and maintainability (Oct), Condition based maintenance (Nov), Diagnostics and Prognostics (Dec), Probability and Statistics in risk and Reliability Engineering (Jan), Individual Thesis Project (Feb - Sep)

Part Time Student with three year plan of completion:

Year-1:

Taught Modules: Induction (Sept), Industrial Maintenance (Oct), Condition based maintenance (Nov), Asset Management (Jan)

Year-2:

Taught Modules: System availability and maintainability (Oct), Maintenance Planning and Control (Nov), Probability and Statistics in risk and Reliability Engineering (Jan) and Dissertation (Feb - August)

Year-3:

Taught Modules: Failure of Materials and Structures (Oct), Diagnostics and Prognostics (Dec), Individual Thesis Project (Feb – Sep)

Part-time students can propose work-related research projects for their Dissertation and Individual thesis Project modules. They will be allowed to pursue the research under these modules at their work places while assessment will only be done at Cranfield campus.

## 7. Course Level Assessment Strategy<sup>4</sup>

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<sup>4</sup> Guidance to aid colleagues writing or updating a course-level assessment strategy for inclusion in the Course Specification can be found as Appendix K in either the Senate Handbook on Setting up a New Taught Course or the Senate Handbook on Managing Taught Courses <https://intranet.cranfield.ac.uk/EducationServices/Pages/SenateHandbooksA-Z.aspx>

MEAM course comprises 8 taught modules, a group project and an individual thesis. The overall course assessment strategy includes the assessment methods defined for each of the mentioned in their respective descriptors. These methods are either summative or formative or both. The selection of these methods for a module depends on its ILO's. The course assessment will start with the delivery of its first module (i.e. Industrial maintenance) by a formative assessment during the brainstorming and the open discussion sessions. The module will end up in a summative assessment with a closed book written examination of 2 hours. The exam questions will evaluate student's understanding about the suitability and the significance of maintenance approaches in industrial scenarios. The student will receive feedback on this summative assessment within 20 working days of the exam date. Modules including Asset Management, Failure of Structures and Materials and Probability and Statistics in Risk and Reliability Engineering will also use summative assessment (i.e. closed book examination) for evaluating student's comprehension about the technical and the financial management of asset availability and the inter-related risks and failures. The rest of the four taught modules (i.e. Condition-Based Maintenance, Diagnostics and Prognostics, Maintenance Planning and Control and System Availability and Maintainability) will use individual assignment based summative assessments. These assignments will focus on real industrial case studies to judge student's ability in the selection of a feasible maintenance approach with all related details such as planning, NDT techniques and asset maintainability optimization. The student will receive feedback on these assignments within 20 working days of the submission date. Similar to the first module, most of the mentioned taught modules will involve open discussion sessions that end up in formative feedback for the students. Five of the above modules will also include 30 hours of lab sessions. In these sessions, students will perform physical testing on assets and/or software-based tasks. Formative feedback will be provided after each of these lab sessions. After the taught module delivery and assessment (that covers the first 5 ILO's), students will then have opportunities to develop their communication skills, as they will be required to give a group presentation. The ability to work effectively in groups is a highly desirable skill, which mainly covers ILOs 6, 7 and 8. Feedback will be available immediately after the group presentation. In the last four months of the academic year, students will undertake an individual research project and that covers ILO's 9 and 10. Students are generally expected to be more self-directed in their learning during this research project and guidance will be provided through the dedicated academic staff. The individual research project will mainly use summative mode of assessment where students have to submit a thesis report and a poster. The feedbacks on both submissions will be available for the students.

## 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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
0	I-MAN-INWK	Induction	Prof Konstantinos Salonitis	21	0	0	Y	28/09/20	28/09/20	02/10/20	n/a	AO					N/A	N/A
1	NEW MODULE I-MNU-A1008	Industrial Maintenance	Dr Muhammad Khan	27	0	10	N	05/10/20	05/10/20	09/10/20	40	ICW	100				02/11/20	Manufacturing resit exams will be during week commencing 17/05/21

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

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

<sup>7</sup> 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  $\geq 50\%$ .

<sup>8</sup> For **independent assessments** please record type and weighting of each separate piece of assessment individually. 10 credit modules should be designed to allow assessment through a single independent summative assessment. Deviations will require approval by the School Director of Education

<sup>9</sup> For **multi-part assessments** please record the overall weighting of module which should be 100%. Multipart assessments should only be included in courses where there is a clear andragogical reason and where each element forms part of a continuous learning and assessment experience for students.

<sup>10</sup> 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.

<sup>11</sup> 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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
2	NEW MODULE I-MNU-A1009	System Availability and Maintainability	Dr Suresh Perinpanayagam	30	0	10	N	19/10/20	19/10/20	23/10/20	40	ICW	100				16/11/20	Re-assessment date to be set by agreement of the Module Leader as/when required.
3	I-MAT-A1015	Failure of Materials and Structures	Dr Muhammad Khan	32	0	10	Y	26/10/20	26/10/20	30/10/20	40	EX-	100				18/12/20	Manufacturing resit exams will be during week commencing 17/05/21
4	NEW MODULE I-MNU-A1010	Condition Based Maintenance	Dr Isidro Durazo Cardenas	32	0	10	N	09/11/20	09/11/20	13/11/20	40	ICW	100				07/12/20	Re-assessment date to be set by agreement of the 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; MULTI – Multi-part Assessment

Module Number	Module code	Title	Module Leader	Contact hours <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
5	NEW MODULE I-MNU-A1011	Maintenance Planning and Control	Dr Leigh Kirkwood	32		10	N	23/11/20	23/11/20	27/11/20	40	ICW	100				04/01/21	Re-assessment date to be set by agreement of the Module Leader as/when required.
6	I-IVH-A1514 (Occ C)	Diagnostics and Prognostics	Dr Muhammad Khan	25		10	Y	30/11/20	30/11/20	04/12/20	40	ICW	100				11/01/21	Re-assessment date to be set by agreement of the Module Leader as/when required.
7	NEW MODULE I-MNU-A1012	Asset Management	Prof Andrew Starr	32		10	N	11/01/21	11/01/21	15/01/21	40	EX	100				22/02/21	Manufacturing resit exams will be during week commencing 17/05/21
8	NEW MODULE	Probability and Statistics in	Dr Gustavo Castelluccio	30		10	N	25/01/21	25/01/21	29/01/21	40	ICW	100				22/02/21	Manufacturing resit

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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
	LE I-MNU-A1013	Risk and Reliability Engineering															exams will be during week commencing 17/05/21	
9a	I-MAT-GRPP	Group Project for Full-Time Students	Dr David Ayre  Dr Supriyo Ganguly	20		40	Y	01/02/2021	01/02/21 Occ A FT	27/04/21 FT	50	GCW  ICW	80  20		GPRES GPROJ ICW Observed behaviour	20 80 50 50	27/04/21 04/05/21 04/05/21 04/05/21	
								01/02/21	01/02/21 Occ B PT	27/08/21 PT	50	GCW  ICW	80  20		GPRES GPROJ ICW Observed behaviour	20 80 50 50	27/08/21 01/09/21 01/09/21 01/09/21	
9b	I-MAT-DISS	Dissertation for Part-time Students	Dr David Ayre/ Dr Sue Impey	20		40	Y	08/02/21	08/02/21	31/08/21	50	ICW	100				27/08/21	
10	I-MNU-	Individual Research Project	Dr Muhammad Khan	20		80	Y	08/02/21	cc A = PT 08/02/21	PT 27/08/21	50	THESIS OR	90 10				27/08/21 01/09/21	

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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
	THESIS							30/04/21	Occ B = FT 30/04/21	FT 27/08/21	50	THESIS OR	90 10				27/08/21 01/09/21	

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>
I-MAN-INWK	Induction	Engineering and Management of Manufacturing Systems	Engineering and Management of Manufacturing Systems, Management and Information Systems, Global Product Development and Management, Cyber-Secure Manufacturing, Aerospace Manufacturing
I-MAT-A1015	Failure of Materials and Structures	Advanced Materials	Aerospace Materials, Aerospace Manufacturing
I-IVH-A1514	Diagnostics and Prognostics	Through life System Sustainment	
I-MAT-GRPP	Group Project for Full-Time Students	Advanced Materials	Aerospace Materials, Manufacturing Technology and Management, Aerospace Manufacturing, Engineering and Management of Manufacturing Systems, Global Product Development and Management, Management and Information Systems, Cyber-Secure Manufacturing, Welding Engineering, Metal Additive Manufacturing
I-MAT-DISS	Dissertation	Advanced Materials	Aerospace Materials, Manufacturing Technology and Management, Aerospace Manufacturing, Engineering and Management of Manufacturing Systems, Global Product Development and Management, 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, Management and Information Systems, Advanced Materials, Aerospace Materials, Manufacturing Technology and Management, Welding Engineering, Metal Additive Manufacturing

## 8. How are the ILOs assessed?

The following assessment types are utilised:

Students can expect to have either examinations or assessment by submitted work and elements of assessment by presentation or viva. |

This approach has been adopted because:

[It allows the students demonstrate their understanding through a wide range of learning techniques, but are not disadvantaged through any one approach]

### Assessment and ILO Mapping

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

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

#### A. Postgraduate Certificate

Award ILOs Module No.	ILO 1	ILO 2	ILO 3	ILO4	ILO 5
1		ICW		ICW	ICW
2	ICW		ICW	ICW	
3	EX				EX
4	ICW	ICW			ICW
5			ICW	ICW	ICW
6	ICW	ICW			ICW
7			EX	EX	EX
8			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 6	ILO 7	ILO 8
9a	GPRES GRPROJ ICW Observed Behaviour	GPRES GRPROJ ICW Observed Behaviour	GPRES GRPROJ ICW Observed Behaviour
9b	ICW	ICW	ICW

#### C. MSc

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

<b>Award ILOs</b>	ILO 9	ILO 10
<b>Module No.</b>		
10	Thesis OR	Thesis OR

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

Title	Modules Covered	Assessment	
		Type	Weight (%)
None	None	N/A	N/A

**9. 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 provides authoritative guidance on policy and procedure to the Panel. Proposals are reviewed in line with the UK Quality Code for Higher Education. 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 guiding principles to meet the Expectations and Core Practices of the UK Quality Code for Higher Education. 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 UK Quality Code for Higher Education. The delivery of new partnership provision is ultimately approved by the Universities 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.

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

[This qualification takes you on to a wide range of careers involving maintenance engineering and asset management, with responsibilities in industries including Oil and Gas, Aerospace, Defense, Power generation and distribution, Nuclear, Automotive, Chemical and Process, Manufacturing Textile, Civil Infrastructure, Logistics and Health. The unique feature of this course is its applied and practical nature, aimed at the availability of strategic assets. This course will qualify you to transform the current industry culture of OEM's based maintenance routines to strategy based maintenance.]

**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.

**Date of first publication/latest revision:** May 2020

**1. What is the course?**

**Course information**

<b>Course Title</b>	MSc in Management
<b>Course code</b>	MSMGTFCT, PDMGTFCT, PCMGTFCT
<b>Academic Year</b>	2020 - 2021
<b>Valid entry routes</b>	MSc
<b>Additional exit routes</b>	PgDip, PgCert
<b>Mode of delivery</b>	Full-time
<b>Location(s)<sup>1</sup> of Study</b>	Cranfield Campus
<b>School(s)</b>	School of Management
<b>Theme</b>	Leadership and Management
<b>Centre</b>	Centre for Management
<b>Course Director</b>	Professor Michael Dickmann
<b>Awarding Body</b>	Cranfield University
<b>Is this an AP Contract course?<sup>2</sup></b>	No
<b>Is this course offered as a Cranfield Mastership?</b>	No
<b>Apprenticeship Standard the course is mapped to</b>	N/A
<b>Is the Degree apprenticeship integrated or non-integrated?</b>	N/A
<b>Is the Mastership offered as an open and/or closed course?</b>	N/A
<b>Teaching Institution</b>	Cranfield University
<b>Admissions body</b>	Cranfield University
<b>Entry requirements</b>	Standard University entry requirements

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

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

<b>UK Qualifications Framework Level</b>	QAA FHEQ level 7 (Masters)
<b>Benchmark Statement(s)</b>	N/A
<b>Registration Period(s) available</b>	Full-time MSc
<b>Course Start Month(s)</b>	September

### **Institutions delivering the course**

This course is delivered by the School of Management (SOM), Leadership and Management Theme, Centre for Management across its four Communities where the research interests include:

a wide range of Management areas. The modules are either existing or combinations of modules already taught on existing MSc courses offered by SOM. Teaching is provided by SOM Faculty and selected lectures and case studies provided by Visiting Fellows/Professors. Company based thesis projects and internships will involve external organisations. However, Cranfield University School of Management remains fully responsible for the quality of delivery of the course and the assessment of the course. It also provides a core set of management modules which can be offered to the University and the opportunity to jointly develop MSc in Management plus programmes with other Schools.

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

- 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 Diploma**

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 8. 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
<b>COMPULSORY MODULES:</b>	
6 modules from modules 1-9	60
<b>ELECTIVE MODULES:</b>	
N/A	N/A
<b>TOTAL:</b>	60

## B. Postgraduate Diploma

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

Description	Credits
<b>COMPULSORY MODULES:</b>	
Modules 1-9	90
<b>ELECTIVE MODULES:</b>	
3 modules from modules 10-14	30
<b>TOTAL:</b>	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
<b>COMPULSORY MODULES:</b>	
Modules 1-9 & 15	100
Masters of Management Thesis (Internship) 16 or Masters of Management Thesis (Non-internship) 17	90
<b>ELECTIVE MODULES:</b>	
3 modules from modules 10-14	30
<b>TOTAL:</b>	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);<sup>3</sup>
- **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);

<sup>3</sup> 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 ≥50% (where they exist);
- **For the thesis**, a mark of ≥50% in order to receive a pass (where it exists).

## 6. How is the course structured?

The 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.

## 7. Course Level Assessment Strategy<sup>4</sup>

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 assessment strategy of this course is challenging and diverse and enables students to demonstrate a full range of skills and attributes. Summative assessment will include a range of assessment types including the preparation of individual and group reports and written exams. 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.

Written coursework will be of varying lengths, recognising that writing coursework to a short length can be more challenging for some and can develop different skills relevant to professional practice. The length of each assessment task is usually stated within the module descriptor. Students then have opportunities to develop their communication and group working skills, as they are required to give group presentations. Feedback for all assessments is given in a timely fashion, dependent on the type of assessment, but we strive to be always within 20 working days.

Formative feedback will be provided through in-class discussion on the conceptual material introduced during the module. For instance, modules - such as core modules in the areas of marketing, strategy, corporate sustainability, management consulting or operations management, or electives such as supply

<sup>4</sup> Guidance to aid colleagues writing or updating a course-level assessment strategy for inclusion in the Course Specification can be found as Appendix K in either the Senate Handbook on Setting up a New Taught Course or the Senate Handbook on Managing Taught Courses <https://intranet.cranfield.ac.uk/EducationServices/Pages/SenateHandbooksA-Z.aspx>

chain management or cross-cultural management - are supported by a number of formative tasks including group discussions, group exercises, case studies and oral presentations.

The taught components precede the research project, so assessment can be used to develop skills required for the individual research project. Students are generally expected to be more self-directed in their learning during the research project and guidance will be provided through the *Evidence-Based Management* module and meetings with their thesis supervisor.

## Course modules – all Occ A unless specified

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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
1	M-T/ MMT	Strategic Marketing	Dr Ahmed Shaalan	20		10	Y	29/01/21	26/01/21	11/02/21	40	ICW	100				26/03/2021	
2	M-T/ OBA	Applied Organisational Behaviour	Dr Deirdre Anderson	20		10	Y	11/01/21	11/01/21	18/02/21	40	ICW	100				19/03/2021	
3	M-L/ ACF Occ C	Accounting and Finance	Dr Matthias Nnadi	20		10	Y	02/11/20	02/11/20	07/12/20	40	EX	100				W/C 14/12/2020	

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

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

<sup>7</sup> 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  $\geq 50\%$ .

<sup>8</sup> For **independent assessments** please record type and weighting of each separate piece of assessment individually. 10 credit modules should be designed to allow assessment through a single independent summative assessment. Deviations will require approval by the School Director of Education

<sup>9</sup> For **multi-part assessments** please record the overall weighting of module which should be 100%. Multipart assessments should only be included in courses where there is a clear androgogical reason and where each element forms part of a continuous learning and assessment experience for students.

<sup>10</sup> 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.

<sup>11</sup> 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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>8</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
4	M-T/ PML	People Management and Leadership	Prof Michael Dickmann	20		10	Y	26/10/20	26/10/20	20/11/20	40			100 MULTI	GCW ICW	70 30	19/02/2021	
5	M-T/ ECM	Economics for Managers	Dr Catarina Figueira	20		10	Y	16/11/20	16/11/20	04/12/20	40	GCW	100				29/01/2021	
6	M-T/ MNO	Managing Operations	Dr Abdelkader Aoufi	20		10	Y	12/01/21	12/01/21	29/01/21	40	GCW	100				12/03/2021	
7	M-T/ STG	Strategic Management	Dr Mikko Arevuo	20		10	Y	03/11/20	03/11/20	17/11/20	40	EX	100				W/C 14/12/2020	
8	M-T/ MAC	Management Consulting	Dr Monica Franco-Santos	20		10	Y	04/04/21	04/04/21	28/05/21	40			100 MULTI	GPRES ICW	50 50	18/06/2021	
9	M-T/ LCS	Leading Corporate Sustainability	Dr Namita Shete	20	5	10	Y	01/02/21	01/02/21	02/03/20 21	40	ICW	100				26/04/2021	
10	M-T/ ORP	Organisational Performance: Direction Control and Measurement	Prof Mike Bourne	20		10	N	23/10/20	23/10/20	04/12/20	40	ICW	100				15/01/2021	
11	M-T/ SCM	Supply Chain Management	Dr Leila Alinaghian	20		10	N	19/04/21	19/04/21	10/05/21	40			100 MULTI	ICW GCW	50 50	04/06/2021	

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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>8</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
12	M-T/ENT	Entrepreneurship	Dr Oksana Koryak	20		10	N	22/02/21	22/02/21	19/03/21	40	GCW	100				07/05/2021	
13	M-T/MPM	Mastering Project Management	Dr Elmar Kutsch	20		10	N	30/11/20	30/11/20	10/12/20	40			100 MULTI	GPRAC GCW	70 30	10/12/2020	
14	M-T/ECC	Effective Cross-Cultural Management	Prof Michael Dickmann	20		10	N	12/04/2021	12/04/2021	24/04/2021	40			100 MULTI	GCW ICW	70 30	17/05/2021	
15	M-T/EBM	Evidence-Based Management	Dr Valentina Battista	20		10	Y	27/04/21	27/04/21	26/05/21	40	GCW	100				25/06/2021	
16	M-T/THS	Masters of Management Thesis (Internship)	Dr Leila Alinaghian	10		90	N	27/04/21	27/04/21	22/10/21	50 50	ICW THESIS	30 70				22/10/2021 22/10/2021	
17	M-T/THSNI	Masters of Management (Non-Internship)	Dr Leila Alinaghian	10		90	N	27/04/21	27/04/21	22/10/21	50	THESIS	100				22/10/2021	

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>
M-L/ACF	Accounting and Finance	Logistics and Supply Chain Management	Procurement and Supply Chain Management; Business and Strategic Leadership; Management and Corporate Sustainability; Management and Entrepreneurship
M-T/MMT	Strategic Marketing	Management	Management and Corporate Sustainability, Management and Entrepreneurship
M-T/OBA	Organisational Behaviour: Application	Management	Management and Corporate Sustainability, Management and Entrepreneurship
M-T/ECM	Economics for Managers	Management	Management and Corporate Sustainability; Management and Leadership
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
M-T/MAC	Management Consulting	Management	Management and Leadership
M-T-LCS	Leading Corporate Sustainability	Management	Management and Corporate Sustainability; Business and Strategic Leadership; Management and Leadership; Future Food Sustainability; Food Systems and Management; Environmental Management for Business
M-T/EBM M-T/EBMA	Evidence-based Management	Management	Management and Corporate Sustainability, Management and Entrepreneurship; Management and Leadership; Exec Logistics and Supply Chain
M-T/PML	People Management and Leadership	Management	Management and Leadership, Marketing and Leadership

## 8. 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.

This approach has been adopted because:

it is impossible to preclude the risk of companies curtailing an internship or that some students are not able to gain an internship.

### Assessment and ILO Mapping

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

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

Award ILOs Module No.	Postgraduate Certificate						Postgraduate Diploma					MSc							
	ILO1	ILO2	ILO3	ILO4	ILO5	ILO6	ILO7	ILO8	ILO9	ILO10	ILO11	ILO12	ILO13	ILO14	ILO15	ILO16	ILO17	ILO18	ILO19
1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
3	✓	✓	✓	✓	✓		✓	✓	✓	✓									
4	✓	✓	✓	✓	✓		✓	✓	✓	✓									
5	✓	✓	✓	✓	✓		✓	✓	✓	✓									
6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
7	✓	✓	✓	✓	✓		✓	✓	✓	✓									
8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
9	✓	✓		✓	✓	✓	✓	✓	✓	✓									
10							✓	✓	✓	✓									
11							✓	✓	✓	✓									
12							✓	✓	✓	✓									
13							✓	✓	✓	✓									
14							✓	✓	✓	✓									
15												✓	✓	✓	✓				
16				ICW	ICW	ICW		ICW		ICW		THESIS	THESIS	THESIS	THESIS ICW	THESIS	THESIS ICW	THESIS	
17				ICW	ICW	ICW		ICW		ICW		THESIS	THESIS	THESIS	THESIS ICW	THESIS	THESIS ICW	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

### 9. 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 provides authoritative guidance on policy and procedure to the Panel. Proposals are reviewed in line with the UK Quality Code for Higher Education. 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 guiding principles to meet the Expectations and Core Practices of the UK Quality Code for Higher Education. 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 UK Quality Code for Higher Education. The delivery of new partnership provision is ultimately approved by the Universities 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.

## **10. 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.

**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.

**Date of first publication/latest revision:** September 2020

**1. What is the course?**

**Course information**

<b>Course Title</b>	Management and Corporate Sustainability
<b>Course code</b>	MSMPSFTC, PDMPSTC, PCMPSFTC
<b>Academic Year</b>	2020 - 2021
<b>Valid entry routes</b>	MSc
<b>Additional exit routes</b>	PgDip, PgCert
<b>Mode of delivery</b>	Full-time
<b>Location(s)<sup>1</sup> of Study</b>	Cranfield
<b>School(s)</b>	School of Management
<b>Theme</b>	Leadership and Management
<b>Centre</b>	Policy, Sustainability and Performance
<b>Course Director</b>	Dr Richard Adams
<b>Awarding Body</b>	Cranfield University
<b>Is this an AP Contract course?<sup>2</sup></b>	No
<b>Is this course offered as a Cranfield Mastership?</b>	No
<b>Apprenticeship Standard the course is mapped to</b>	N/A
<b>Is the Degree apprenticeship integrated or non-integrated?</b>	N/A
<b>Is the Mastership offered as an open and/or closed course?</b>	N/A
<b>Teaching Institution</b>	Cranfield University
<b>Admissions body</b>	Cranfield University

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

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

<b>Entry requirements</b>	Standard University entry requirements
<b>UK Qualifications Framework Level</b>	QAA FHEQ – Level 7 (Masters)
<b>Benchmark Statement(s)</b>	N/A
<b>Registration Period(s) available</b>	1 year
<b>Course Start Month(s)</b>	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.
- ILO 2. Use new management skills to support decision making in the development of corporate sustainability strategy.
- 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 lecturers, in-class case discussions, group and self-study. Group project work, reflective practice and class exercises are used to develop problem solving skills. Additional practical expertise will be provided by visiting fellows and guest speakers.

Each assessed module comprises 20 hours of class contact time with a further 80 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

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 8. 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
<b>COMPULSORY MODULES:</b>	
Six modules from 1-12 which must include 2 of the following: <ul style="list-style-type: none"><li>• Leading Corporate Sustainability (8)</li><li>• Creating Sustainable Organisations (9)* and Sustainability in Practice (10)*</li><li>• Applied Science and Technology for Environmental Sustainability (11)</li></ul> <p>* Modules 9 and 10 share an integrated assessment and therefore both must be taken together to be considered towards the Award.</p>	60
<b>ELECTIVE MODULES:</b>	
N/A	N/A

<b>TOTAL:</b>	<b>60</b>
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## B. Postgraduate Diploma

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

Description	Credits
<b>COMPULSORY MODULES:</b>	
Modules 1-12	120
<b>ELECTIVE MODULES:</b>	
N/A	N/A
<b>TOTAL:</b>	<b>120</b>

## 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
<b>COMPULSORY MODULES:</b>	
Modules 1-12	120
Thesis 13	80
<b>ELECTIVE MODULES:</b>	
N/A	N/A
<b>TOTAL:</b>	<b>200</b>

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);<sup>3</sup>
- **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

<sup>3</sup> 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%).

- 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  $\geq 40$  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 our assessments.

The majority of the course modules will be taught as a series of lectures within 1 or 2 week blocks within in 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.

## 7. Course Level Assessment Strategy<sup>4</sup>

The aim is to provide a varied, stimulating and experiential learning environment. All taught modules consist of formal lecturers, in-class case discussions, group and self-study. Group project work, reflective practice and class exercises are used to develop problem solving skills.

The assessment strategy of this course is challenging and diverse and enables students to demonstrate a full range of skills and attributes. Summative assessment will include a range of assessment types including the preparation of individual and group reports and written exams. 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.

Written coursework will be of varying lengths, recognising that writing coursework to a short length can be more challenging for some and can develop different skills relevant to professional practice. The length of each assessment task is usually stated within the module descriptor. Students then have opportunities to develop their communication and group working skills, as they are required to give group presentations. Feedback for all assessments is given in a timely fashion, dependent on the type of assessment, but we strive to be always within 20 working days.

Formative feedback will be provided through in-class discussion on the conceptual material introduced during the module.

The taught components precede the research project, so assessment can be used to develop skills required for the individual research project. Students are generally expected to be more self-directed in

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<sup>4</sup> Guidance to aid colleagues writing or updating a course-level assessment strategy for inclusion in the Course Specification can be found as Appendix K in either the Senate Handbook on Setting up a New Taught Course or the Senate Handbook on Managing Taught Courses <https://intranet.cranfield.ac.uk/EducationServices/Pages/SenateHandbooksA-Z.aspx>

their learning during the research project and guidance will be provided through the Evidence-Based Management module and meetings with their thesis supervisor.

## Course modules – all Occ A unless specified

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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
1	M-T/MMT	Strategic Marketing	Dr Ahmed Shaalan	20		10	Y	29/01/21	29/01/21	11/02/21	40	ICW	100				26/03/2021	
2	M-T/OBA	Organisational Behaviour: Application	Dr Deirdre Anderson	20		10	Y	11/01/21	11/01/21	18/02/21	40	ICW	100				19/03/2021	
3	M-L/ACF Occ C	Accounting and Finance	Dr Matthias Nnadi	20		10	Y	02/11/20	02/11/20	07/12/20	40	EX	100				W/C 14/12/20	
4	M-E/SEM	Social Entrepreneurship	Dr Richard Adams	20		10	Y	12/04/21	12/04/21	11/05/21	40			MULTI 100	GPRES RP	50 50	04/06/2021	

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

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

<sup>7</sup> 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  $\geq 50\%$ .

<sup>8</sup> For **independent assessments** please record type and weighting of each separate piece of assessment individually. 10 credit modules should be designed to allow assessment through a single independent summative assessment. Deviations will require approval by the School Director of Education

<sup>9</sup> For **multi-part assessments** please record the overall weighting of module which should be 100%. Multipart assessments should only be included in courses where there is a clear androgogical reason and where each element forms part of a continuous learning and assessment experience for students.

<sup>10</sup> 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.

<sup>11</sup> 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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
5	M-T/ECM	Economics for Managers	Prof Catarina Figueira	20		10	Y	16/11/20	16/11/20	04/12/20	40	GCW	100				29/01/2021	
6	M-T/MNO	Managing Operations	Dr Abdelkader Aoufi	20		10	Y	12/01/21	12/01/21	29/01/21	40	GCW	100				12/03/2021	
7	M-T/STG	Strategic Management	Dr Mikko Arevuo	20		10	Y	03/11/20	03/11/20	17/11/20	40	EX	100				W/C 14/12/2020	
8	M-T/LCS Occ B	Leading Corporate Sustainability	Dr Namita Shete	20	5	10	Y	09/11/21	09/11/20	20/11/20	40	ICW	100				15/01/2021	
9	M-C/CSO	Creating Sustainable Organisations	Prof David Grayson	20		10	N	26/01/21	26/01/21	19/03/21	40			Integrated Assessment	GPRES ICW	70 30	16/04/2021	
10	M-C/SIP	Sustainability in Practice	Prof David Grayson	20		10	N	26/01/21	26/01/21	19/03/21				MULTI 100				
11	M-C/AST	Applied Science and Technology for Environmental Sustainability	Prof Phil Longhurst	20		10	N	23/11/20	23/11/20	03/12/20	50	ICW	100				12/02/2021	
12	M-T/EBM	Evidence-based Management	Dr Valentina Battista	20		10	Y	27/04/21	27/04/21	26/05/21	40	GCW	100				25/06/2021	
13	M-C/THS	Thesis	Dr Richard Adams	10		80	N	03/05/21	03/05/21	10/09/21	50	THESIS	100				10/09/21	

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>
M-L/ACF	Accounting and Finance	Logistics and Supply Chain Management	Procurement and Supply Chain Management; Business and Strategic Leadership; Management and Corporate Sustainability; Management and Entrepreneurship
M-T/MMT	Strategic Marketing	Management	Management and Corporate Sustainability; Management and Entrepreneurship
M-T/OBA	Organisational Behaviour: Application	Management	Management and Corporate Sustainability; Management and Entrepreneurship
M-E/SEM	Social Entrepreneurship	Management and Entrepreneurship	Management and Corporate Sustainability
M-T/ECM	Economics for Managers	Management	Management and Corporate Sustainability
M-T/MNO	Strategic Operations Leadership	Management	Management and Corporate Sustainability; Management and Entrepreneurship
M-T/STG	Strategic Management	Management	Management and Corporate Sustainability, Management and Entrepreneurship
M-T-LCS	Leading Corporate Sustainability	Management	Management and Corporate Sustainability; Business and Strategic Leadership; Management and Leadership; Future Food Sustainability; Food Systems and Management; Environmental Management for Business
M-T/EBM M-T/EBMA	Evidence based Management	Management	Management and Corporate Sustainability; Management and Entrepreneurship

## 8. 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.

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

Award ILOs	ILO 1	ILO2	ILO3	ILO4	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
	Postgraduate Certificate					Postgraduate Diploma					MSc							
1	√				√	√				√								
2	√				√	√				√								
3	√				√	√				√								
4						√	√	√	√	√	√							
5	√				√	√				√								
6	√				√	√				√								
7	√				√	√				√								
8	√		√		√	√	√		√	√								
9	√		√		√	√	√		√	√								
10	√	√	√	√	√	√	√	√	√	√								
11	√	√	√		√	√	√		√	√								
12														√	√	√		√
13		√	√	√			√	√	√	√	√	√	√	√	√	√	√	√

**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"> <li>Module 9 - Creating Sustainable Organisations</li> <li>Module 10 - Sustainability in Practice</li> </ul>	GPRES	70%
<ul style="list-style-type: none"> <li>Group Presentation</li> <li>Individual Reflection</li> </ul>		Individual Reflection	30%

**9. 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 provides authoritative guidance on policy and procedure to the Panel. Proposals are reviewed in line with the UK Quality Code for Higher Education. 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 guiding principles to meet the Expectations and Core Practices of the UK Quality Code for Higher Education. 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 UK Quality Code for Higher Education. The delivery of new partnership provision is ultimately approved by the Universities 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.

## **10. 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.

**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.

**Date of first publication/latest revision:** May 2020

### 1. What is the course?

#### Course information

<b>Course Title</b>	MSc in Management and Entrepreneurship
<b>Course code</b>	MSMERFTC, PDMERFTC, PCMERFTC, MSMEOPTC, MSMEOFTC
<b>Academic Year</b>	2020 - 2021
<b>Valid entry routes</b>	MSc
<b>Additional exit routes</b>	PgDip, PgCert
<b>Mode of delivery</b>	Full-time, Part-time
<b>Location(s)<sup>1</sup> of Study</b>	Cranfield Campus and Muscat University, Oman
<b>School(s)</b>	School of Management
<b>Theme</b>	Leadership and Management
<b>Centre</b>	Bettany Centre for Entrepreneurship
<b>Course Director</b>	Dr Oksana Koryak
<b>Awarding Body</b>	Cranfield University
<b>Is this an AP Contract course?<sup>2</sup></b>	No
<b>Is this course offered as a Cranfield Mastership?</b>	No
<b>Apprenticeship Standard the course is mapped to</b>	N/A
<b>Is the Degree apprenticeship integrated or non-integrated?</b>	N/A
<b>Is the Mastership offered as an open and/or closed course?</b>	N/A
<b>Teaching Institution</b>	Cranfield University
<b>Admissions body</b>	Cranfield University

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

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

<b>Entry requirements</b>	Standard University entry requirements
<b>UK Qualifications Framework Level</b>	QAA FHEQ level 7 (Masters)
<b>Benchmark Statement(s)</b>	N/A
<b>Registration Period(s) available</b>	Full-time MSc – one year, Part-time MSc – up to three years
<b>Course Start Month(s)</b>	September

**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 Bettany Centre for Entrepreneurship faculty and those PhD students who have a Recognised Teacher Status. The students will have an option either to do 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 timescales, 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 20 hours of class contact time with a further 80 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 8. 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
<b>COMPULSORY MODULES:</b>	
Modules 1–12	120
Module 13	0
Thesis 14 (Thesis)	80
<b>ELECTIVE MODULES:</b>	
N/A	N/A
<b>TOTAL:</b>	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
Modules 1- 12	120
Module 13	0
Module 14 (Thesis)	80
<b>ELECTIVE MODULES:</b>	
N/A	N/A

<b>TOTAL:</b>	200
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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);<sup>3</sup>
- **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  $\geq 40$  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.

Each assessed module is based on 100 notional learning hours, comprising 20 class contact hours with a further 80 hours of private study to consolidate learning and to carry our assessments.

## 7. Course Level Assessment Strategy<sup>4</sup>

<sup>3</sup> 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%).

<sup>4</sup> Guidance to aid colleagues writing or updating a course-level assessment strategy for inclusion in the Course Specification can be found as Appendix K in either the Senate Handbook on Setting up a New Taught Course or the Senate Handbook on Managing Taught Courses <https://intranet.cranfield.ac.uk/EducationServices/Pages/SenateHandbooksA-Z.aspx>

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 assessment strategy of this course is challenging and diverse and enables students to demonstrate a full range of skills and attributes. Summative assessment will include a range of assessment types including the preparation of individual and group reports and written exams. 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.

Written coursework will be of varying lengths, recognising that writing coursework to a short length can be more challenging for some and can develop different skills relevant to professional practice. The length of each assessment task is usually stated within the module descriptor. Students then have opportunities to develop their communication and group working skills, as they are required to give group presentations. Feedback for all assessments is given in a timely fashion, dependent on the type of assessment, but we strive to be always within 20 working days.

Formative feedback will be provided through in-class discussion on the conceptual material introduced during the module.

The taught components precede the research project, so assessment can be used to develop skills required for the individual research project. Students are generally expected to be more self-directed in their learning during the research project and guidance will be provided through the Evidence-Based Management module and meetings with their thesis supervisor.

## Course modules – all Occ A unless specified

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.

### Management and Entrepreneurship (Cranfield)

Module Number	Module code	Title	Module Leader	Contact hours <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
1	M-T/MMT	Strategic Marketing	Dr Ahmed Shaalan	20		10	Y	29/01/21	29/01/21	11/02/21	40	ICW	100				26/03/2021	
2	M-T/OBA	Organisational Behaviour: Application	Dr Deirdre Anderson	20		10	Y	11/01/21	11/01/21	18/02/21	40	ICW	100				19/03/2021	
3	M-L/ACF	Accounting and Finance	Dr Matthias Nnadi	20		10	Y	02/11/20	02/11/20	07/12/20	40	EX	100				W/C 14/12/20	

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

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

<sup>7</sup> 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%.

<sup>8</sup> For **independent assessments** please record type and weighting of each separate piece of assessment individually. 10 credit modules should be designed to allow assessment through a single independent summative assessment. Deviations will require approval by the School Director of Education

<sup>9</sup> For **multi-part assessments** please record the overall weighting of module which should be 100%. Multipart assessments should only be included in courses where there is a clear androgogical reason and where each element forms part of a continuous learning and assessment experience for students.

<sup>10</sup> 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.

<sup>11</sup> 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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment								
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date	
	Occ C																		
4	M-E/ENT	Entrepreneurship	Dr Oksana Koryak	20		10	N	19/10/2020	19/10/20	11/11/20	40	GCW	100					15/01/2021	
5	M-E/ENF	Entrepreneurial Finance	Dr Stephanie Hussels	20		10	Y	22/02/21	22/02/21	04/03/21	40	GCW	100					30/04/2021	
6	M-E/MBG	Managing Business Growth	Dr Oksana Koryak	20		10	Y	11/02/21	11/02/21	02/03/21	40	ICW	100					16/04/2021	
7	M-T/MNO	Managing Operations	Dr Abdelkader Aoufi	20		10	Y	12/01/21	12/01/21	29/01/21	40	GCW	100					12/03/2021	
8	M-T/STG	Strategic Management	Dr Mikko Arevuo	20		10	Y	03/11/20	03/11/20	17/11/20	40	EX	100					W/C 14/12/2020	
9	M-E/DIN	Disruptive Innovation	Prof Leon Williams	20		10	Y	24/11/20	24/11/20	08/12/20	40			100 MULTI	GCW ICW	40 60		12/02/2021	
10	M-E/CEN	Corporate Entrepreneurship	Dr Oksana Koryak	20		10	N	26/01/21	26/01/21	10/02/21	40	ICW	100					05/03/2021	
11	M-E/FBM	Family Business Management	Dr Stephanie Hussels	20		10	N	13/04/21	13/04/21	29/04/21	40	GCW	100					21/05/2021	
12	M-E/SEM	Social Entrepreneurship	Dr Richard Adams	20		10	N	12/04/21	12/04/21	11/05/21	40			100 MULTI	GPRES RP	50 50		04/06/2021	

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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>8</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
13	M-T/EBMA	Evidence-based Management	Dr Valentina Battista	20		0	Y	27/04/21	27/04/21	26/05/21	N/A	AO	N/A				N/A	
14	M-E/THS	Thesis	Dr Oksana Koryak	10		80	N	03/05/21	03/05/21	10/09/21	50	THESIS	100				10/09/21	

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

## Management and Entrepreneurship (Muscat)

Module Number	Module code	Title	Module Leader	Contact hours <sup>12</sup>	Total hours delivered by Visiting Lecturers <sup>13</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>14</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>15</sup> (%) of Independent assessments	Weighting within module of multi-part assessments	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>17</sup>	Assessment Submission and/or exam date <sup>18</sup>	Assessment / Exam Retake date
1	M-T/MMT Occ B	Strategic Marketing	Dr Ahmed Ghoneim (delivered locally)	20		10	Y	FT/PT 17/01/21	FT/PT 17/01/21	FT/PT 21/01/21	40	ICW	100				15/02/21	
2	M-T/OBA Occ B	Organisational Behaviour: Application	Dr Deirdre Anderson	20		10	Y	FT/PT 25/10/20	FT/PT 25/10/20	FT/PT 29/10/20	40	ICW	100				30/11/20	
3	M-L/ACF Occ B	Accounting and Finance	Dr Simon Templar (delivered locally)	20		10	Y	FT/PT 24/01/21	FT/PT 24/01/21	FT/PT 28/01/21	40	EX	100				Exam week 2 TBC	
4	M-E/ENT Occ B	Entrepreneurship	Dr Oksana Koryak	20		10	Y	FT/PT 11/10/20	FT/PT 11/10/20	FT/PT 15/10/20	40	ICW	100				09/11/20	

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

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

<sup>14</sup> 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  $\geq 50\%$ .

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

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

<sup>17</sup> 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.

<sup>18</sup> 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 <sup>12</sup>	Total hours delivered by Visiting Lecturers <sup>13</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>14</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>15</sup> (%) of independent assessments	Weighting within module of multi-part assessments	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>17</sup>	Assessment Submission and/or exam date <sup>18</sup>	Assessment / Exam Retake date
5	M-E/ENF Occ B	Entrepreneurial Finance	Dr Stephanie Hussels	20		10	Y	FT/PT 14/02/21	FT/PT 14/02/21	FT/PT 18/02/21	40	GCW	100				05/04/21	
6	M-E/MBG Occ B	Managing Business Growth	Dr Sergey Portyanko	20		10	Y	FT/PT 06/12/20	FT/PT 06/12/20	FT/PT 10/12/20	40	ICW	100				25/01/21	
7	M-T/MNO Occ B	Managing Operations	Dr Abdelkader Aoufi	20		10	Y	FT 29/11/20	FT 29/11/20	FT 03/12/20	40	GCW	100				11/01/2021	
8	M-T/STG Occ B	Strategic Management	Dr Ahmed Ghoneim (delivered locally)	20		10	Y	FT/PT 07/03/21	FT/PT 07/03/21	FT/PT 11/03/21	40	EX	100				W/C 08/06/21	
9	M-E/DIN Occ B	Disruptive Innovation	Dr Leon Williams	20		10	Y	FT/PT 07/02/21	FT/PT 07/02/21	FT/PT 11/02/21	40			100 MULTI	GCW ICW	40 60	15/03/21	
10	M-E/CEN Occ B	Corporate Entrepreneurship	Dr Oksana Koryak	20		10	N	FT/PT 08/11/20	FT/PT 08/11/20	FT/PT 12/11/20	40	ICW	100				15/02/21	
11	M-E/FBM Occ B	Family Business Management	Dr Stephanie Hussels	20		10	N	FT/PT 13/03/21	FT/PT 13/03/21	FT/PT 18/03/21	40	GCW	100				19/04/21	
12	M-E/SEM Occ B	Social Entrepreneurship	Dr Richard Adams	20		10	N	FT 18/04/21	FT 18/04/21	FT 22/04/21	40			100 MULTI	GPRES RP	50 50	24/05/21	

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 <sup>12</sup>	Total hours delivered by Visiting Lecturers <sup>13</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>14</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>15</sup> (%) of independent assessments	Weighting within module of multi-part assessments	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>17</sup>	Assessment Submission and/or exam date <sup>18</sup>	Assessment / Exam Retake date
13	M-T/EBMA Occ B	Evidence-based Management	Dr Nicholas Hubbard (Delivered locally)	20		0	Y	FT 04/04/21	FT 04/04/21	FT 08/04/21	N/A	AO	N/A				N/A	
14	M-E/THS Occ B	Thesis (Business Plan)	Dr Oksana Koryak	10		80	N	FT 01/04/21	FT 01/04/21	FT 10/09/21	50	THESIS	100				10/09/21	

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>
M-L/ACF	Accounting and Finance	Logistics and Supply Chain Management	Procurement and Supply Chain Management; Management; Management and Corporate Sustainability; Management and Entrepreneurship; Exec Logistics and Supply Chain
M-T/MMT	Strategic Marketing	Management	Management and Corporate Sustainability, Management and Entrepreneurship
M-T/OBA	Organisational Behaviour: Application	Management	Management and Corporate Sustainability, Management and Entrepreneurship
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
M-E/DIN	Disruptive Innovation	Management and Entrepreneurship	Management and Leadership
M-T/EBMA M-T/EBM	Evidence-based Management	Management	Management and Corporate Sustainability, Management and Entrepreneurship; Management and Leadership; Exec Logistics and Supply Chain

## 8. 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.

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

#### A. Postgraduate Certificate

<b>Award ILOs</b> <b>Module No.</b>	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	√	√	√	√	√	√	√	√							

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.
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						√	√	√	√	√	√				

## 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.
13	NOT ASSESSED														
14	√				√	√	√	√	√		√	√	√	√	√

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

Title	Modules Covered	Assessment	
		Type	Weight (%)

## 9. 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 provides authoritative guidance on policy and procedure to the Panel. Proposals are reviewed in line with the UK Quality Code for Higher Education. 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 guiding principles to meet the Expectations and Core Practices of the UK Quality Code for Higher Education. 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 UK Quality Code for Higher Education. The delivery of new partnership provision is ultimately approved by the Universities 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.

## **10. 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.

**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.

**Date of first publication/latest revision:** August 2020

**1. What is the course?**

**Course information**

<b>Course Title</b>	MSc in Management and Information Systems
<b>Course code</b>	MSMGIFTC, MSMGIPTC, PDMGIFTC, PDMGIPTC, PCMGIFTC, PCMGIPTC
<b>Academic Year</b>	2020-2021
<b>Valid entry routes</b>	MSc, PgDip, PgCert
<b>Additional exit routes</b>	PgDip, PgCert
<b>Mode of delivery</b>	Full-time, Part-time
<b>Location(s)<sup>1</sup> of Study</b>	Cranfield University
<b>School(s)</b>	School of Aerospace, Transport and Manufacturing
<b>Theme</b>	Manufacturing
<b>Centre</b>	Through-life Engineering Services Institute
<b>Course Director</b>	Dr Christos Emmanouilidis
<b>Awarding Body</b>	Cranfield University
<b>Is this an AP Contract course?<sup>2</sup></b>	No
<b>Is this course offered as a Cranfield Mastership?</b>	N/A
<b>Apprenticeship Standard the course is mapped to</b>	N/A
<b>Is the Degree apprenticeship integrated or non-integrated?</b>	N/A
<b>Is the Mastership offered as an open and/or closed course?</b>	N/A
<b>Teaching Institution</b>	Cranfield University
<b>Admissions body</b>	Cranfield University

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

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

<b>Entry requirements</b>	Standard University entry requirements
<b>UK Qualifications Framework Level</b>	QAA FHEQ Level 7 (Masters)
<b>Benchmark Statement(s)</b>	Not Applicable
<b>Registration Period(s) available</b>	Full-time MSc - one year, Part-time MSc - up to three years, Full-time PgDip - one year, Part-time PgDip - two years, Full-time PgCert - one year, Part-time PgCert - two years
<b>Course Start Month(s)</b>	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, Through Life Engineering Services Institute, where the research interests include:

- Product-Service Systems
- Services and Supply Chain Management
- Enterprise Scale IT/OT (Information / Operational Technology) and Internet of Things (IoT)
- Data Analytics
- Simulation and Modelling
- Industry 4.0 and Innovation Management
- Enterprise Asset and Maintenance Management
- Digital Services

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. Application for course accreditation extension with all the above PSRBs is under way and it is additionally considered to extend accreditation with BCS, all involving a mapping of course and employing modules ILOs to AHEP learning outcomes.

## **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 use of Virtual Learning environment and blended learning, with a combination of synchronous and self-paced learning 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. 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. Part-time Students are encouraged to take the Group Project component and only in exceptional circumstances, and with approval from the Group Project Co-ordinator, will be permitted to replace the Group Project with an individual dissertation. 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 8. 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
<b>COMPULSORY MODULES:</b>	
Modules 2, 3, 4 and 6	40
<b>ELECTIVE MODULES:</b>	
Modules 5, 7, 8 and 9 (Select 2)	20
<b>RECOMMENDED MODULE:</b>	
Induction	0
<b>TOTAL:</b>	60

### B. **Postgraduate Diploma**

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

#### **FULL TIME STUDENTS**

Description	Credits
<b>COMPULSORY MODULES:</b>	
Modules 2-9	80
Group Project (10a)	40

<b>ELECTIVE MODULES:</b>	
None	
<b>RECOMMENDED MODULE:</b>	
Induction	0
<b>TOTAL:</b>	120

#### PART TIME STUDENTS

Description	Credits
<b>COMPULSORY MODULES:</b>	
Modules 2-9	80
<b>ELECTIVE MODULES:</b>	
Group Project (10a) or Dissertation (10b)	40
<b>RECOMMENDED MODULE:</b>	
Induction	0
<b>TOTAL:</b>	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:

#### FULL TIME STUDENTS

Description	Credits
<b>COMPULSORY MODULES:</b>	
Modules 2-9	80
Group Project (10a)	40
Individual Research Project (11)	80
<b>ELECTIVE MODULES:</b>	
None	
<b>RECOMMENDED MODULE:</b>	
Induction	0
<b>TOTAL:</b>	200

#### PART TIME STUDENTS

Description	Credits
<b>COMPULSORY MODULES:</b>	
Modules 2-9	80
Individual Research Project (11)	80
<b>ELECTIVE MODULES:</b>	
Group Project (10a) or Dissertation (10b)	40
<b>RECOMMENDED MODULE:</b>	
Induction	0
<b>TOTAL:</b>	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);<sup>3</sup>
- **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  $\geq 40$  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.

## 7. Course Level Assessment Strategy<sup>4</sup>

The course assessment strategy involves a multitude of methods, including exams and assignments for summative assessment, multi-part assessment, inclusive of individual and group elements, and a range of in-module activities for formative assessment. These are designed so that the learners construct their own learning through relevant learning activities which take place before, during, and after the modules as well as during the learner's engagement with group and individual projects work. The relevant activities are directly relevant to the Intended Learning Outcomes (ILOs) and challenge the students to develop and demonstrate the full range of skills and knowledge required to succeed in their professional careers as management and information systems specialists, as specified at the individual modules and are aligned with the course-level ILOs. The attainment of ILOs is assessed through formative and summative assessment of varying length and nature, which are linked to both individual and group activities and are

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<sup>3</sup> 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 ( $< 50\%$ ).

<sup>4</sup> Guidance to aid colleagues writing or updating a course-level assessment strategy for inclusion in the Course Specification can be found as Appendix K in either the Senate Handbook on Setting up a New Taught Course or the Senate Handbook on Managing Taught Courses <https://intranet.cranfield.ac.uk/EducationServices/Pages/SenateHandbooksA-Z.aspx>

clearly stated in the individual module descriptors, enabling students with different learning styles to express their learning achievements linked to professional practice and these achievements to be appropriately assessed. Students have opportunities to develop communication skills, as they are required to give presentations individually and as members of a group. Formative assessment feedback is given verbally during the modules and involve both tutor-led and peer learning feedback during the module activities, case studies, and presentations, but also during interactive learning activities, which incorporate such formative feedback. The taught components precede the group and individual research project, so assessment can be used to develop skills required for these projects. Learners are expected to develop self-directed goal attainment skills in this is assessed through their group and individual project reports and presentations, which are assessed according to the specified assessment criteria. All assessment criteria are made available in advance to the students and provided feedback is aligned with these criteria.

## 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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
1	I-MAN-INWK	Induction	Prof Konstantinos Salonitis	18		0	Y	28/09/20	28/09/20	02/10/20	N/A	AO	N/A				N/A	
2	I-MNU-A1031	Enterprise Systems	Dr Essam Shehab	32		10	Y	19/10/20	19/10/20	23/10/20	40				GCW GPRES	90 10	30/11/20 16/11/20	Re-assessment date to be set by agreement of the Module Leader as/when required

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

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

<sup>7</sup> 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  $\geq 50\%$ .

<sup>8</sup> For **independent assessments** please record type and weighting of each separate piece of assessment individually. 10 credit modules should be designed to allow assessment through a single independent summative assessment. Deviations will require approval by the School Director of Education

<sup>9</sup> For **multi-part assessments** please record the overall weighting of module which should be 100%. Multipart assessments should only be included in courses where there is a clear and pedagogical reason and where each element forms part of a continuous learning and assessment experience for students.

<sup>10</sup> 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.

<sup>11</sup> 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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment								
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates			
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date	
3	I-MNU-A1034	Operations Management	Mr John Patsavellas	32		10	Y	05/10/20	05/10/20 Stream 1 12/10/20 Stream 2 Occ A	09/11/20 Stream 1 16/10/20 Stream 2	40	EX	100					14/12/20	Manufacturing resit exams will be during week commencing 17/05/21
4	I-MNU-A1074	Business Process Analysis and Engineering	Dr Ip-Shing Fan	32		10	Y	26/10/20	26/10/20	30/10/20	40	ICW	100					23/11/20	Re-assessment date to be set by agreement of the Module Leader as/when required.
5	I-MNU-A1018	General Management	Mr Matthew Caffrey	32		10	Y	30/11/20	30/11/20	04/12/20	40	EX	100					08/01/21	Manufacturing resit exams will be during week commencing 17/05/21.
6	I-MNU-A1035	Business Change Management	Dr Ip-Shing Fan	32		10	N	09/11/20	09/11/20	13/11/20	40	ICW	100					07/12/20	Re-assessment date to be set by agreement of the Module Leader

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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
																	as/when required.	
7	I-MNU-A1007	Data Analytics (new title)	Dr Cristobal Ruiz-Carcel	32		10	N	25/01/21	25/01/21	29/01/21	40	ICW	100				22/02/21	Re-assessment date to be set by agreement of the Module Leader as/when required.
8	I-KME-A1037	Enterprise Modelling	Dr John Ahmet Erkoyuncu	32		10	Y	23/11/20	23/11/20	27/11/20	40			100 MULTI	ICW GCW	60 40	11/01/21 04/12/20	Re-assessment date to be set by agreement of the Module Leader as/when required.
9	I-MNU-A1038	Supply Chain Management	Dr Ahmed Al-Ashaab	32		10	Y	11/01/21	11/01/21	15/01/21	40	GCW	100				08/02/21	Re-assessment date to be set by agreement of the 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; MULTI – Multi-part Assessment

Module Number	Module code	Title	Module Leader	Contact hours <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>10</sup>	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
10a	I-MAT-GRPP	Group Project	Dr David Ayre	20		40	Y	01/02/21	01/02/21	27/04/21	50	GCW	80		GPRES	20	27/04/21	
									Occ A FT	FT		ICW	20		GPROJ	80	04/05/21	
			Dr Supriyo Ganguly						01/02/21	27/08/21	50	GCW	80		GPRES	20	27/08/21	
									Occ B PT	PT		ICW	20		GPROJ	80	01/09/21	
10b	I-MAT-DISS	Dissertation for Part Time Students	Dr Konstantinos Salonitis	20		40	Y	08/02/21	08/02/21	31/08/21	50	ICW	100				27/08/21	
11	I-MNU-THESIS	Individual Research Project	Dr Muhammad Khan	20		80	Y	08/02/21	Occ A = PT	27/08/21	50	THESIS	90				27/08/21	
								08/02/21	FT	10		01/09/21						
			Dr Muhammad Khan					30/04/21	Occ B = FT	27/08/21	50	THESIS	90				27/08/21	
									30/04/21	FT		OR	10				01/09/20	

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

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

<b><u>Module code</u></b>	<b><u>Module title</u></b>	<b><u>Course that owns the module</u></b>	<b><u>Other course(s)/ programme(s) that use the module</u></b>
I-MAN-INWK	Induction	Manufacturing Systems and Management Programme	Engineering & Management of Manufacturing Systems, Aerospace Manufacturing, Global Product Development and Management, Cyber-Secure Manufacturing, Maintenance Engineering and Asset Management
I-MNU-A1031	Enterprise Systems	Management and Information Systems	Engineering & Management of Manufacturing Systems
I-MNU-A1074	Business Process Analysis and Engineering	Management and Information Systems	Engineering Competence
I-MNU-A1034	Operations Management	Engineering and Management of Manufacturing Systems	Global Product Development and Management, Aerospace Manufacturing, Cyber-Secure Manufacturing, Engineering Competence
I-MNU-A1018	General Management	Engineering and Management of Manufacturing Systems	Advanced Materials, Manufacturing Technology and Management, Global Product Development and Management, Engineering Competence, Metal Additive Manufacturing
I-KME-A1037	Enterprise Modelling	Management and Information Systems	Global Product Development and Management
I-MNU-A1038	Supply Chain Management	Engineering and Management of Manufacturing Systems	Aerospace Management, Global Product Development and Management
I-MAT-DISS	Dissertation for Part Time Students	Advanced Materials	Aerospace Materials, Manufacturing Technology & Management, Aerospace Manufacturing, Engineering & Management of Manufacturing Systems, Global Product Development and Management, Cyber-Secure Manufacturing, Welding Engineering, Metal Additive Manufacturing, Maintenance Engineering and Asset Management
I-MAT-GRPP	Group Project	Advanced Materials	Aerospace Materials, Manufacturing Technology &

			Management, Engineering & Management of Manufacturing Systems, Aerospace Manufacturing, Global Product Development and Management, Cyber-Secure Manufacturing, Welding Engineering, Metal Additive Manufacturing, Maintenance Engineering and Asset Management
I-MNU-THESIS	Individual Research Project	Aerospace Manufacturing	Engineering & Management of Manufacturing Systems, Global Product Development and Management, Cyber-Secure Manufacturing, Aerospace Materials, Manufacturing Technology and Management, Welding Engineering, Aerospace Manufacturing, Metal Additive Manufacturing, Maintenance Engineering and Asset Management, Advanced Materials

## 8. 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	GCW GPRES	GCW GPRES		GCW GPRES	GCW GPRES
3	EX	EX		EX	
4	ICW	ICW		ICW	ICW

Award ILOs Module No.	ILO 1.	ILO 2.	ILO 3.	ILO 4.	ILO 5.
5	EX	EX		EX	
6	ICW	ICW	ICW	ICW	ICW
7	ICW	ICW	ICW	ICW	
8	ICW	ICW	ICW	ICW	ICW
9	GCW	GCW	GCW	GCW	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.
10a	GPRES GPROJ ICW						
10b	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
11	THESIS OR							

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

Title	Modules Covered	Assessment	
		Type	Weight (%)

## 9. 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 provides authoritative guidance on policy and procedure to the Panel. Proposals are reviewed in line with the UK Quality Code for Higher Education. 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 guiding principles to meet the Expectations and Core Practices of the UK Quality Code for Higher Education. 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 UK Quality Code for Higher Education. The delivery of new partnership provision is ultimately approved by the Universities 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.

## **10. 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.

**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.

**Date of first publication/latest revision:** November 2020

**1. What is the course?**

**Course information**

<b>Course Title</b>	MSc in Management and Leadership – December 2020
<b>Course code</b>	MSMMLPTC, PDMMLPTC, PCMMLPTC, MSMMLPAC
<b>Academic Year</b>	2020/21
<b>Valid entry routes</b>	MSc
<b>Additional exit routes</b>	PgCert PgDip
<b>Mode of delivery</b>	Part-time
<b>Location(s)<sup>1</sup> of Study</b>	Cranfield University; London (Grant Thornton Premises)
<b>School(s)</b>	School of Management
<b>Theme</b>	Leadership and Management
<b>Centre</b>	Management and Leadership (MML)
<b>Course Director</b>	Dr Robby Allen
<b>Awarding Body</b>	Cranfield University
<b>Is this an AP Contract course?<sup>2</sup></b>	No
<b>Is this course offered as a Cranfield Mastership?</b>	Yes
<b>Apprenticeship Standard the course is mapped to</b>	Senior Leader (Degree) Level 7 Apprenticeship Standard
<b>Is the Degree apprenticeship integrated or non-integrated?</b>	Non-integrated
<b>Is the Mastership offered as an open and/or closed course?</b>	Open
<b>Teaching Institution</b>	Cranfield University
<b>Admissions body</b>	Cranfield University

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

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

<b>Entry requirements</b>	Standard University entry requirements
<b>UK Qualifications Framework Level</b>	QAA FHEQ Level 7 (Masters)
<b>Benchmark Statement(s)</b>	Not Applicable
<b>Registration Period(s) available</b>	MSc – Part-time - maximum of 5 years PG Certificate – 3 years PG Diploma – 4 years
<b>Course Start Month(s)</b>	December 2020

### **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, at times in cooperation with other parts of the university or through external collaborators who have recognised teacher status (RTS). The principal external collaborator is Grant Thornton, one of the major professional service organizations in the UK. Some modules are taught at the premises of Grant Thornton in London. Grant Thornton's RTS staff also delivers some accounting teaching. In addition, Grant Thornton's accredited coaching will engage with the students and deliver individualized coaching sessions in close alignment with Cranfield and the Leading with Impact: Organizational Behaviour module

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

- All students will undertake a consulting project, normally 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 students undertake research and/or project work off campus, within organisations. In some cases this may take the form of a short term internship assessed by individual project.

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

### **Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)**

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

The Cranfield MML 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 five aims:

- To develop a group of influential future leaders who will make a significant impact on their organisations, industries and the wider community.
- To create an understanding as to how to develop leadership capabilities in self and others in order to meet modern societal and business challenges.
- To deliver a contemporary and comprehensive knowledge of core business functions enabling students to show leading-edge insights and knowledge to experts and non-experts in a variety of management 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 lead and/or operate effectively as a member of a team drawn from a diverse variety of cultures, business experiences and personalities.

This programme is intended for the following range of students:

- Early-career 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.

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

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

#### **A. Postgraduate Certificate in Management and Leadership**

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

- ILO 1. Articulate a critical awareness of the global environment within which organisations operate and the socio-cultural, political, institutional, managerial, technical and ethical ambiguities and risks that this gives rise to.
- ILO 2. Demonstrate appropriate and flexible qualities of leadership. Critically evaluate their personal strengths, weaknesses and preferences when working with others or leading them.
- ILO 3. Exhibit a critical, conceptual understanding of the main areas of management and a systematic knowledge of the relevant literature.
- ILO 4. Critically analyse and creatively manage the career development of themselves and others.

#### **B. Postgraduate Diploma in Management and Leadership**

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

- ILO 5. Evidence the mastery of a wide range of management techniques that successfully address complex problems in a world characterized by high degrees of uncertainty and change. These techniques allow students to identify and analyse business challenges and to develop and implement appropriate solutions. .
- ILO 6. Build strong working relationships as leaders and team members. Demonstrate an ability to work effectively with colleagues through leadership and persuasive influencing skills.

#### **C. Masters in Management and Leadership**

In completing this course, and achieving the associated award, a diligent student would also be expected to:

- ILO 7. Engage and carry out an evidence-led management project and critically discuss and reflect on it in a substantial project report, developing justified recommendations and action plans.

### **4. How is the course taught?**

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

- Intensive classroom interaction combined with a high proportion of teamwork, group projects, business simulations 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.
- peer coaching elements

## 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 8. 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**

The accumulation of 200 credits through the assessment of taught modules and the work-based project report as detailed below:

Description	Credits
<b>COMPULSORY MODULES:</b>	
Module 1 - 11 Module 12 (attendance only)	130
<b>WORK-BASED PROJECT:</b>	
THESIS	70
<b>TOTAL:</b>	<b>200</b>

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);<sup>3</sup>
- **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);

<sup>3</sup> 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  $\geq 40$  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 December 2020 and are expected to complete the course within 2 years.

The MML programme comprises a number of residential phases and a work-based project phase. Students start with an orientation day at Cranfield and have one or two modules in their block weeks approximately every six weeks. After 12 modules (week 14) students embark on a work-based project thesis for which they are supervised by Cranfield academics. The thesis project has a minimum duration of 12 weeks. Following submission of the Thesis the student enters an EPA preparatory period via a 'get ready' workshop to facilitate the integration of learning.

From year 1 of their studies students engage in peer coaching which is complemented by professional coaching sessions in year 2. Throughout their MML degree students are in learning teams to support each other.

## 7. **Course Level Assessment Strategy**<sup>4</sup>

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 assessment strategy of this course is challenging and diverse and enables students to demonstrate a full range of skills and attributes. Summative assessment will include a range of assessment types including the preparation of individual and group reports and written exams. 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.

Written coursework will be of varying lengths, recognising that writing coursework to a short length can be more challenging for some and can develop different skills relevant to professional practice. The length of each assessment task is usually stated within the module descriptor. Students then have opportunities to develop their communication and group working skills, as they are required to give group presentations. Feedback for all assessments is given in a timely fashion, dependent on the type of assessment, but we strive to be always within 20 working days.

Formative feedback will be provided through in-class discussion on the conceptual material introduced during the module. For instance, modules - such as core modules in the areas of marketing, strategy, corporate sustainability, management consulting or operations management, or electives such as supply chain management or cross-cultural management - are supported by a number of formative tasks including group discussions, group exercises, case studies and oral presentations.

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<sup>4</sup> Guidance to aid colleagues writing or updating a course-level assessment strategy for inclusion in the Course Specification can be found as Appendix K in either the Senate Handbook on Setting up a New Taught Course or the Senate Handbook on Managing Taught Courses <https://intranet.cranfield.ac.uk/EducationServices/Pages/SenateHandbooksA-Z.aspx>

The taught components precede the research project, so assessment can be used to develop skills required for the individual research project. Students are generally expected to be more self-directed in their learning during the research project and guidance will be provided through the *Evidence-Based Management* module and meetings with their thesis supervisor.

## Course modules MML (December) – Occurrence T

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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
1	MML-LOB Occ T20	Leading with Impact: Organisational Behaviour	Dr Deirdre Anderson	32		20	N	08/02/21	08/02/21	15/06/21	40	ICW	100				27/07/21	
2	M-T/ECM Occ T20	Economics for Managers	Prof Catarina Figueira	16		10	Y	12/04/21	12/04/21	13/04/21	40	GCW	100				25/05/21	

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

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

<sup>7</sup> 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%.

<sup>8</sup> For **independent assessments** please record type and weighting of each separate piece of assessment individually. 10 credit modules should be designed to allow assessment through a single independent summative assessment. Deviations will require approval by the School Director of Education

<sup>9</sup> For **multi-part assessments** please record the overall weighting of module which should be 100%. Multipart assessments should only be included in courses where there is a clear androgogical reason and where each element forms part of a continuous learning and assessment experience for students.

<sup>10</sup> 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.

<sup>11</sup> 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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
3	MML/LSO Occ T21	Leading Strategic Operations	Dr Abdelkader Aoufi	16		10	N	20/09/21	20/09/21	21/09/21	40	ICW	100				02/11/21	
4	M-T/MMT Occ T21	Strategic Marketing	Prof Vasilis Theoharakis	16		10	N	11/10/21	11/10/21	12/10/21	40	ICW	100				23/11/21	
5	MXM/ACT Occ T21	Accounting	Dr Matthias Nnadi	16		10	Y	07/02/22	07/02/22	08/02/22	40	EX	100				11/04/22	
6	M-T/LCS Occ T21	Leading Corporate Sustainability	Dr Rosina Watson	16		10	Y	29/11/21	29/11/21	30/11/21	40	ICW	100				11/01/22	
7	MML/SML Occ T21	Strategic Management and Leadership	Dr Paul Raspin	16		10	N	12/04/22	12/04/22	13/04/22	40	GCW	100				25/05/22	
8	MML/EPRM Occ T22	Enterprise Performance and Risk Management	Prof Michael Bourne	16		20	N	10/10/22	10/10/22	06/12/22	40			MULTI 100	GCW ICW	70 30	17/01/23 17/01/23	
9	M-T/MAC Occ T21	Management Consulting	Dr Monica Franco Santos	16		10	Y	06/06/22	06/06/22	30/08/22	40 40			MULTI 100	GPRES ICW	50 50	11/10/22 11/10/22	

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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>8</sup> (%) of independent	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
10	M-E/ DIN Occ T22	Disruptive Innovation	Paul Lighterness	16		10	Y	15/02/23	15/02/23	16/02/23	40			MULTI 100	GCW ICW	40 60	30/03/23 30/03/23	
11	M-T/ PML Occ T22	People Management and Leadership	Prof Michael Dickmann	16		10	Y	31/08/22	31/08/22	01/09/22	40			MULTI 100	GCW ICW	70 30	13/10/22 13/10/22	
12	M-T/ EBMA Occ T22	Evidence-based Management	Dr Valentina Battista	16		0	Y	13/02/23	13/02/23	14/02/23	N/A	AO	N/A					
13	MML/ THS Occ T22	Management and Leadership Thesis (Work-based project)	Dr Robby Allen	10		70	N	01/02/23	01/02/23	30/03/23	50	THESIS	100				11/10/23	

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>
M-T/ECM	Economics for Managers	Management	Management; Management and Corporate Sustainability; Management and Leadership
M-T/MMT	Strategic Marketing	Management	Management; Management and Corporate Sustainability; Management and Entrepreneurship; Management and Leadership; Retail and Digital Banking
M-T/LCS	Leading Corporate Sustainability	Management	Management; Management and Corporate Sustainability; Management and Leadership; Business and Strategic Leadership; Future Food Sustainability; Food Systems and Management; Environmental Management for Business
M-E/DIN	Disruptive Innovation	Management and Entrepreneurship	Management and Entrepreneurship; Management and Leadership
M-T/MAC	Management Consulting	Management	Management; Management and Leadership
M-T/PML	People Management and Leadership	Management	Management; Management and Leadership
M-T/EBM(A)	Evidence-based Management	Management	Management; Management and Corporate Sustainability; Management and Entrepreneurship; Management and Leadership; Executive Logistics and Supply Chain Management
MXM/ACT	Accounting	Executive MBA	Executive MBA; Management and Leadership

## 8. 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. 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. MSc

Award ILOs Module No.	ILO1.	ILO2.	ILO3.	ILO4.	ILO5.	ILO6.	ILO7.
01		Multi	Multi	Multi			
02	GCW						
03	ICW		ICW		ICW		
04	ICW		ICW		ICW		
05			EX		EX		
06	ICW	ICW	ICW		ICW	ICW	
07	GPRES/ GCW		GPRES/ GCW		GPRES/ GCW	GPRES/ GCW	
08	Multi		Multi		Multi		
09	GPRES/ ICW	GPRES/ ICW	GPRES/ ICW		GPRES/ ICW	GPRES/ ICW	
10	Multi	Multi	Multi		Multi	Multi	
11	EX		EX		EX		
12							AO
13 (WBP)	THS		THS		THS	THS	THS

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

Title	Modules Covered	Assessment	
		Type	Weight (%)

### 9. 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 provides authoritative guidance on policy and procedure to the Panel. Proposals are reviewed in line with the UK Quality Code for Higher Education. 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 guiding principles to meet the Expectations and Core Practices of the UK Quality Code for Higher Education. 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 UK Quality Code for Higher Education. The delivery of new partnership provision is ultimately approved by the Universities 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.

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

The list of opportunities available to our Masters students 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.

**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.

**Date of first publication/latest revision:** September 2020

**1. What is the course?**

**Course information**

<b>Course Title</b>	MSc in Management and Leadership – September 2020
<b>Course code</b>	MSMMLPTC, PDMMLPTC, PCMMLPTC, MSMMLPAC
<b>Academic Year</b>	2020/21
<b>Valid entry routes</b>	MSc
<b>Additional exit routes</b>	PgCert PgDip
<b>Mode of delivery</b>	Part-time
<b>Location(s)<sup>1</sup> of Study</b>	Cranfield University; London (Grant Thornton Premises)
<b>School(s)</b>	School of Management
<b>Theme</b>	Leadership and Management
<b>Centre</b>	Management and Leadership (MML)
<b>Course Director</b>	Professor Michael Dickmann
<b>Awarding Body</b>	Cranfield University
<b>Is this an AP Contract course?<sup>2</sup></b>	No
<b>Is this course offered as a Cranfield Mastership?</b>	Yes
<b>Apprenticeship Standard the course is mapped to</b>	Senior Leader (Degree) Level 7 Apprenticeship Standard
<b>Is the Degree apprenticeship integrated or non-integrated?</b>	Non-integrated
<b>Is the Mastership offered as an open and/or closed course?</b>	Open
<b>Teaching Institution</b>	Cranfield University
<b>Admissions body</b>	Cranfield University

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

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

<b>Entry requirements</b>	Standard University entry requirements
<b>UK Qualifications Framework Level</b>	QAA FHEQ Level 7 (Masters)
<b>Benchmark Statement(s)</b>	Not Applicable
<b>Registration Period(s) available</b>	MSc – Part-time - maximum of 5 years PG Certificate – 3 years PG Diploma – 4 years
<b>Course Start Month(s)</b>	September 2020

### **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, at times in cooperation with other parts of the university or through external collaborators who have recognised teacher status (RTS). The principal external collaborator is Grant Thornton, one of the major professional service organizations in the UK. Some modules are taught at the premises of Grant Thornton in London. Grant Thornton's RTS staff also delivers some accounting teaching. In addition, Grant Thornton's accredited coaching will engage with the students and deliver individualized coaching sessions in close alignment with Cranfield and the Leading with Impact: Organizational Behaviour module

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

- All students will undertake a consulting project, normally 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 students undertake research and/or project work off campus, within organisations. In some cases this may take the form of a short term internship assessed by individual project.

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

### **Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)**

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

The Cranfield MML 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 five aims:

- To develop a group of influential future leaders who will make a significant impact on their organisations, industries and the wider community.
- To create an understanding as to how to develop leadership capabilities in self and others in order to meet modern societal and business challenges.
- To deliver a contemporary and comprehensive knowledge of core business functions enabling students to show leading-edge insights and knowledge to experts and non-experts in a variety of management 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 lead and/or operate effectively as a member of a team drawn from a diverse variety of cultures, business experiences and personalities.

This programme is intended for the following range of students:

- Early-career 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.

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

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

#### **A. Postgraduate Certificate in Management and Leadership**

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

- ILO 1. Articulate a critical awareness of the global environment within which organisations operate and the socio-cultural, political, institutional, managerial, technical and ethical ambiguities and risks that this gives rise to.
- ILO 2. Demonstrate appropriate and flexible qualities of leadership. Critically evaluate their personal strengths, weaknesses and preferences when working with others or leading them.
- ILO 3. Exhibit a critical, conceptual understanding of the main areas of management and a systematic knowledge of the relevant literature.
- ILO 4. Critically analyse and creatively manage the career development of themselves and others.

#### **B. Postgraduate Diploma in Management and Leadership**

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

- ILO 5. Evidence the mastery of a wide range of management techniques that successfully address complex problems in a world characterized by high degrees of uncertainty and change. These techniques allow students to identify and analyse business challenges and to develop and implement appropriate solutions. .
- ILO 6. Build strong working relationships as leaders and team members. Demonstrate an ability to work effectively with colleagues through leadership and persuasive influencing skills.

#### **C. Masters in Management and Leadership**

In completing this course, and achieving the associated award, a diligent student would also be expected to:

- ILO 7. Engage and carry out an evidence-led management project and critically discuss and reflect on it in a substantial project report, developing justified recommendations and action plans.

### **4. How is the course taught?**

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

- Intensive classroom interaction combined with a high proportion of teamwork, group projects, business simulations 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.
- peer coaching elements

## 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 8. 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

The accumulation of 200 credits through the assessment of taught modules and the work-based project report as detailed below:

Description	Credits
<b>COMPULSORY MODULES:</b>	
Module 1 - 11 Module 12 (attendance only)	130
<b>WORK-BASED PROJECT:</b>	
THESIS	70
<b>TOTAL:</b>	<b>200</b>

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);<sup>3</sup>
- **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);

<sup>3</sup> 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 ≥50% (where they exist);
- **For the thesis**, a mark of ≥50% in order to receive a pass (where it exists).

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

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

The MML programme comprises a number of residential phases and a work-based project phase. Students start with an orientation day at Cranfield and have, on average, two modules in their block weeks every three months. After 12 modules (the 7<sup>th</sup> residential week) students embark on a work-based project for which they are supervised by Cranfield academics. After this project which has a minimum duration of 12 weeks the students return to have a last residential phase. This last face-to-face interaction is designed to explore and facilitate the integration of learning, encourages, where possible, the students to share their work-based project experiences (e.g. through a capstone conference) and to help students prepare for their EPAs.

From year 1 of their studies students engage in peer coaching which is complemented by professional coaching sessions in year 2. Throughout their MML degree students are in learning teams to support each other.

## 7. **Course Level Assessment Strategy**<sup>4</sup>

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 assessment strategy of this course is challenging and diverse and enables students to demonstrate a full range of skills and attributes. Summative assessment will include a range of assessment types including the preparation of individual and group reports and written exams. 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.

Written coursework will be of varying lengths, recognising that writing coursework to a short length can be more challenging for some and can develop different skills relevant to professional practice. The length of each assessment task is usually stated within the module descriptor. Students then have opportunities to develop their communication and group working skills, as they are required to give group presentations. Feedback for all assessments is given in a timely fashion, dependent on the type of assessment, but we strive to be always within 20 working days.

Formative feedback will be provided through in-class discussion on the conceptual material introduced during the module. For instance, modules - such as core modules in the areas of marketing, strategy, corporate sustainability, management consulting or operations management, or electives such as supply

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<sup>4</sup> Guidance to aid colleagues writing or updating a course-level assessment strategy for inclusion in the Course Specification can be found as Appendix K in either the Senate Handbook on Setting up a New Taught Course or the Senate Handbook on Managing Taught Courses <https://intranet.cranfield.ac.uk/EducationServices/Pages/SenateHandbooksA-Z.aspx>

chain management or cross-cultural management - are supported by a number of formative tasks including group discussions, group exercises, case studies and oral presentations.

The taught components precede the research project, so assessment can be used to develop skills required for the individual research project. Students are generally expected to be more self-directed in their learning during the research project and guidance will be provided through the *Evidence-Based Management* module and meetings with their thesis supervisor.

## Course modules MML (September) – Occurrence K

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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
1	MML-LOB Occ K20	Leading with Impact: Organisational Behaviour	Dr Deirdre Anderson	32		20	N	22/09/20	22/09/20	10/06/21	40	ICW	100				30/07/21	
2	M-T/ECM Occ K20	Economics for Managers	Prof Catarina Figueira	16		10	Y	22/09/20	22/09/20	25/09/20	40	GCW	100				30/10/20	

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

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

<sup>7</sup> 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  $\geq 50\%$ .

<sup>8</sup> For **independent assessments** please record type and weighting of each separate piece of assessment individually. 10 credit modules should be designed to allow assessment through a single independent summative assessment. Deviations will require approval by the School Director of Education

<sup>9</sup> For **multi-part assessments** please record the overall weighting of module which should be 100%. Multipart assessments should only be included in courses where there is a clear androgogical reason and where each element forms part of a continuous learning and assessment experience for students.

<sup>10</sup> 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.

<sup>11</sup> 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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
3	MML/ LSO Occ K20	Leading Strategic Operations	Dr Abdelkader Aoufi	16		10	N	09/12/20	09/12/20	11/12/20	40	ICW	100				05/02/21	
4	M-T/ MMT Occ K20	Strategic Marketing	Prof Vasilis Theoharakis	16		10	N	07/12/20	07/12/20	10/12/20	40	ICW	100				21/01/21	
5	MXM/ ACT Occ K20	Accounting	Dr Matthias Nnadi	16		10	Y	15/03/21	15/03/21	16/03/21	40	EX	100				07/06/21	
6	M-T/ LCS Occ K20	Leading Corporate Sustainability	Dr Rosina Watson	16		10	Y	17/03/21	17/03/21	18/03/21	40	ICW	100				06/05/21	
7	MML/ SML Occ K20	Strategic Management and Leadership	Dr Paul Raspin	16		10	N	08/06/21	08/06/21	11/06/21	40	GCW	100				20/08/21	
8	MML/ EPRM Occ K21	Enterprise Performance and Risk Management	Prof Michael Bourne	16		20	N	09/09/21	09/09/21	10/03/22	40			MULTI 100	GCW ICW	70 30	29/04/22 29/04/22	
9	M-T/ MAC Occ K21	Management Consulting	Dr Monica Franco Santos	16		10	Y	06/12/21	06/12/21	10/12/21	40 40			MULTI 100	GPRES ICW	50 50	11/03/22 01/04/22	
10	M-E/ DIN	Disruptive Innovation	Dr Leon Williams	16		10	Y	07/03/22	07/03/22	10/03/22	40			MULTI 100	GCW ICW	40 60	06/05/22 06/05/22	

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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of independent	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date	
	Occ K21																		
11	M-T/ PML Occ K21	People Management and Leadership	Prof Michael Dickmann	16		10	Y	06/09/21	06/09/21	08/09/21	40			MULTI 100	GCW ICW	70 30	22/10/21 22/10/21		
12	M-T/ EBM Occ K21	Evidence-based Management	Dr Valentina Battista	16		0	Y	07/12/21	07/12/21	10/12/21	N/A	AO	N/A						
13	MML/ THS Occ K21	Management and Leadership Thesis (Work-based project)	Dr Robby Allen	10		70	N	04/04/22	04/04/22	02/09/22	50	THESIS	100				30/09/22		

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>
M-T/ECM	Economics for Managers	Management	Management and Corporate Sustainability; Management and Leadership
M-T/LCS	Leading Corporate Sustainability	Management	Management and Corporate Sustainability; Management and Leadership
M-T/DIN	Disruptive Innovation	Management	Management and Entrepreneurship; Management and Leadership
M-T/MAC	Management Consulting	Management	Management and Corporate Sustainability; Management and Leadership
M-T/MPL	People Management and Leadership	Management	Management and Corporate Sustainability; Management and Entrepreneurship; Management and Leadership
M-T/EBM	Evidence-based Management	Management	Management and Corporate Sustainability; Management and Entrepreneurship; Management and Leadership; Executive Logistics and Supply Chain Management
MXM/ACT	Accounting	Executive MBA	Management and Leadership

## 8. 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. 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. MSc

<u>Award ILOs</u> <u>Module No.</u>	ILO1.	ILO2.	ILO3.	ILO4.	ILO5.	ILO6.	ILO7.
01		Multi	Multi	Multi			
02	GCW						
03	ICW		ICW		ICW		

Award ILOs Module No.	ILO1.	ILO2.	ILO3.	ILO4.	ILO5.	ILO6.	ILO7.
04	ICW		ICW		ICW		
05			EX		EX		
06	ICW	ICW	ICW		ICW	ICW	
07	GPRES/ GCW		GPRES/ GCW		GPRES/ GCW	GPRES/ GCW	
08	Multi		Multi		Multi		
09	GPRES/ ICW	GPRES/ ICW	GPRES/ ICW		GPRES/ ICW	GPRES/ ICW	
10	Multi	Multi	Multi		Multi	Multi	
11	EX		EX		EX		
12							AO
13 (WBP)	THS		THS		THS	THS	THS

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

Title	Modules Covered	Assessment	
		Type	Weight (%)

**9. 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 provides authoritative guidance on policy and procedure to the Panel. Proposals are reviewed in line with the UK Quality Code for Higher Education. 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 guiding principles to meet the Expectations and Core Practices of the UK Quality Code for Higher Education. 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 UK Quality Code for Higher Education. The delivery of new partnership provision is ultimately approved by the Universities 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.

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

The list of opportunities available to our Masters students 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.



**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.

**Date of first publication/latest revision:** August 2020

**1. What is the course?**

**Course information**

<b>Course Title</b>	MSc in Manufacturing Technology and Management
<b>Course code</b>	MSMTMFTC, MSMTMPTC, PDMTMFTC, PDMTMPTC, PCMTMFTC, PCMTMPTC (apprenticeship course code to be added when available)
<b>Academic Year</b>	2020/21
<b>Valid entry routes</b>	MSc, PgDip, PgCert (PgDip and PgCert not available to apprenticeship students)
<b>Additional exit routes</b>	PgDip, PgCert
<b>Mode of delivery</b>	Full-time, Part-time
<b>Location(s)<sup>1</sup> of Study</b>	Cranfield University
<b>School(s)</b>	School of Aerospace, Transport and Manufacturing
<b>Theme</b>	Manufacturing
<b>Centre</b>	Surface Engineering and Precision Institute
<b>Course Director</b>	Dr Jeff Rao
<b>Awarding Body</b>	Cranfield University
<b>Is this an AP Contract course?<sup>2</sup></b>	No
<b>Is this course offered as a Cranfield Mastership?</b>	Yes – Mastership scheduled to start January 2021
<b>Apprenticeship Standard the course is mapped to</b>	Level 7 Materials Process Engineer
<b>Is the Degree apprenticeship integrated or non-integrated?</b>	Non-integrated
<b>Is the Mastership offered as an open and/or closed course?</b>	Open
<b>Teaching Institution</b>	Cranfield University

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

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

<b>Admissions body</b>	Cranfield University
<b>Entry requirements</b>	Standard University entry requirements
<b>UK Qualifications Framework Level</b>	QAA FHEQ Level 7 (Masters)
<b>Benchmark Statement(s)</b>	N/A
<b>Registration Period(s) available</b>	One year full-time, three years part-time
<b>Course Start Month(s)</b>	Full-time: October. Part-time: throughout the year. Mastership: January

### **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: where the research interests include:

Enhanced Composites and Advanced Structures  
 Surface Engineering and Precision Engineering  
 Welding Engineering and Laser Processing  
 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 the Institution of Mechanical Engineers (IMechE), Institution of Engineering and Technology (IET), Royal Aeronautical Society (RAeS) and The Welding Institute (TWI).

Students completing an accredited degree are deemed to have met part or all of the academic requirements for registration as a Chartered or Incorporated Engineer and are in a strong position to move on to achieve professional engineering status after a period of initial professional development in industry.

## **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 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 8. 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
<b>COMPULSORY MODULES:</b>	
Modules 1 and 3	20
<b>ELECTIVE MODULES:</b>	
Four modules from modules 2, 4 and 5 - 15	40
<b>TOTAL:</b>	60

#### B. Postgraduate Diploma

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

##### FULL TIME STUDENTS

Description	Credits
<b>COMPULSORY MODULES:</b>	
Modules 1, 3 and 4	30
Group Project (16a)	40
<b>ELECTIVE MODULES:</b>	
Five modules from modules 2, and 5 - 15	50
<b>TOTAL:</b>	120

##### PART TIME STUDENTS

Description	Credits
<b>COMPULSORY MODULES:</b>	
Modules 1, 3 and 4	30
<b>ELECTIVE MODULES:</b>	
Five modules from modules 2, and 5 – 15.	50
Group Project (16a) or Dissertation (16b)	40
<b>TOTAL:</b>	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:

##### FULL TIME STUDENTS

Description	Credits
<b>COMPULSORY MODULES:</b>	
Modules 1, 3 and 4	30
Group Project (16a)	40
Individual Research Project (17)	80
<b>ELECTIVE MODULES:</b>	

Five modules from modules 2, and 5 - 15	50
<b>TOTAL:</b>	200

### PART TIME STUDENTS

Description	Credits
<b>COMPULSORY MODULES:</b>	
Modules 1, 3 and 4	30
Individual Research Project (17)	80
<b>ELECTIVE MODULES:</b>	
Five modules from modules 2, and 5 – 15.	50
Group Project (16a) or Dissertation (16b)	40
<b>TOTAL:</b>	200

### APPRENTICESHIP STUDENTS

Description	Credits
<b>COMPULSORY MODULES:</b>	
Modules 1, 3, 4, 6, 7, 11 and 18	80
Dissertation for MPE (16c)	40
Individual Research Project (17)	80
<b>TOTAL:</b>	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);<sup>3</sup>
- **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

<sup>3</sup> 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 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  $\geq 40$  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.

## 7. Course Level Assessment Strategy<sup>4</sup>

The assessment tasks are designed to enable students to apply and demonstrate a range of skills and attributes as summarized in the ILOs. The core modules form the heart of manufacturing technology and their understanding will be assessed through either assignments and exams. The choice of 5 elective modules allow the students to tailor their learning to their intended careers. Each module has its own assessment type, which could be either summative or formative, details of which is clearly stated within the module descriptor.

The introductory course (Introduction to Manufacturing and Research Techniques) is designed for students to get to know each other and work in teams. Students are given opportunities to develop their communication skills at an early stage, as they are required to give a group presentation and individual presentation. The ability to work effectively in groups is a highly desirable skill which has translated into ILOs 4 and 5. Feedback on their presentations are given immediately after the group presentations. Students will also engage with an interactive learning activity which incorporates formative feedback. This is exhibited in modules 3, 4, 5, 6, 7, 9 which are supported by a number of formative tasks including group discussions, lab tours, seminars and oral presentations. Formative feedback is given verbally within the classroom following discussions and oral feedback provided by the tutor and peers after presentations.

For modules 2, 3, 4, 5 peer review informs practice and tutorials guide progress, students are generally encouraged to support each other by asking and answering questions via the VLE. The taught components precede the research project, so assessment can be used to develop skills required for the individual research project. Students are generally expected to be more self-directed in their learning during this research project and guidance will be provided through modules 16, 17. The research project addresses ILO 9 and takes the form of a Thesis accessed via an oral poster presentation and a research thesis report.

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<sup>4</sup> Guidance to aid colleagues writing or updating a course-level assessment strategy for inclusion in the Course Specification can be found as Appendix K in either the Senate Handbook on Setting up a New Taught Course or the Senate Handbook on Managing Taught Courses <https://intranet.cranfield.ac.uk/EducationServices/Pages/SenateHandbooksA-Z.aspx>

## 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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
1	I-MTM-A2028	Introduction to Manufacturing, Materials and Research Techniques	Dr Sue Impey/D Kostas Georgarakis/Dr Jeff Rao	25		10	Y	12/10/20	12/10/20	16/10/20	40			100 MULTI	GCW GPRES	80 20	23/11/20 16/10/20	Re-assessment date to be set by agreement of the Module Leader as/when required.

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

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

<sup>7</sup> 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  $\geq 50\%$ .

<sup>8</sup> For **independent assessments** please record type and weighting of each separate piece of assessment individually. 10 credit modules should be designed to allow assessment through a single independent summative assessment. Deviations will require approval by the School Director of Education

<sup>9</sup> For **multi-part assessments** please record the overall weighting of module which should be 100%. Multipart assessments should only be included in courses where there is a clear andragogical reason and where each element forms part of a continuous learning and assessment experience for students.

<sup>10</sup> 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.

<sup>11</sup> 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; 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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
2	I-MAT-A1009	Introduction to Materials Engineering	Dr David Ayre	30		10	Y	05/10/20	05/10/20	09/10/20	40	EX	100				14/12/20	Manufacturing resit exams will be during week commencing 17/05/21
3	I-GPD-A1505	Lean Product Development	Dr Ahmed Al-Ashaab	32		10	Y	18/01/01	18/01/21	22/01/21	40	GCW	100				15/02/21	Re-assessment date to be set by agreement of the Module Leader as/when required.
4	I-MNU-A1018	General Management	Mr Matthew Caffrey	32		10	Y	30/11/20	30/11/20	04/12/20	40	EX	100				08/01/21	Manufacturing resit exams will be during week commencing 17/05/21
5	I-MAT-A1013 –	Composites Manufacturing for High Performance Structures	Mr Andrew Mills	35		10	Y	16/11/20	16/11/20 Occ A	20/11/20	40	ICW	100				04/01/21	Re-assessment date to be set by agreement of the 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; MULTI – Multi-part Assessment

Module Number	Module code	Title	Module Leader	Contact hours <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment								
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent assessments	Weighting within module of multi-part assessments <sup>9</sup> /(100%)	Type of Assessment	Weighting of individual elements of multi-part	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date	
6	I-MNU-A1034 occ A	Operations Management	Mr John Patsavellas	32		10	Y	05/10/20	05/10/20 Stream 1 12/10/20 Stream 2	09/10/20 Stream 1 16/10/20 Stream 2	40	EX	100					14/12/20	Manufacturing resit exams will be during week 17/05/21
7	I-MNU-A1029 occ A	Operations Analysis	Dr Kostas Salonitis	32		10	Y	26/10/20	26/10/20 occ A	30/10/20	40	EX	100					18/12/20	Manufacturing resit exams will be during week 17/05/21
8	I-WEE-A1110	Advanced Welding Processes	Dr Wojciech Suder	35		10	Y	16/11/20	16/11/20	20/11/20	40	EX	100					08/01/21	Manufacturing resit exams will be during week commencing 17/05/21
9	I-MAT-A1011	Additive and Subtractive Manufacturing Technologies	Dr Isidro Durazo-Cardenas	30		10	Y	19/10/20	19/10/20 Stream 1 12/10/20 Stream 2	23/10/20 Stream 1 16/10/20 Stream 2	40			100 MULTI	ICW GPRES	70 30	16/11/20 23/10/20	Re-assessment date to be set by agreement of the Module Leader as/when required.	
10	I-MAT-A1016	Surface Science and Engineering	Prof John Nicholls	30		10	Y	25/01/21	25/01/21	29/01/21	40	ICW	100					22/02/21	Re-assessment date to be set by the Module Leader

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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
																	as/when required.	
11	I-UPT-A1186	Materials Process Engineering (New title)	Dr Jeff Rao	32		10	N	25/01/21	25/01/21	29/01/21	40	ICW	100				22/02/21	Re-assessment date set by Module Leader as/when required.
12	I-MAT-A1014	Finite Element Analysis	Dr Muhammad Khan/Dr Hamed Yazdani Nezhad	35		10	Y	09/11/20	09/11/20	13/11/20	40			100 MULTI	PRES ICW	10 90	07/12/20 30/11/20	Re-assessment date to be set by the Module Leader as/when required.
13	N-AEN-M	Manufacturing	Dr Jafar Jamshidi	25		10	Y	02/11/20	02/11/20	06/11/20	40	ICW	100				15/01/21	Re-assessment date to be set by the Module Leader as/when required.
14	I-MTM-CRS	Composites Joining, Repair	Dr Sameer Rahatekar	30		10	N	11/01/21	11/01/21	15/01/21	40	ICW	100				08/02/21	Re-assessment date to be set

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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment								
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates			
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date	
		and Serviceability																by agreement of the Module Leader as/when required.	
15	I-MTM-NAC	Nanomaterials and Advanced Composites	Dr Sameer Rahatekar	30		10	N	19/10/20	19/10/20	23/10/20	40	ICW	100					16/11/20	Re-assessment date to be set by agreement of the Module Leader as/when required.
16a	I-MAT-GRPP	Group Project	Dr David Ayre	20		40	Y	01/02/21	01/02/21 Occ A FT	27/04/21 FT	50	GCW ICW	80 20		GPRES GPROJ ICW Observed behaviour	20 80 50 50	27/04/21 04/05/21 04/05/21 04/05/21		
			Dr Supriyo Ganguly						01/02/21 Occ B PT	27/08/21 PT	50	GCW ICW	80 20		GPRES GPROJ ICW Observed behaviour	20 80 50 50	27/08/21 01/09/21 01/09/21 01/09/21		

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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
16b	I-MAT-DISS	Dissertation for Part Time Students	Dr Sue Impey/D David Ayre	20		40	Y	08/02/21	08/02/21	31/08/21	50	ICW	100				27/08/21	
16c	New module and code I-MPE-DISS	Dissertation for Materials Process Engineer	Dr Jeff Rao	20		40	N	This module is not available to students on non-Apprenticeship routes										
17	I-MNU-THESIS	Individual Research Project	Dr Muhammad Khan  Dr Muhammad Khan	20		80	Y	08/02/21	Occ A = PT 08/02/21	PT 27/08/21	50	THESIS OR	90 10				27/08/21 01/09/21	
								30/04/21	Occ B = FT 30/04/21	FT 27/08/21	50	THESIS OR	90 10				27/08/21 01/09/20	
18	New module and code I-MPE-DISS	Optimisation of Manufacturing Operations	Dr Jeff Rao	23		20		This module is not available to students on non-Apprenticeship routes										

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

## 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.

### Apprenticeship route.

Module Number	Module code	Title	Module Leader	Contact hours <sup>12</sup>	Total hours delivered by Visiting Lecturer <sup>13</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg 11/01/21)	' Residential' Start Date	' Residential' End Date	Minimum Mark <sup>14</sup> - 40%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>15</sup> (%) of Independent	Weighting within module of multi-part assessments	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>17</sup>	Assessment Submission and/or exam date <sup>18</sup>	Assessment / Exam Retake date
1	I-MTM-A2028 A19 Occ B	Introduction to Manufacturing, Materials and Research Techniques	Dr Sue Impey/Dr Kostas Georgarakis/ Dr Jeff Rao	25		10	Y	11/01/21	11/01/21	15/01/21	40			100 MULTI	GCW GPRES	80 20	08/02/21 15/01/21	Re-assessment date to be set by agreement of the Module Leader as/when required.
2	I-MAT-A1009	Introduction to Materials Engineering	Dr David Ayre	30		10	Y	This module is not available to students on the Apprenticeship route										

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  $\geq 50\%$ .

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 <sup>12</sup>	Total hours delivered by Visiting <sup>13</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg 17/01/22)	'Residential' Start Date	'Residential' End Date	Minimum Mark <sup>14</sup> - 40%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>15</sup> (%) of Independent	Weighting within module of multi-part assessments	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>17</sup>	Assessment Submission and/or exam date <sup>18</sup>	Assessment / Exam Retake date
3	I-GPD-A1505 A21 Occ A	Lean Product Development	Dr Ahmed Al-Ashaab	32		10	Y	17/01/22	17/01/22	21/01/22	40	GCW	100				14/02/22	Re-assessment date to be set by agreement of the Module Leader as/when required.
4	I-MNU-A1018 A20 Occ C	General Management	Mr Matthew Caffrey	32		10	Y	24/05/21	24/05/21	28/05/21	40	EX	100				25/06/21	Resit exams dates will be advised accordingly
5	I-MAT-A1013 –	Composites Manufacturing for High Performance Structures	Andrew Mills	35		10	Y	This module is not available to students on the Apprenticeship route										
6	I-MNU-A1034 A20 Occ B	Operations Management	Mr John Patsavellas	32		10	Y	08/03/21	08/03/21	12/03/21	40	EX	100				17/05/21	Resit exams dates will be advised accordingly
7	I-MNU-A1029 A21 Occ A	Operations Analysis	Dr Kostas Salonitis	32		10	Y	25/10/21	25/10/21	29/10/21	40	EX	100				17/12/21	Resit exams dates will be advised accordingly
8	I-WEE-A1110	Advanced Welding Processes	Dr Wojciech Suder	32		10	Y	This module is not available to students on the Apprenticeship route										

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 <sup>12</sup>	Total hours delivered by Visiting <sup>13</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment						
								Module Start Date (eg 24/01/22)	' Residential' Start Date	' Residential' End Date	Minimum Mark <sup>14</sup> - 40%	Independent Assessment		Multi-part Assessment		Submission dates	
												Type of Assessment	Weighting within module <sup>15</sup> (%) of independent	Weighting within module of multi-part assessments	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>17</sup>	Assessment Submission and/or exam date <sup>18</sup>
9	I-MAT-A1011	Additive and Subtractive Manufacturing Technologies	Dr Isidro Durazo-Cardenas	30		10	Y	This module is not available to students on the Apprenticeship route									
10	I-MAT-A1016	Surface Science and Engineering	Prof John Nicholls	30		10	Y	This module is not available to students on the Apprenticeship route									
11	I-UPT-A1186	Functional Coatings and Thin Films Materials Process Engineering (new title)	Dr Jeff Rao	32		10	N	24/01/22	24/01/22	28/01/22	40	ICW	100			21/02/22	Re-assessment date set by Module Leader as/when required.
12	I-MAT-A1014	Finite Element Analysis	Dr Muhammad Khan/Dr Hamed Yazdan Nezhad	35		10	Y	This module is not available to students on the Apprenticeship route									
13	N-AEN-M	Manufacturing	Dr Kostas Salonitis	25		10	Y	This module is not available to students on the Apprenticeship route									
14	I-MTM-CRS (New module)	Composites Joining, Repair and Serviceability	Dr Hamed Yazdani Nezhad	30		10	N	This module is not available to students on the Apprenticeship route									
15	I-MTM-NAC (New module)	Nanomaterials and Advanced Composites	Dr Sameer Rahatekar	30		10	N	This module is not available to students on the Apprenticeship route									

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 <sup>12</sup>	Total hours delivered by Visiting <sup>13</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg ' Residential' Start Date	' Residential' End Date	Minimum Mark <sup>14</sup> - 40%	Independent Assessment		Multi-part Assessment		Submission dates			
											Type of Assessment	Weighting within module <sup>15</sup> (%) of Independent	Weighting within module of multi-part assessments	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>17</sup>	Assessment Submission and/or exam date <sup>18</sup>	Assessment / Exam Retake date	
16a	I-MAT-GRPP	Group Project	Dr David Ayre/ Dr Supriyo Ganguly	20		40	Y	This module is not available to students on the Apprenticeship route										
16b	I-MAT-DISS	Dissertation for Part Time Students	Dr Sue Impey/Dr David Ayre	20		40	Y	This module is not available to students on the Apprenticeship route										
16c	New module and code I-MPE-DISS	Dissertation for Materials Process Engineer	Dr Jeff Rao	20		40	N	28/03/22	28/03/22	20/06/22	50	ICW	100				27/06/22	
17	I-MNU-THESIS A21 Occ C	Individual Research Project	Dr Muhammad Khan	20		80	Y	01/08/22	01/08/22	30/11/22	50	THESIS OR	90				02/12/22 05/12/22	
18	New module and code I-MTM-OMO	Optimisation of Manufacturing Operations	Dr Jeff Rao	23		20	N	01/10/21	01/10/21	01/03/22	50	ICW	100				07/03/21	Re-assessment date set by Module Leader as/when required.

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

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

<b><u>Module code</u></b>	<b><u>Module title</u></b>	<b><u>Course that owns the module</u></b>	<b><u>Other course(s)/ programme(s) that use the module</u></b>
I-MTM-A2028	Introduction to Manufacturing, Materials and Research Techniques	Manufacturing Technology and Management	EngD in Sustainable Manufacturing Systems
I-MAT-A1009	Introduction to Materials Engineering	Advanced Materials	Aerospace Materials
I-GPD-A1505	Lean Product Development	Global Product Development and Management	Engineering Competence
I-MNU-A1018	General Management	Engineering and Management of Manufacturing Systems	Global Product Development and Management, Management and Information Systems, Advanced Materials, Engineering Competence, Metal Additive Manufacturing
I-MAT-A1013	Composites Manufacturing for High Performance Structures	Advanced Materials	Aerospace Manufacturing, Aerospace Materials, Renewable Energy Marine Structures EngD
N-AEN-M	Manufacturing	Aircraft Engineering	Airworthiness
I-MAT-A1016	Surface Science and Engineering	Advanced Materials	Aerospace Materials
I-MAT-A1014	Finite Element Analysis	Advanced Materials	Aerospace Materials, Metal Additive Manufacturing
I-WEE-A1110	Advanced Welding Processing	Welding Engineering	Aerospace Manufacturing, Renewable Energy Marine Structures EngD
I-MNU-A1034	Operations Management	Engineering and Management of Manufacturing Systems	Aerospace Manufacturing, Cyber-Secure Manufacturing, Global Product Development and Management, Management and Information Systems, Engineering Competence
I-MNU-A1029	Operations Analysis	Engineering and Management of Manufacturing Systems	Aerospace Manufacturing, Manufacturing Technology and Management
I-MAT-GRPP	Group Project	Advanced Materials	Aerospace Materials, Aerospace Manufacturing, Engineering and Management of Manufacturing Systems, Global Product Development and Management, Management and Information Systems, Cyber-Secure Manufacturing, Welding Engineering, Metal Additive Manufacturing
I-MAT-DISS	Dissertation for Part Time Students	Advanced Materials	Aerospace Materials, Aerospace Manufacturing, Engineering and Management of Manufacturing Systems, Global Product Development

			and Management, Management and Information Systems, Cyber-Secure Manufacturing, Welding Engineering, Metal Additive Manufacturing
I-MNU-THESIS	Individual Research Project	Advanced Materials	Cyber-Secure Manufacturing, Engineering and Management of Manufacturing Systems, Global Product Development and Management, Management and Information Systems, Aerospace Materials, Welding Engineering, Metal Additive Manufacturing, Aerospace Manufacturing

### 8. 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	GCW		GCW	GCW/ GPRES
2	EX		EX	EX
3	GCW	GCW	GCW	GCW
4			EX	EX
5	ICW	ICW	ICW	ICW
6		EX	EX	
7			EX	EX
8	EX	EX	EX	EX
9	ICW/ GPRES	ICW/ GPRES	ICW/ GPRES	ICW/ GPRES
10	ICW	ICW	ICW	ICW
11	ICW	ICW	ICW	ICW
12	PRES ICW	PRES ICW	PRES ICW	PRES ICW

Award ILOs Module No.	ILO 1	ILO 2	ILO 3	ILO 4
13	ICW	ICW		ICW
14	ICW	ICW	ICW	ICW
15	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
16a	GPRES GPROJ ICW	GPRES GPROJ ICW	GPRES GPROJ ICW	GPRES GPROJ ICW
16b	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 5	ILO 6	ILO 9
17			THESIS OR
18	ICW	ICW	

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

Title	Modules Covered	Assessment	
		Type	Weight (%)

## 9. 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 provides authoritative guidance on policy and procedure to the Panel. Proposals are reviewed in line with the UK Quality Code for Higher Education. 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 guiding principles to meet the Expectations and Core Practices of the UK Quality Code for Higher Education. 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 UK Quality Code for Higher Education. The delivery of new partnership provision is ultimately approved by the Universities 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.

## **10. 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.

**Date of first publication/latest revision:** August 2020

#### **A. What is the course?**

##### **Course information**

<b>Course Title</b>	Master of Business Administration Master of Business Administration (Energy)
<b>Course code</b>	MBFTMFTC (Energy Route: ENEF) (Chilean Route: MBACHLF)
<b>Academic Year</b>	2020-21
<b>Valid entry routes</b>	MBA
<b>Additional exit routes</b>	PgCert in Business Administration PgDip in Business Administration
<b>Mode of delivery</b>	Full-time
<b>Location(s)<sup>1</sup> of Study</b>	Cranfield University
<b>School(s)</b>	School of Management
<b>Theme</b>	Leadership and Management
<b>Centre</b>	Centre for Management
<b>Course Director</b>	Dr Andrew Angus
<b>Awarding Body</b>	Cranfield University
<b>Is this an AP Contract course?<sup>2</sup></b>	No
<b>Is this course offered as a Cranfield Mastership?</b>	No
<b>Apprenticeship Standard the course is mapped to</b>	No
<b>Is the Degree apprenticeship integrated or non-integrated?</b>	No
<b>Is the Mastership offered as an open and/or closed course?</b>	N/A

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

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

<b>Teaching Institution</b>	Cranfield University
<b>Admissions body</b>	Cranfield University
<b>Entry requirements</b>	<ul style="list-style-type: none"> <li>• A minimum of three years' post-qualification work experience.</li> <li>• A good degree and / or professional qualification.</li> <li>• 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.</li> </ul> <p>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.</p>
<b>UK Qualifications Framework Level</b>	QAA FHEQ Level 7 (Masters)
<b>Benchmark Statement(s)</b>	N/A
<b>Registration Period(s) available</b>	1 year
<b>Course Start Month(s)</b>	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 not accredited by any external bodies.

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).

### **B. 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 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 to start a new business or grow their existing business.

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

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

#### **A. MBA**

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

- ILO 1. Demonstrate robust yet flexible qualities of leadership and an understanding of a wide range of management techniques.
- ILO 2. Exhibit a conceptual understanding of the main functional areas of management and a systematic knowledge of the relevant literature.
- ILO 3. How a thorough understanding of the importance of strategy, cross-function working and managing core business processes.
- ILO 4. Articulate a critical awareness of the global environment within which organisations operate and the cultural, political, 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.

||

### **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 8. 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 240 credits as outlined below:

Description	Credits
<b>COMPULSORY MODULES:</b>	
Module 1, 15	40
Modules 2-12	110
Modules 13-14, 16	30
<b>ELECTIVE MODULES:</b>	
60 credits from Modules 17-37	60
<b>TOTAL:</b>	<b>240</b>

### B. MBA (Energy) – Not running in 2020/21

Description	Credits
<b>COMPULSORY MODULES:</b>	
Module 1, 15	40
Modules 2-12	110
Modules 13-14, 16	30
Modules 38-43	60
<b>TOTAL:</b>	<b>240</b>

### C. MBA (Chilean Collaboration)

Description	Credits
<b>COMPULSORY MODULES:</b>	
Credits awarded for University of Chile (APL)	80
Modules 8-14, 15a-16, 34	100

<b>ELECTIVE MODULES:</b>	
60 credits from Modules 16-33, 35-42	60
<b>TOTAL:</b>	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 course in September and are expected to complete the course within 13 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, full-time MBA 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.

## **7. Course Level Assessment Strategy<sup>3</sup>**

The aim of the course 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 course further aims to offer personal and specialist skills development for candidates with extensive industrial experience. This approach has been adopted to ensure that students demonstrate their understanding through a wide range of learning techniques, but are not disadvantaged through any one approach.

The assessment strategy of this course is challenging and diverse and enables students to demonstrate a full range of skills and attributes, as described in module and course intended learning outcomes. Summative assessment will include a range of assessment types including the preparation of individual and group reports, oral presentations and written exams.

Written coursework will be of varying lengths, recognising that writing coursework to a short length can be more challenging for some and can develop different skills relevant to professional practice. The length of each assessment task will usually be stated within the module descriptor. Students then have opportunities to develop their communication and group working skills, as

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<sup>3</sup> Guidance to aid colleagues writing or updating a course-level assessment strategy for inclusion in the Course Specification can be found as Appendix K in either the Senate Handbook on Setting up a New Taught Course or the Senate Handbook on Managing Taught Courses  
<https://intranet.cranfield.ac.uk/EducationServices/Pages/SenateHandbooksA-Z.aspx>

they are required to give group presentations. Feedback for all assessments is given in a timely fashion, dependent on the type of assessment, but always within 20 working days.

Many modules such as Economics of Organisations and Strategy, Strategic Management and Project Management Introduction are supported by a number of formative tasks including group discussion, case studies and oral presentations. Formative feedback will be provided through in-class discussion on the conceptual material introduced during each session.

## Course modules – FT MBA ‘A’ occurrences unless specified

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

Module Number	Module code	Title	Module Leader	Contact hours <sup>4</sup>	Total hours delivered by Visiting Lecturers <sup>5</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment								
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>6</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates			
												Type of Assessment	Weighting within module <sup>7</sup> (%) of Independent	Weighting within module of multi-part assessments <sup>8</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part	Assessment Submission and/or exam date <sup>10</sup>	Assessment / Exam Retake date	
<b>PART ONE MT1 Modules</b>																			
1	M-M/OBL	Organisational Behaviour: Developing Leadership	Dr Richard Kwiatkowski	40		20	N	05/10/20	05/10/20	01/12/20	50	I P R O J	100					8/12/20 tbc	
2	M-M/ACC	Accounting	Dr Matthias Nnadi	20		10	N	23/10/20	23/10/20	01/12/20	50	EX	100					EXAM WEEK 1	

<sup>4</sup> Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

<sup>5</sup> Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

<sup>6</sup> 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%.

<sup>7</sup> For **independent assessments** please record type and weighting of each separate piece of assessment individually. 10 credit modules should be designed to allow assessment through a single independent summative assessment. Deviations will require approval by the School Director of Education

<sup>8</sup> For **multi-part assessments** please record the overall weighting of module which should be 100%. Multipart assessments should only be included in courses where there is a clear androgogical reason and where each element forms part of a continuous learning and assessment experience for students.

<sup>9</sup> 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.

<sup>10</sup> 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 <sup>4</sup>	Total hours delivered by Visiting Lecturers <sup>5</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment								
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												Type of Assessment	Weighting within module <sup>7</sup> (%) of Independent	Weighting within module of multi-part assessments <sup>8</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part	Assessment Submission and/or exam date <sup>10</sup>	Assessment / Exam Retake date	
3	M-M/OPS	Strategic Operations Management	Dr Abdelkader Aoufi	20		10	N	26/10/20	26/10/20	26/11/20	50			100 MULTI	GPRES GCW	40 60	26/11/20 17/12/20		
4	M-M/MKT	Strategic Marketing	Dr Stan Maklan	20		10	N	14/10/20	14/10/20	20/11/20	50	ICW	50	50 MULTI	GCW GPRES	30 20	08/12/20 20 30/10/20 Stream 1 09/11/20 stream 2 10/11/20		
5	M-M/EOS	Economics of Organisations and Strategy	Dr Catarina Figueira	20		10	N	12/10/20	12/10/20	13/11/20	50	GCW	100				11/12/20		
6	M-M/ENT	Entrepreneurship and New Venture Creation	Dr Oksana Koryak	20		10	Y	30/11/20	30/11/20	11/12/20	50	GCW	100				15/12/20 16/12/20		
7	M-M/ESB	Entrepreneurial Finance	Dr Stephanie Hussels	20		10	Y	08/02/21	08/02/21	26/02/21	50	GCW	100				26/03/21		
TERM TWO MT2																			
8	M-M/FIN	Financial Management	Dr Andrea Moro	20		10	N	20/01/21	20/01/21	09/03/21	50	EX	100				Exam Week 6		

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 <sup>4</sup>	Total hours delivered by Visiting Lecturers <sup>5</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment								
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												Type of Assessment	Weighting within module <sup>7</sup> (%) of Independent	Weighting within module of multi-part assessments <sup>8</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part	Assessment Submission and/or exam date <sup>10</sup>	Assessment / Exam Retake date	
9	M-M/STG	Strategic Management	Dr Richard Schoenberg	20		10	Y	21/01/21	21/01/21	25/2/21	50	GCW	100					12/03/21	
10	M-M/PMI	Project Management Introduction	John Algar	20		10	N	13/01/21	13/01/21	17/01/21	50	EX	40					Exam Week 4	
														60 MULTI	GCW GPRAC GPRES	10 30 20	13/03/21 13/03/21 13/03/21		
11	M-M/GME	Global Macroeconomics and Business Environment	Prof Joe Nellis	20		10	Y	03/02/21	03/02/21	24/02/21	50	GCW	100					26/03/21	
12	M-M/MPC	Challenges for Leaders: Managing People and Change	Debora Gottardello	20		10	Y	20/01/21	20/01/21	19/02/21	50	EX	100					Exam week 3	
13	MXM/LS B	Leading Sustainable Business	Dr Rosina Watson	20		10	Y	08/03/21	08/03/21	19/03/21	50	ICW	100					19/03/21	
<b>PART TWO MT34 Modules</b>																			

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 <sup>4</sup>	Total hours delivered by Visiting Lecturers <sup>5</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>6</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>7</sup> (%) of Independent	Weighting within module of multi-part assessments <sup>8</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part	Assessment Submission and/or exam date <sup>10</sup>	Assessment / Exam Retake date
14	M-M/IBA	International Business Assignment	Dr Emma Parry	20		10	Y	04/06/21	04/06/21	14/06/21	50	ICW GCW	20 80				17/07/21 17/07/21	
15	M-M/DMDA	Data Analytics and Decision Making	Dr Catarina Figueira	40		20	Y	20/01/21	20/01/21	11/05/21	50	EX GPR OJ	30 70				Exam week 6 22/06/21	
15a	M-M/DMDAC	Decision Making and Data Analytics (Chilean students only) – supplemented by APL	Dr Catarina Figueira	20		10	N	20/01/21	20/01/21	11/05/21	50	ICW	100				22/06/21	
16	M-M/LIA	Leadership in Action	Emma Parry	20		10	N	06/05/21	06/05/21	19/07/21	50	ICW	100				22/07/21	
<b>ELECTIVES</b>																		
<b>MT34</b>																		
17	M-M/IST	International Strategy	Prof Patrick Reinmoeller	20		10	Y	26/05/21	26/05/21	04/6/21	50	GCW ICW	80 20				03/07/21 04/04/21	
18	M-M/MMA	Managing International	Dr Richard Schoenberg	20		10	Y	Not Running in 2020-21				GCW	70 30				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; MULTI – Multi-part Assessment

Module Number	Module code	Title	Module Leader	Contact hours <sup>4</sup>	Total hours delivered by Visiting Lecturers <sup>5</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>6</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>7</sup> (%) of Independent	Weighting within module of multi-part assessments <sup>8</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part	Assessment Submission and/or exam date <sup>10</sup>	Assessment / Exam Retake date
		Mergers and Acquisitions										GPR ES						
19	M-M/CFS	Corporate Financial Strategy	Dr Benoit Chevalier-Roignant	20		10	Y	20/04/21	20/04/21	27/04/21	50	EX	100				Exam Week 6	
20	M-M/CFT	Corporate Finance Transactions		20		10	N	Not Running in 2020-21				ICW GCW	10 90				N/A	
21	M-M/SCC	Strategizing in Challenging Contexts	Dr Richard Schoenberg	20		10	Y	19/05/20	19/05/20	17/06/21	50	GCW	100				1/07/21	
22	M-M/SHR	Strategic Human Resource Management in the 21 <sup>st</sup> Century	Dr Valentina Battista	20		10	Y	20/04/21	20/04/21	07/05/21	50	ICW	100				11/06/21	
23	M-M/DVSC	Driving Value Through the Supply Chain	Assoc Prof Mike Bernor	20		10	Y	10/5/21	10/5/21	27/06/21	50	ICW	100				14/08/21	
24	M-M/NBO	Negotiating in Business and Organisations	Dr Javier Marcos	20		10	Y	13/07/21	13/07/21	30/7/21	50	ICW	100				07/08/21	
25	M-M/MSI	Managing Strategic Innovation	Prof Mark Jenkins	20		10	N	Not Running				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; MULTI – Multi-part Assessment

Module Number	Module code	Title	Module Leader	Contact hours <sup>4</sup>	Total hours delivered by Visiting Lecturers <sup>5</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>6</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
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26	M-M/BL	Business Law	Dr Anicee van Engeland	20		10	Y	With EMBA				ICW	100				16/07/21	
27	M-M/IHN	Identifying (Customers') Hidden Needs						Not Running in 2020-21										
28	M-M/IRM	Investment and Risk Management	Prof Sunil Poshakwale	20		10	N	12/04/21	12/04/21	12/05/21	50	EX	100				Exam Week 6	
29	M-M/LSO	Leading Sales and Customer Management Organisations	Dr Javier Marcos	20		10	Y	06/05/21	06/05/21	26/05/21	50	ICW	100				07/07/21	
30	M-M/CPM	Major Critical Projects and Programme Management – a Sectoral Approach						Not Running in 2020-21										
31	M-M/LMF	Leading and Managing the Family Enterprise	Dr Stephanie Hussels	20		10	Y	07/07/21	07/07/21	28/07/21	50	GCW	100				21/08/21	
32	M-M/SQM	Strategic Quality Management						Not Running in 2020-21										

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 <sup>4</sup>	Total hours delivered by Visiting Lecturers <sup>5</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>6</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates			
												Type of Assessment	Weighting within module <sup>7</sup> (%) of Independent	Weighting within module of multi-part assessments <sup>8</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part	Assessment Submission and/or exam date <sup>10</sup>	Assessment / Exam Retake date	
33	M-M/LTP	Leaders as Thinkers: Leadership through Philosophy	Dr Andrey Pavlov	20		10	N	16/4/21	16/4/21	27/5/2021	50	ICW	100					07/06/21	
34	M-M/IP	Independent Project	Dr Andrew Angus			10	Y	14/04/21	14/04/21	31/08/21	50	ICW	100					31/08/21	
34a	M-M/IP1	Independent Project	Dr Andrew Angus			10	Y	14/04/21	14/04/21	31/08/21	50	ICW	100					31/08/21	
35	M-M/IP2	Independent Project	Dr Andrew Angus			20	Y	14/04/21	14/04/21	31/08/21	50	ICW	100					31/08/21	
36	M-M/GP1	Group Project	Dr Andrew Angus			10	Y	14/04/21	14/04/21	31/08/21	50	GCW	100					31/08/21	
37	M-M/GP2	Group Project	Dr Andrew Angus			20	Y	14/04/21	14/04/21	31/08/21	50	GCW	100					31/08/21	
38	M-ME/EM EP	Energy Markets. An Executive Perspective						Not Running in 2020-21											
39	M-ME/SCE T	Sustainable and Conventional Energy Technologies						Not Running in 2020-21											

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 <sup>4</sup>	Total hours delivered by Visiting Lecturers <sup>5</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment						
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												Type of Assessment	Weighting within module <sup>7</sup> (%) of Independent	Weighting within module of multi-part assessments <sup>8</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part	Assessment Submission and/or exam date <sup>10</sup>
40	M-ME/FPEC	Value Chain of Fuels Production and Energy Conversion						Not Running in 2020-21									
41	M-ME/RM DM	Risk Management and Decision Making in Energy Industry						Not Running in 2020-21									
42	M-ME/RMS	Resource Management Strategy						Not Running in 2020-21									
43	M-ME/SECP	Specialised Energy Consultancy Project						Not Running in 2020-21									

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.

<b><u>Module code</u></b>	<b><u>Module title</u></b>	<b><u>Course that owns the module</u></b>	<b><u>Other course(s)/ programme(s) that use the module</u></b>
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/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/MSI	Managing Strategic Innovation	Master of Business Administration	Executive Master of Business Administration; Business and Strategic Leadership
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
MXM/LSB	Leading Sustainable Business	Executive Master of Business Administration	Master of Business Administration

## 8. 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

Award ILOs Module No.	ILO1.	ILO2.	ILO3.	ILO4.	ILO5.	ILO6.	ILO7.	ILO8.	ILO9.	ILO10.	ILO11.
13	ICW	ICW	ICW	ICW	ICW						
14	GCW		ICW	GCW	ICW / GCW		GCW	GCW		GCW	
15					EX/ GPROJ		GPROJ				
15a	ICW	ICW				ICW				ICW	
16	ICW							ICW	ICW		ICW
17			ICW / 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											
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	ICW		ICW	ICW	ICW	ICW			ICW	ICW	
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			

## 9. 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 provides authoritative guidance on policy and procedure to the Panel. Proposals are reviewed in line with the UK Quality Code for Higher Education. 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 guiding principles to meet the Expectations and Core Practices of the UK Quality Code for Higher Education. 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 UK Quality Code for Higher Education. The delivery of new partnership provision is ultimately approved by the Universities 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.

#### **10. 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.



**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.

Date of first publication/latest revision: August 2020

**1. What is the course?**

Course information

Course Title	MSc in Metal Additive Manufacturing
Course code	MSMAMFTC, MSMAMPTC, PDMAMFTC, PDMAMPTC, PCMAMFTC, PCMAMPTC
Academic Year	2020-21
Valid entry routes	MSc, PgDip, PgCert
Additional exit routes	PgDip, PgCert
Mode of delivery	Full-time, Part-time
Location(s) <sup>1</sup> of Study	Cranfield University
School(s)	School of Aerospace, Transport and Manufacturing
Theme	Manufacturing
Centre	Welding Engineering and Laser Processing
Course Director	Dr Supriyo Ganguly
Awarding Body	Cranfield University
Is this an AP Contract course? <sup>2</sup>	No
Is this course offered as a Cranfield Mastership?	No
Apprenticeship Standard the course is mapped to	N/A
Is the Degree apprenticeship integrated or non-integrated?	N/A
Is the Mastership offered as an open and/or closed course?	N/A
Teaching Institution	Cranfield University
Admissions body	Cranfield University

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

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

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: 1 year      Full-time PgDip: up to 1 year Full-time PgCert: up to 1 year Part-time MSc: 3 years      Part-time PgDip and PgCert: 2 years
Course Start Month(s)	Full-time MSc: October Part-time: throughout the year

### Institutions delivering the course

This course is delivered by School of Aerospace, Transport and Manufacturing, Manufacturing Theme, Welding Engineering and Laser Processing Centre where the research interests include:

Arc and Laser Wire-Based Additive Manufacture  
Laser Micro-Joining  
High Power Laser Welding  
Hybrid Laser/Arc Welding  
Weld Repair and Modelling

Within the Welding Engineering and Laser Processing Centre, the Additive Manufacturing (AM) team has been pioneering research in large-scale AM of metallic structures since the '90s, with a major push for more than 10 years. Cranfield University has been active on all required fronts, i.e. process design; incorporation of ancillary processes (cold work, metrology, inspection); development of specialist hardware and CAM software; qualification of material properties; and definition of design and manufacturing rules. The ever-growing materials portfolio is impressive, and features alloys systems such as titanium-, aluminium-, iron-, nickel-, copper-based ones, as well as more exotic elements such as tungsten, molybdenum, and tantalum.

Notable results include:

- worlds' largest monolithic metal AM part, a 6-m 300-kg aluminium spar structure
- several primary structural elements for both military and civil applications (spar, ribs, bracket, mounts, bulkheads), with the required level of structural integrity, and planar area as big as 2m x 1.5m (already validated on a real primary airframe component)
- pressure vessels for manned and unmanned space missions, up to 1m tall and 40kg heavy
- rocket motor bodies
- net-shape deposition of small structures i.e. 1-2mm thick.

Students will have access to several state-of-the-art AM facilities, including Wire + Arc AM systems based on robotic arms or CNC gantries, laser-wire AM systems, as well as powder-based systems too.

Moreover, the students will join a teaching and research team of approximately 30 people, and should have the chance to work on projects within the WAAMMat consortium, that currently counts 20 industry partners (including Airbus, BAE SYSTEMS, Lockheed Martin, etc). More details on [waammat.com](http://waammat.com)

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

1. Students may undertake their research and/or project work off campus
2. Significant input to the teaching of two of the modules (Net-shape Manufacturing, and Post-processing for AM) will be provided by the University of Birmingham.

Cranfield University will retain overall responsibility for the modules and therefore the partnership may be described as "Partner Support". The formal process of partnership recognition has been initiated.]

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

### **Accreditation by Public, Statutory or Regulatory Bodies (PSRBs)**

It is our intention to seek accreditation from the following bodies (in line with other courses in the Materials programme):

- Institution of Mechanical Engineers (IMechE)
- Institution of Engineering and Technology (IET)
- Royal Aeronautical Society (RAeS)
- Institute of Materials, Minerals and Mining (IOM3)

The course will be designed to meet the requirements of "The Accreditation of Higher Education Programmes" published by the Engineering Council.

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

Cranfield University offers the MSc course in order to deliver graduates who are able to hold positions of significant engineering responsibility in the wide range of organisations using Metal Additive Manufacturing Technologies. This course provides students with the latest knowledge and skills for metal Additive Manufacturing (AM) providing a great foundation for a future career. This includes AM processes and their capabilities, designing AM systems, qualification, modelling and materials. Practical experience will be gained through assignments and group and individual projects in close collaboration with leading industrial end users. The graduate will meet a major part of the requirements for membership of the appropriate professional organisations, and will have experience and skills in the management of research and development projects.

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

This programme is intended for the following range of students:

[Students with a background in Engineering, Materials Science and Physics.]

## **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 applicability of Metal AM to real use cases
- ILO 2. Assess the impact of a metal additive manufacturing and other net-shape processes to a component's material, microstructure and mechanical properties.
- ILO 3. Design parts for additive manufacturing and analyse loads to predict structural performance.
- ILO 4. Evaluate the impact of metal additive manufacturing on cost, operations and supply chain against conventional processes.]
- ILO 5. Evaluate the requirements of health and safety legislation in relation to AM, and demonstrate knowledge of National, European and International standards relating to quality assurance in AM.
- ILO 6. Evaluate the quality of data and determine its relevance in research and industrial contexts.]

## **B. Postgraduate Diploma**

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

- ILO 7. Communicate effectively results of developments, proposals and analyses to specialist and non-specialist audiences, both orally and in writing.
- ILO 8. Plan, organise, undertake, and analyse research and industrial projects to increase knowledge and understanding of AM, and to evaluate the application of AM technology in industrial applications, also from a cost perspective.
- ILO 9. Propose new developments to solve AM technology problems, individually or as part of a team.

## **C. MSc**

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

- ILO 10. Plan and manage research projects at the cutting edge of technology, show self-direction in the performance and analysis of research, and show on-going interest in advancing their knowledge and skills.

## **4. How is the course taught?**

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

The Metal Additive Manufacturing course will deliver the modules through a mixture of flipped classroom, conventional lecture, lab exercises, and problem based learning.

In addition to the teaching methods outlined students will be supported in their learning and personal development by:

1. Comprehensive course materials (provided), as well as a web-site using the Blackboard™ Virtual Learning Environment (VLE). Part-time students will be supported by granting remote access during lectures using video-conferencing facilities or other distance-learning methods.
2. Students are guided through the use of study texts, and use of interactive exercises. Problem-based learning will be included to promote self-centred learning. The TEL team will be involved in the preparation of some lecturing material.
3. Some of the material is designed to be delivered via Flipped Classroom format so that students prepare the material prior to arrival and then most of the tutorial session is devoted to performing exercises with feedback provided by the tutor. VLE will also be available throughout.
4. Course directors and module leaders will be available to provide support and advice on an informal basis to student queries. The same support will be provided to part-time students via email and telephone communication.

## **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
<b>COMPULSORY MODULES:</b>	
3. Metal AM Processes 4. Metal Additive Manufacturing Metallurgy	30
<b>ELECTIVE MODULES:</b>	
Three out of the following five: 5. Finite Element Analysis 6. Management of Manufacturing Quality 7. General Management 8. Post Processing for AM 9. Additive Manufacturing System Design	30
<b>TOTAL:</b>	60

## B. Postgraduate Diploma

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

### FULL TIME STUDENTS

Description	Credits
<b>COMPULSORY MODULES:</b>	
Seven taught modules 3-9	80
Group Project (10a)	40
<b>ELECTIVE MODULES:</b>	
None	
<b>TOTAL:</b>	120

### PART TIME STUDENTS

Description	Credits
<b>COMPULSORY MODULES:</b>	
Seven taught modules 3-9	80
<b>ELECTIVE MODULES:</b>	
Group Project (10a) or Dissertation (10b)	40
<b>TOTAL:</b>	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:

### FULL TIME STUDENTS

Description	Credits
<b>COMPULSORY MODULES:</b>	
Seven taught Modules 3-9	80
Group Project (10a)	40
Individual Research Project (11)	80
<b>ELECTIVE MODULES:</b>	
None	
<b>TOTAL:</b>	200

## PART TIME STUDENTS

Description	Credits
<b>COMPULSORY MODULES:</b>	
Seven taught Modules 3-9	80
Individual Research Project (11)	80
<b>ELECTIVE MODULES:</b>	
Group Project (10a) or Dissertation (10b)	40
<b>TOTAL:</b>	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);<sup>3</sup>
- **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  $\geq 40$  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 11 calendar months.

<sup>3</sup> 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 ( $< 50\%$ ).

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

Full-time PgDip students register for the course in October and are expected to complete the course within 7 calendar months. The technical modules and design project are delivered between October and April. Part-time the student would normally be expected to complete within 14-36 months.

Full-time PgCert students register for the course in October and are expected to complete the course within 5 calendar months. The technical modules and design project are delivered between October and April. Part-time the student would normally be expected to complete within 10-24 months.

The technical modules and design project are delivered between October and April, thereafter the full-time students undertake an individual research project. Modules are taught over one week and a second week is provided which is largely free of structured teaching to allow time for more independent learning and reflection.

Part-time students will attend modules with the full-time students with four being done during the first year of registration and the remaining four during the second. In addition, part-time students will undertake a design project normally during the first year of registration and an individual project normally during the second year of registration. Note that timing for individual students may need to be adjusted around work and other commitments

Please note the following pre-requisites with regards to the sequence of modules for part-time students:

- Metal AM processes, AM metallurgy, Finite element analysis, Management of Manufacturing Quality, General Management, Net-shape manufacturing: no pre-requisites;
- Post-processing for AM: pre-requires Metal AM processes, and AM metallurgy;
- AM system design: pre-requires Metal AM processes

## 7. Course Level Assessment Strategy<sup>4</sup>

The assessment tasks are challenging and enable students to demonstrate a full range of skills and attributes. The pre-requisite modules Metal AM processes and AM metallurgy will introduce students to the fundamentals of each AM processes, and to the architecture of AM machines, whilst mastering the effects of processing conditions on the resulting microstructure and mechanical properties. The modules will be assessed through essays, presentations and a closed-book examination. The length of each assessment task is clearly stated within the module descriptor. Students will write employability relevant policy briefing documents to equip them with the skills they require to succeed in the field of metal AM, and to address the specific award ILOs 1-7. Students then have opportunities to develop their communication skills, as they are required to give a group presentation and individual presentation. The ability to work effectively in groups is a highly desirable skill which has translated into ILOs 7 and 8. Feedback is given immediately after the group presentation. Modules 3, 4, 7 and 8 are supported by a number of formative tasks including group discussion, case studies, oral presentations. Formative feedback is given verbally within the classroom following discussions, via a written summary for case studies from the module leader and oral feedback provided by the tutor and peers for presentations. Students will also engage with an interactive learning activity which incorporates formative feedback. The taught components precede the research project, so assessment can be used to develop skills required for the individual research project. Students are generally expected to be more self-directed in their learning during this research project. The research project addresses ILOs 9 and takes the form of a Thesis, typically written following the structure of a research paper. Students are expected to illustrate and defend their work at the end of the Thesis project.

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<sup>4</sup> Guidance to aid colleagues writing or updating a course-level assessment strategy for inclusion in the Course Specification can be found as Appendix K in either the Senate Handbook on Setting up a New Taught Course or the Senate Handbook on Managing Taught Courses <https://intranet.cranfield.ac.uk/EducationServices/Pages/SenateHandbooksA-Z.aspx>

## 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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
1	I-MAT-INWK	Introduction	Dr Sue Impey	18		0	Y	28/09/20	28/09/20	02/10/20	N/A	AO	N/A				N/A	
2	I-WEE-A1109A	Introduction to Materials for Welding Engineering (Attendance Only) [Conv]	Dr Supriyo Ganguly	28		0	Y	05/10/20	05/10/20	09/10/20	N/A	AO	N/A				N/A	
3	N-MAM-MAMP	Metal Additive Manufacturing Processes	Dr Supriyo Ganguly	48	6	20	N	12/10/20	12/10/20	23/10/20	40	MULTI	100	100 MULTI	IPRES ICW	10 90	16/12/20	At the next available opportunity

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

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

<sup>7</sup> 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  $\geq 50\%$ .

<sup>8</sup> For **independent assessments** please record type and weighting of each separate piece of assessment individually. 10 credit modules should be designed to allow assessment through a single independent summative assessment. Deviations will require approval by the School Director of Education

<sup>9</sup> For **multi-part assessments** please record the overall weighting of module which should be 100%. Multipart assessments should only be included in courses where there is a clear andragogical reason and where each element forms part of a continuous learning and assessment experience for students.

<sup>10</sup> 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.

<sup>11</sup> 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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment								
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates			
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date	
																		which may not be until the following academic year	
4	N-MAM-MAMM	Metal Additive Manufacturing Metallurgy	Dr Supriyo Ganguly	23	0	10	N	26/10/20	26/10/20	30/10/20	40	EX	100					18/12/20	At the next available opportunity which may not be until the following academic year
5	New code required N-MAM-FEAM	Finite Element Analysis for Additive Manufacturing	Dr Yongle Sun	29	0	10	Y	09/11/20	09/11/20	17/11/20	40	ICW	100					07/12/20	Reassessment date to be set by agreement of the module leader as/when required.
6	N-MAM-MMQ	Management of Manufacturing Quality	Dr Supriyo Ganguly	29	0	10	Y	11/01/21	11/01/21	15/01/21	40	ICW	100					08/02/21	Reassessment date to be set by agreement of the module leader

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 <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment								
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates			
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date	
																		as/when required.	
7	I-MNU-A1018	General Management	Matthew Caffrey	32	0	10	Y	30/11/20	30/11/20	04/12/20	40	EX	100					08/01/21	At the next available opportunity which may not be until the following academic year
8	N-MAM-PPAM	Post Processing for Additive Manufacturing	Dr Surya Krishnaswamy	27	27	10	N	25/01/21	25/01/21	29/01/21	40	ICW	100					22/02/21	Reassessment date to be set by agreement of the module leader as/when required.
9	N-MAM-AMSD	Additive Manufacturing System Design	Dr Surya Krishnaswamy	29	0	10	N	23/11/20	23/11/20	27/11/20	40	ICW	100					18/01/21	Reassessment date to be set by agreement of the module leader as/when required.

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; MULTI – Multi-part Assessment

Module Number	Module code	Title	Module Leader	Contact hours <sup>5</sup>	Total hours delivered by Visiting Lecturers <sup>6</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>7</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>8</sup> (%) of Independent assessments	Weighting within module of multi-part assessments <sup>9</sup> (100%)	Type of Assessment	Weighting of individual	Assessment Submission and/or exam date <sup>11</sup>	Assessment / Exam Retake date
10a	I-MAT-GRPP	Group Project	Dr. David Ayre  Dr Andy Pidcock	20		40	Y	01/02/21	01/02/21 Occ A (FT)	04/05/21 FT	50	GCW  ICW	80  20		GPRES GPROJ ICW Observed behaviour	20 80 50 50	27/04/21 04/05/21 04/05/21 04/05/21	Reassessment date to be set by agreement of the module leader as/when required.
								01/02/21 Occ B (PT)	01/09/21 PT	50	GCW  ICW	80  20		GPRES GPROJ ICW Observed behaviour	20 80 50 50	27/08/21 01/09/21 01/09/21 01/09/21		
10b	I-MAT-DISS	Dissertation for part-time students	Dr. David Ayre / Dr. Sue Impey	20		40	Y	01/02/21	01/02/21†	27/08/21	50	ICW	100				27/08/21	Reassessment date to be set by agreement of the module leader as/when required.
11	I-MNU-THESIS	Individual Research Project	Dr Muhammad Khan  Dr Muhammad Khan	20		80	Y	08/02/21	Occ A = PT 08/01/21	PT 27/08/21	50	THESIS OR	90 10				27/08/21 01/09/21	Reassessment date to be set by agreement of the module leader as/when required.
								01/05/21	Occ B = FT 04/05/21	FT 01/09/21	50	THESIS OR	90 10				27/08/21 01/09/21	Reassessment date to be set by agreement of the 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; MULTI – Multi-part Assessment

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

<b><u>Module code</u></b>	<b><u>Module title</u></b>	<b><u>Course that owns the module</u></b>	<b><u>Other course(s)/ programme(s) that use the module</u></b>
I-MAT-INWK	Introduction	Advanced Materials	Aerospace Materials Global Product Development and Management Management and Information Systems Manufacturing Technology and Management
I-WEE-A1109	Intro to materials for welding engineering	Welding Engineering	Metal Additive Manufacturing
I-MNU-A1018	General Management	Engineering and Management of Manufacturing Systems	Advanced Materials Global Product Development and Management Management and Information Systems Manufacturing Technology and Management
I-MAT-GRPP	Group Project	Advanced Materials	Aerospace Materials, Manufacturing Technology and Management, Aerospace Manufacturing, Engineering and Management of Manufacturing Systems, Global Product Development and Management, Management and Information Systems, Cyber-Secure Manufacturing, Welding Engineering, Maintenance Engineering & Asset Management
I-MAT-DISS	Dissertation for Part Time Students	Advanced Materials	Aerospace Materials, Aerospace Manufacturing, Engineering and Management of Manufacturing Systems, Global Product Development and Management, Management and Information Systems, Cyber-Secure Manufacturing, Welding Engineering, Manufacturing Technology and Management, Maintenance Engineering & Asset Management
I-MNU-THESIS	Individual Research Project	Advanced Materials	Cyber-Secure Manufacturing, Engineering and Management of Manufacturing Systems, Global Product Development and Management, Management and Information Systems, Aerospace Materials, Manufacturing Technology and Management, Welding Engineering, Aerospace Manufacturing, Maintenance Engineering & Asset Management

## 8. How are the ILOs assessed?

The following assessment types are utilised:

Students can expect to have either examination or assessment by submitted work and elements of assessment by presentation or viva.

This approach has been adopted because:

It allows the students to demonstrate their understanding through a wide range of learning techniques, but are not disadvantaged through any one approach.

### Assessment and ILO Mapping

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

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

#### A. Postgraduate Certificate

Award ILOs Module No.	ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
1	Not assessed					
2	Not assessed					
3	EX	EX		EX	EX	
4	EX			EX	EX	
5	ICW	ICW		ICW		
6			ICW	ICW	ICW	ICW
7			EX	EX		
8	ICW			ICW	ICW	ICW
9			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 7	ILO 8	ILO 9
10a	GPROJ	GPROJ	GPROJ
10b	IPROJ	IPROJ	IPROJ

#### C. MSc

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

<b>Award ILOs</b>	ILO 10
<b>Module No.</b>	
11	THESIS

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

Title	Modules Covered	Assessment	
		Type	Weight (%)

**9. 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 provides authoritative guidance on policy and procedure to the Panel. Proposals are reviewed in line with the UK Quality Code for Higher Education. 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 guiding principles to meet the Expectations and Core Practices of the UK Quality Code for Higher Education. 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 UK Quality Code for Higher Education. The delivery of new partnership provision is ultimately approved by the Universities 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.

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

Successful students develop diverse and rewarding careers in engineering management in a wide range of organisations deploying AM technologies. Roles include AM Manufacturing Engineer, Manager of AM Operations, AM Design Engineer, AM Materials Engineer and AM Cost Engineer. The international nature of such activities means that career opportunities are not restricted to the UK. Cranfield graduates develop careers around the world.

**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.

**Date of first publication/latest revision:** 2020

**1. What is the course?**

**Course information**

<b>Course Title</b>	Military Aerospace and Airworthiness
<b>Course code</b>	MSMAAPTR, PDMAAPTR, PCMAAPTR, SPMAAPTR
<b>Academic Year</b>	2020 – 2021
<b>Valid entry routes</b>	MSc, PgDip, PgCert
<b>Additional exit routes</b>	MSc, PgDip, PgCert
<b>Mode of delivery</b>	Part-time
<b>Location(s)<sup>1</sup> of Study</b>	Shrivenham and Bedford
<b>School(s)</b>	Cranfield Defence and Security
<b>Theme</b>	N/A
<b>Centre</b>	Centre for Defence Engineering: Aeromechanical Systems
<b>Course Director</b>	Dr John Economou
<b>Awarding Body</b>	Cranfield University
<b>Is this an AP Contract course?<sup>2</sup></b>	Yes
<b>Is this course offered as a Cranfield Mastership?</b>	N/A
<b>Apprenticeship Standard the course is mapped to</b>	N/A
<b>Is the Degree apprenticeship integrated or non-integrated?</b>	N/A
<b>Is the Mastership offered as an open and/or closed course?</b>	N/A
<b>Teaching Institution</b>	Cranfield University

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

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

<b>Admissions body</b>	Cranfield University
<b>Entry requirements</b>	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.
<b>UK Qualifications Framework Level</b>	QAA FHEQ level 7 (Masters)
<b>Benchmark Statement(s)</b>	As set out in the Quality Assurance Agency for Higher Education subject benchmark statements for Engineering, Mathematics and Physics at Masters level
<b>Registration Period(s) available</b>	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.
<b>Course Start Month(s)</b>	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), where the research interests include:

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.

**Military Aerospace and Airworthiness** course specification: Version 1 August 2020

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

**Military Aerospace and Airworthiness** course specification: Version 1 August 2020

### 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 8. 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
<b>COMPULSORY MODULES:</b>	
00 03, 04, 18, 21, 22	0 50
<b>ELECTIVE MODULES:</b>	
One module to the value of 10 credits chosen from 05-09, 11-17, 23-26	10
<b>TOTAL:</b>	<b>60</b>

#### **AEF<sup>3</sup> QUALIFIED CANDIDATES ONLY**

<sup>3</sup> Aeronautical Engineering Fundamentals (AEF) is a five-week, 20-credit Accredited short course.

Description	Credits
<b>APCL MODULES</b>	
21, 22, 20	20
<b>CORE MODULES:</b>	
00	0
03, 04, 18, 20	40
<b>ELECTIVE MODULES</b>	
N/A	
<b>TOTAL:</b>	<b>60</b>

### B. Postgraduate Diploma

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

Description	Credits
<b>COMPULSORY MODULES:</b>	
00, 03, 04, 18, 21, 22	0 50
<b>ELECTIVE MODULES:</b>	
Modules to the value of 70 credits chosen from 05-09, 11-17, 23-26	70
<b>TOTAL:</b>	<b>120</b>

### AEF<sup>3</sup> QUALIFIED CANDIDATES ONLY

Description	Credits
<b>APCL MODULES</b>	
21, 22, 20	30
<b>COMPULSORY MODULES:</b>	
00	0
03, 04, 18, 20	40
<b>ELECTIVE MODULES</b>	
Modules to the value of 60 credits chosen from 05-09, 11-17, 24, 25, 26	60
<b>TOTAL:</b>	<b>120</b>

### 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
<b>COMPULSORY MODULES:</b>	
00, 03, 04, 18, 21, 22, 19	0 50 80
<b>ELECTIVE MODULES:</b>	

Modules to the value of 70 credits chosen from 05-09, 11-17, 23-26	70
<b>TOTAL:</b>	<b>200</b>

### AEF<sup>3</sup> QUALIFIED CANDIDATES ONLY

Description	Credits
<b>APCL MODULES</b>	
21, 22, 20	30
<b>COMPULSORY MODULES:</b>	
00	0
03, 04, 18, 20	40
19	80
<b>ELECTIVE MODULES</b>	
Modules to the value of 60 credits chosen from 05-09, 11-17, 24, 25,26	60
<b>TOTAL:</b>	<b>200</b>

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);<sup>4</sup>
- **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.

<sup>4</sup> 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  $\geq 40$  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 either September and 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.

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.

### AEF-Qualified Students

Students who have successfully passed the Aeronautical Engineering Fundamentals (AEF) 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

**Military Aerospace and Airworthiness** course specification: Version 1 August 2020

- PgDip: One year
- MSc: Two years

Maximum period of registration

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

## 7. Course Level Assessment Strategy<sup>5</sup>

The Military Aerospace and Airworthiness course consists of a range of challenging assessment tasks that are designed to enable the students to demonstrate a full range of skills and attributes. The course consists of six compulsory modules, whereby the initial Study-Skills module (no credits) amongst other tasks, focuses on preparing the students towards their first use of the coursework submission tools. The remaining five modules are 10 credits each. The assessment strategy for the Study-Skills module offers the students' the opportunity to simulate the process of working on a general MAA research topic. The students would then need to submit on time their work and peer-review other students' work and provide their assessment. Part of this process also incorporates a further learning layer of the teaching team providing feedback on the students' peer-reviews. This process helps the students' at an early stage to engage and appreciate the level of work involved and the processes and tools involved in enabling and achieving this. The assessment is formative with feedback and allows the academic team to evaluate students' comprehension, potential learning needs, and progress. The credit-bearing compulsory modules, (5-modules), are assessed using mainly coursework based summative assessments for all five modules and with two out of these modules also having an exam assessment. The MAA modules offer opportunities for further formative assessments in the form for example of a tutorial(s) and walk around physical full-scale aircraft including fixed-wing and rotary-wing, uninhabited or inhabited aircraft which are available during the course. The students have the opportunity to demonstrate their comprehension and progress as part of this formative assessment process. For formative based discussions the academic team will provide immediate feedback and advice and for written work normally feedback would be provided in writing. With parts of the course offered as remote delivery (Military Aircraft Systems-MAS) as an example, the laboratory sessions and discussions took place via the use of suitable teleconferencing tools. Academics and students had opportunities to meet and discuss and provide live feedback to the students after they had the opportunity to present their coursework plan in relation to the ILOs and coursework targets.

It is expected that the students will continue to use teleconferencing tools and interact in addition to the scheduled timetabled sessions and exchange ideas and address the specific award ILO relating to demonstrating knowledge and critical understanding and the ability to share and explain this to the academic team.

As the students complete their twelve award bearing modules, they are expected to engage in discussions with the academic team and propose a research project in consultation with the CD and Thesis module leader to discuss how the proposed work addresses ILOs 10-15 inclusive. It is expected by that stage, that the students will be more self-directed in their learning during this phase, while still consult with the academic team as necessary. The Thesis is assessed by a viva whereby the students' are expected to defend their work. The Thesis is also assessed by the Supervisor and an independent assessor.

<sup>5</sup> Guidance to aid colleagues writing or updating a course-level assessment strategy for inclusion in the Course Specification can be found as Appendix K in either the Senate Handbook on Setting up a New Taught Course or the Senate Handbook on Managing Taught Courses <https://intranet.cranfield.ac.uk/EducationServices/Pages/SenateHandbooksA-Z.aspx>

## 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 <sup>6</sup>	Total hours delivered by Visiting Lecturers <sup>7</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>8</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>9</sup> (%) of Independent	Weighting within module of multi-part assessments <sup>10</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>11</sup>	Assessment Submission and/or exam date <sup>12</sup>	Assessment / Exam Retake date
00	R-MAA-SS	Study Skills	Dr John Economou	12		0	N	07/09/20 A20	07/09/20	09/09/20	N/A	AO					N/A	
								11/01/21 B20	11/01/21	13/01/21								
03	R-MAA-AMA	Airworthiness of Military Aircraft	Miss Laura Lacey	30		10	N	07/12/20 A20	07/12/20	11/12/20	50	ICW	100				08/02/21	16/03/21
								12/07/21 B20	12/07/21	16/07/21		ICW	100				20/09/21	08/05/21

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

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

<sup>8</sup> 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  $\geq 50\%$ .

<sup>9</sup> For **independent assessments** please record type and weighting of each separate piece of assessment individually. 10 credit modules should be designed to allow assessment through a single independent summative assessment. Deviations will require approval by the School Director of Education

<sup>10</sup> For **multi-part assessments** please record the overall weighting of module which should be 100%. Multipart assessments should only be included in courses where there is a clear androgogical reason and where each element forms part of a continuous learning and assessment experience for students.

<sup>11</sup> 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.

<sup>12</sup> 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

**Military Aerospace and Airworthiness** course specification: Version 1 August 2020

Module Number	Module code	Title	Module Leader	Contact hours <sup>6</sup>	Total hours delivered by Visiting Lecturers <sup>7</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>8</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>9</sup> (%) of Independent	Weighting within module of multi-part assessments <sup>10</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>11</sup>	Assessment Submission and/or exam date <sup>12</sup>	Assessment / Exam Retake date
04	N-SAI-ISMS	Aviation Safety Management	Dr Simon Mitchell	30		10	Y	07/09/20 A20	07/09/20	11/09/20	40	ICW	100				09/11/20	AY21/22
			Mr David Barry					22/03/21 B20	22/03/21	26/03/21	40	ICW	100				24/05/21	
05	N-AW-ATEMO	Air Transport Engineering – Maintenance Operations	Dr Cenqiz Turkoglu	30	0	10	Y	08/02/21	08/02/21	12/02/21	40	ICW	100				06/04/21	AY21/22
06	N-HFS-AAI	Aircraft Accident Investigation and Response	Dr Leigh Dunn	30		10	Y	12/04/20	12/04/21	16/04/21	40	ICW	100				14/06/21	AY21/22
07	R-MAA-AS	Aircraft Survivability	Mr Ioannis Vagias	35		10	N	15/03/21	15/03/21	19/03/21	40	ICW	100				10/05/21	AY21/22
			Dr Gareth Appleby-Thomas															
08	N-AW-ICAS	Design Durability and Integrity of Composite Aircraft Structures	Dr Y Xu	35		10	Y	12/07/21	12/07/21	16/07/21	40	ICW	100				13/09/21	AY21/22

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

### Military Aerospace and Airworthiness course specification: Version 1 August 2020

Module Number	Module code	Title	Module Leader	Contact hours <sup>6</sup>	Total hours delivered by Visiting Lecturers <sup>7</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>8</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>9</sup> (%) of Independent	Weighting within module of multi-part assessments <sup>10</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>11</sup>	Assessment Submission and/or exam date <sup>12</sup>	Assessment / Exam Retake date
09	N-AW-FAEC	Fundamentals of Aircraft Engine Control	Dr Theoklis Nikolaidis	30		10	Y	08/03/21	08/03/21	12/03/21	40	ICW	100				17/05/21	AY21/22
11	R-MAA-GW	Guided Weapons	Dr Derek Bray	32		10	Y	18/01/21 A20	18/01/21	22/01/21	40	ICW	100				22/03/21	AY21/22
								26/04/21 B20	26/04/21	30/04/21	40	ICW	100				30/07/21	
12	N-AEN-ASC	Introduction to Aircraft Structural Crashworthiness	Dr Hessam Ghaseemnejad	25		10	Y	15/03/21	15/03/21	19/03/21	40	ICW	100				17/05/21	AY20/21
13	R-MAA-IHF	Introduction to Human Factors	Miss Laura Lacey	40		10	Y	28/06/21	28/06/21	02/07/21	40	ICW	100				23/08/21	AY21/22 AY21/22
14	N-AW-MIGT	Mechanical Integrity of Gas Turbines	Dr Panagiotis Laskaridis	30		10	Y	19/04/21	19/04/21	23/04/21	40	ICW	100				21/06/21	AY21/22
15	R-MAA-MAS	Military Aircraft Systems	Dr John Economou	35		10	Y	14/06/21	14/06/21	18/06/21	40	EX	50				12/07/21	AY21/22
											40	ICW	50				02/08/21	AY21/22

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

### Military Aerospace and Airworthiness course specification: Version 1 August 2020

Module Number	Module code	Title	Module Leader	Contact hours <sup>6</sup>	Total hours delivered by Visiting Lecturers <sup>7</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>8</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>9</sup> (%) of Independent	Weighting within module of multi-part assessments (10/100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>11</sup>	Assessment Submission and/or exam date <sup>12</sup>	Assessment / Exam Retake date
16	R-MAA-MA	Military Avionics –STA, Communications and Navigation	Dr Alessio Balleri	32		10	N	25/01/21	25/01/21	29/01/21	40	ICW	100				23/03/21	AY21/22
17	N-AW-RA	Practical Reliability	Dr Simon Place	30	10	10	Y	18/01/21	22/01/21	22/01/21	40	ICW	100				22/03/21	AY21/22
18	N-AW-SAAS	Safety Assessment of Aircraft Systems	Leigh Dunn	35	15	10	Y	21/09/20 D20	21/09/20	25/09/20	50			100	ICW GPRES	70 30	23/11/20 25/09/20	AY21/22 AY21/22
								09/11/20 A20	09/11/20	13/11/20	50			100	ICW GPRES	70 30	25/01/21 13/11/20	
								21/06/21 B20	21/06/21	25/06/21			100	ICW GPRES	70 30	23/08/21 25/06/21		
19	R-MAA-THESIS	Research Project	Dr Alistair Saddington	20		80	N	07/09/20 A20	07/09/20	07/09/20	50	THESIS	80				06/09/21	The following academic year
								07/12/20 B20	07/12/20	07/12/20	50	OR	20				06/12/21	
								08/03/21 C20	08/03/21	08/03/21							07/03/22	
								07/06/21 D20	07/06/21	07/06/21							06/06/22	

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

### Military Aerospace and Airworthiness course specification: Version 1 August 2020

Module Number	Module code	Title	Module Leader	Contact hours <sup>6</sup>	Total hours delivered by Visiting Lecturers <sup>7</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>8</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>9</sup> (%) of Independent	Weighting within module of multi-part assessments (10/100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>11</sup>	Assessment Submission and/or exam date <sup>12</sup>	Assessment / Exam Retake date
20	R-MAA-FAE	Aeronautical Engineering – Fundamentals Top Up	Prof Kevin Knowles	6		10	N	NOT	RUNNING		50	ICW	100					AY21/22
21	R-MAA-FWA	Fixed-Wing Aeromechanics	Prof Kevin Knowles	33		10	N	28/09/20	28/09/20	02/10/20	50	EX	50				02/11/20	AY21/22
												50	ICW	50				07/12/20
22	R-MAA-PS	Propulsion Systems	Dr Alistair Saddington	29		10	N	07/12/20	07/12/20	11/12/20	50	EX	50				08/02/21	AY21/22
												50	ICW	50				08/03/21
23	R-MAA-RWA	Rotary-Wing Aeromechanics	Prof Kevin Knowles	32		10	N	02/11/20	02/11/20	06/11/20	40	EX	50				07/12/20	AY21/22
												40	ICW	50				18/01/21
24	N-AW-AFDT	Aircraft Fatigue and Damage Tolerance	Dr Wenli Liu	30		10	Y	14/06/21	14/06/21	18/06/21	40	ICW	100				16/08/21	AY21/22
25	N-HFS-HFAM	Human Factors in Aviation Maintenance	Dr Cenqiz Turkoglu	30		10	Y	22/03/21	22/03/21	26/03/21	40	ICW	100				24/05/21	AY21/22 AY21/22
26	R-MAA-UAS	Uninhabited Aircraft Systems	Dr John Economou	35		10	Y	17/05/21	17/05/21	21/05/21	50	GCW	100				12/07/21	AY21/22

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

### Military Aerospace and Airworthiness course specification: Version 1 August 2020

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"> <li>• Airworthiness</li> <li>• Air Transport Management</li> <li>• Safety and Accident Investigation (Air Transport)</li> <li>• Military Aerospace and Airworthiness</li> </ul>
N-AW-ATEMO	MAA05: Air Transport Engineering – Maintenance Operations	Airworthiness	<ul style="list-style-type: none"> <li>• Air Transport Management</li> <li>• Military Aerospace and Airworthiness</li> </ul>
N-HFS-AAI	MAA06: Aircraft Accident Investigation and Response	Safety and Human Factors in Aviation	<ul style="list-style-type: none"> <li>• Airworthiness</li> <li>• Forensic Engineering and Science</li> <li>• Military Aerospace and Airworthiness</li> </ul>
N-AW-ICAS	MAA08: Design Durability and Integrity of Composite	Aircraft Engineering	<ul style="list-style-type: none"> <li>• Military Aerospace and Airworthiness</li> <li>• Airworthiness</li> <li>• Advanced Materials</li> </ul>
N-AW-FAEC	MAA09: Fundamentals of Aircraft Engine Control	Airworthiness	<ul style="list-style-type: none"> <li>• Military Aerospace and Airworthiness</li> <li>• Thermal Power</li> </ul>
N-AEN-ASC	MAA12: Introduction to Aircraft Structural Crashworthiness	Aircraft Engineering	<ul style="list-style-type: none"> <li>• Airworthiness</li> <li>• Military Aerospace and Airworthiness</li> <li>• Safety and Accident Investigation</li> </ul>
N-AW-MIGT	MAA14: Mechanical Integrity of Gas Turbines	Airworthiness	<ul style="list-style-type: none"> <li>• Military Aerospace and Airworthiness</li> </ul>
N-AW-RA	MAA17: Practical Reliability	Airworthiness	<ul style="list-style-type: none"> <li>• Military Aerospace and Airworthiness</li> </ul>
N-AW-SAAS	MAA18: Safety Assessment of Aircraft Systems	Airworthiness	<ul style="list-style-type: none"> <li>• Military Aerospace and Airworthiness</li> <li>• Safety and Accident Investigation (Air Transport)</li> </ul>
N-HFS-AFDT	MAA24: Aircraft Fatigue and Damage Tolerance	Airworthiness	<ul style="list-style-type: none"> <li>• Military Aerospace and Airworthiness</li> </ul>
N-HFS-HFAM	MAA25: Human Factors in Aircraft	Safety and Human Factors	<ul style="list-style-type: none"> <li>• Military Aerospace and Airworthiness</li> </ul>

**Military Aerospace and Airworthiness** course specification: Version 1 August 2020

	Maintenance	in Aviation	<ul style="list-style-type: none"> <li>• Safety and Accident Investigation (Air Transport)</li> </ul>
R-MAA-GW	MAA11: Guided Weapons	Military Aerospace and Airworthiness	<ul style="list-style-type: none"> <li>• Military Vehicle Technology and Gun Systems Design</li> <li>• Defence Security Programme</li> </ul>
R-MAA-MAS	MAA15: Military Aircraft Systems	Military Aerospace and Airworthiness	<ul style="list-style-type: none"> <li>• Airworthiness</li> <li>• Defence Security Programme</li> </ul>
R-MAA-IHF	MAA13: Introduction to Human Factor	Military Aerospace and Airworthiness	<ul style="list-style-type: none"> <li>• Defence Security Programme</li> </ul>
R-MAA-UAS	Uninhabited Aircraft Systems	Military Aerospace and Airworthiness	<ul style="list-style-type: none"> <li>• Defence Security Programme</li> </ul>

## 8. 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**

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

**Military Aerospace and Airworthiness** course specification: Version 1 August 2020

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

### A. Postgraduate Certificate

Award ILOs Module No.	ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
00						
03	ICW				ICW	
04	ICW		ICW			
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 (%)

**Military Aerospace and Airworthiness** course specification: Version 1 August 2020

## **9. 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 provides authoritative guidance on policy and procedure to the Panel. Proposals are reviewed in line with the UK Quality Code for Higher Education. 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 guiding principles to meet the Expectations and Core Practices of the UK Quality Code for Higher Education. 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 UK Quality Code for Higher Education. The delivery of new partnership provision is ultimately approved by the Universities 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.

**Military Aerospace and Airworthiness** course specification: Version 1 August 2020

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.

**10. 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.

**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.

**Date of first publication/latest revision:** September 2020

**1. What is the course?**

**Course information**

<b>Course Title</b>	Military Electronic Systems Engineering Including: Communications Electronic Warfare PgCert Sensors Electronic Warfare PgCert Military Electronic Systems Engineering Foundations PgCert
<b>Course code</b>	MSMESFTR, PDMESFTR, MSMESPTR, PDMESPTR – PCCEWPTR – PCSEWPTR – PCMESFTR – PCMESPTR – SPMESPTR
<b>Academic Year</b>	2020/2021
<b>Valid entry routes</b>	MSc, PgDip, PgCert
<b>Additional exit routes</b>	PgDip, PgCert
<b>Mode of delivery</b>	Full-time and Part-time
<b>Location(s)<sup>1</sup> of Study</b>	Shrivenham
<b>School(s)</b>	Cranfield Defence and Security
<b>Theme</b>	Defence and Security
<b>Centre</b>	Electronic Warfare and Information Centre (EWIC)
<b>Course Director</b>	Dr David James
<b>Awarding Body</b>	Cranfield University
<b>Is this an AP Contract course?<sup>2</sup></b>	Yes
<b>Is this course offered as a Cranfield Mastership?</b>	No
<b>Apprenticeship Standard the course is mapped to</b>	N/A
<b>Is the Degree apprenticeship integrated or non-integrated?</b>	N/A
<b>Is the Mastership offered as an open and/or closed</b>	N/A

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

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

<b>course?</b>	
<b>Teaching Institution</b>	Cranfield University
<b>Admissions body</b>	Cranfield University
<b>Entry requirements</b>	Standard University entry requirements
<b>UK Qualifications Framework Level</b>	QAA FHEQ level 7 (Masters)
<b>Benchmark Statement(s)</b>	N/A
<b>Registration Period(s) available</b>	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.
<b>Course Start Month(s)</b>	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 & Postgraduate Certificate in Military Electronic Systems Engineering Foundations**

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

<b>Description</b>	<b>Credits</b>
<b>COMPULSORY MODULES:</b>	
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
14 Communications Electronic Warfare	10
<b>ELECTIVE MODULES:</b>	
N/A	
<b>TOTAL:</b>	<b>60</b>

##### **B. Postgraduate Certificate in Sensors Electronic Warfare**

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

<b>Description</b>	<b>Credits</b>
<b>COMPULSORY MODULES:</b>	

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
<b>ELECTIVE MODULES:</b>	
N/A	
<b>TOTAL:</b>	<b>60</b>

### C. Postgraduate Certificate in Military Electronic Systems Engineering Foundations

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

Description	Credits
<b>COMPULSORY MODULES:</b>	
1 Electromagnetic Propagation and Devices	10
2 Signal Processing, Statistics and Analysis	10
3 Communication Principles	10
4 Communication Systems	10
5 Radar Principles	10
7 Electro-optics and Infrared Systems I	10
<b>ELECTIVE MODULES:</b>	
N/A	
<b>TOTAL:</b>	<b>60</b>

### D. Postgraduate Diploma

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

Description	Credits
<b>COMPULSORY MODULES:</b>	
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
<b>ELECTIVE MODULES:</b>	
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	10
14 Communications Electronic Warfare	10
<b>TOTAL:</b>	<b>120</b>

### E. 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
<b>COMPULSORY MODULES:</b>	
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
<b>ELECTIVE MODULES:</b>	
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	10
14 Communications Electronic Warfare	10
<b>TOTAL:</b>	<b>200</b>

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);<sup>3</sup>
- **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

<sup>3</sup> 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%).

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  $\geq 40$  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 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 Certificates.

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.

## 7. Course Level Assessment Strategy

Military Electronic Systems Engineering is a multidisciplinary programme covering the areas of electro-optics, communications, radar, electronic warfare and information networks. The course covers the fundamental physics through to system performance.

The modules cover a range of disciplines and it is not possible for different modules to target specific ILOs. Rather, each module assesses the student on several of the ILOs, but relating to the specific content of that module.

The course uses two key assessment methods both of which allow the students to demonstrate a full range of knowledge and understanding. Most modules require submission of a written piece of work as a technical report or an essay. These will be of varying lengths, recognising that writing articles to a short length can be more challenging for some and can develop different skills relevant to professional practice. The length of each assessment task is clearly stated within the module descriptor. This allows the student to develop their critical thinking and presentation of arguments in a written mode, as well as developing their practice at presenting information in a practical and scientific way for both expert and non-expert audiences. The electro-optics and infrared part 1 module is alone in being assessed by examination.

Through tutorials and practice prior to the examination and through formative feedback alongside the summative assessment, students will develop their practice in expressing complex, scientific and technical concepts clearly and succinctly in a high pressure situation. This is a relevant professional skill to many of the job roles that students go onto after completing the course.

In addition to the taught modules students are required to undertake a research project the output of which takes the form of a Thesis. The assessment of this incorporates ongoing formative feedback in the form of one-to-one supervisory interactions between student and advisor, advice when writing the Thesis document and final comments from the assessors after submission.

## 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 <sup>4</sup>	Total hours delivered by Visiting Lecturers <sup>5</sup>	Credits	Is the module shared? Y/N	Calendar				Assessment						
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>6</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment			Submission dates	
												Type of Assessment	Weighting within module <sup>7</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>8</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>9</sup>	Assessment Submission and/or exam date <sup>10</sup>	Assessment / Exam Retake date
1	R-MES-EPD	Electromagnetic Propagation and Devices	Dr I L Morrow	32	0	10	N	07/09/20	07/09/20	18/09/20	50	ICW	100				16/10/20 (FT & PT)	TBC
2	R-MES-SPSA	Signal Processing, Statistics and Analysis	Dr P Barker	30	0	10	Y	12/10/20	12/10/20	16/10/20	50	ICW	100				13/11/20 (FT & PT)	TBC
3	R-MES-CP	Communication Principles	Dr P Barker	30	0	10	N	16/11/20	16/11/20	20/11/20	50	ICW	100				21/12/20 (FT & PT)	TBC

<sup>4</sup> Please note that all contact hours are indicative and represent scheduled teaching, which is subject to minor changes and variation at short notice

<sup>5</sup> Visiting Lecturer = a member of staff (with RTS) but not on a permanent contract (does not include those acting as occasional guest speakers)

<sup>6</sup> 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.

<sup>7</sup> For **independent assessments** please record type and weighting of each separate piece of assessment individually. 10 credit modules should be designed to allow assessment through a single independent summative assessment. Deviations will require approval by the School Director of Education

<sup>8</sup> For **multi-part assessments** please record the overall weighting of module which should be 100%. Multipart assessments should only be included in courses where there is a clear androgogical reason and where each element forms part of a continuous learning and assessment experience for students.

<sup>9</sup> 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.

<sup>10</sup> 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 <sup>4</sup>	Total hours delivered by Visiting Lecturers <sup>5</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>6</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>7</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>8</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>9</sup>	Assessment Submission and/or exam date <sup>10</sup>	Assessment / Exam Retake date
4	R-MES-CS	Communication Systems	Dr P Barker	30	0	10	N	30/11/20	30/11/20	04/12/20	50	ICW	100				04/01/21 (FT & PT)	TBC
5	R-MES-RP	Radar Principles	Dr A Balleri	30	0	10	Y	02/11/20	02/11/20	06/11/20	50	ICW	100				04/12/20 (FT & PT)	TBC
13	R-AMOR-FMS Occ B	Foundations of Modelling and Simulation	Mr J Hoggard	32	0	10	Y	18/01/21	18/01/21	22/01/21	40	ICW	100				01/03/21 (FT & PT)	TBC
6	R-MES-REW	Radar Electronic Warfare	Mr I Vagias	30	0	10	Y	01/02/21	01/02/21	05/02/21	50	ICW	100				05/03/21 (FT & PT)	TBC
7	R-MES-EOIS1	Electro-optics and Infrared Systems I	Dr D B James	32	0	10	Y	28/09/20	28/09/20	02/10/20	50	EX	100				17/12/20 (FT & PT)	29/03/21
8	R-MES-EOIS2	Electro-optics and Infrared Systems II	Dr D B James	32	0	10	Y	11/01/21	11/01/21	15/01/21	50	ICW	100				12/02/21 (FT & PT)	TBC
9	R-MES-ASDP	Advanced Sensor Data Processing	Dr V S Sastry	30	0	10	N	22/03/21	22/03/21	26/03/21	40	ICW	100				23/04/21 (FT & PT)	TBC
14	R-MES-CEW	Communications Electronic Warfare	Dr P Barker	30	0	10	N	22/02/21	22/02/21	26/02/21	50	ICW	100				26/03/21 (FT & PT)	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; MULTI – Multi-part Assessment

Module Number	Module code	Title	Module Leader	Contact hours <sup>4</sup>	Total hours delivered by Visiting Lecturers <sup>5</sup>	Credits	Is the module shared? Y/N	Calendar			Assessment							
								Module Start Date (eg Pre-course task)	Module Delivery Start Date	Module Delivery End Date	Minimum Mark <sup>6</sup> - 40% or 50%	Independent Assessment		Multi-part Assessment		Submission dates		
												Type of Assessment	Weighting within module <sup>7</sup> (%) of independent assessments	Weighting within module of multi-part assessments <sup>8</sup> (100%)	Type of Assessment	Weighting of individual elements of multi-part assessment <sup>9</sup>	Assessment Submission and/or exam date <sup>10</sup>	Assessment / Exam Retake date
10	R-MES-AR	Advanced Radar	Dr D Andre	30	0	10	N	08/03/21	08/03/21	12/03/21	40	ICW	100				09/04/21 (FT & PT)	TBC
11	R-MES-IN	Information Networks	Dr P Nobles	30	0	10	N	15/03/21	15/03/21	19/03/21	40	ICW	100				16/04/21 (FT & PT)	TBC
12	R-MES-THESIS	Project	Dr D B James	50	0	80	N	04/05/21 (FT & PT)	04/05/21 (FT & PT)	27/07/21 (FT & PT)	50			100	THESIS SUP OR	50 25 25	13/07/21 27/07/21 27/07/21 (FT & PT)	

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

	MODULE	PgCert MESE F	PgCert CEW	PgCert SEW	PgDip MESE	MSc MESE		Marketed as short course	Joint with another MSc
1	EPD	C	C	C	C	C		NO	
2	SPSA	C	C	C	C	C		YES	GWS
3	CP	C	C		C	C		YES	
4	CS	C	C		C	C		YES	
5	RP	C		C	C	C		YES	GWS
6	REW			C	E	E		YES	GWS
7	EOIS1	C		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	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; 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-MES-EOIS1	Electro-optics & Infrared Systems I	Military Electronic Systems Engineering	Guided Weapon Systems
R-MES-EOIS2	Electro-optics & Infrared Systems II	Military Electronic Systems Engineering	Guided Weapon Systems
R-MES-RP	Radar Principles	Military Electronic Systems Engineering	Guided Weapon Systems
R-MES-REW	Radar Electronic Warfare	Military Electronic Systems Engineering	Guided Weapon Systems
R-MES-SPSA	Signal Processing, Statistics and Analysis	Military Electronic Systems Engineering	Guided Weapon Systems
R-AMOR-FMS	Foundations of Modelling and Simulation	Applied Mathematics and Operational Research	Military Electronic Systems Engineering Defence and Security Programme

**Modules offered to Short Course delegates.**

<u>Module code</u>	<u>Module title</u>
R-MES-SPSA	Signal Processing, Statistics and Analysis
R-MES-RP	Radar Principles
R-MES-CP	Communication Principles
R-MES-EOIS1	Electro-Optics & Infrared Systems Part 1
R-MES-CS	Communication Systems
R-MES-EOIS2	Electro-Optics & Infrared Systems Part 2
R-MES-REW	Radar Electronic Warfare
R-MES-CEW	Communications Electronic Warfare
R-MES-AR	Advanced Radar
R-MES-IN	Information Networks
R-MES-ASDP	Advanced Sensor Data Processing

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

The course uses a range of assessment types. Students can expect to have written examinations, pieces of assessment by submitted work and project assessment by written work, presentation and viva.

This approach has been adopted in order to best suit the nature of the individual modules and their content.

### Assessment and ILO Mapping

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

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

#### A. Postgraduate Certificate in Communications Electronics 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
14		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. Postgraduate Certificate in Military Electronic Systems Engineering Foundations

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	
5		ICW	ICW	ICW	ICW

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

#### D. Postgraduate Diploma in Military Electronics Systems Engineering

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

#### E. MSc in Military Electronic Systems Engineering

Award ILOs Module No.	ILO 17	ILO 18
9	ICW	ICW
12	THESIS SUP OR	THESIS SUP OR

### 9. 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 provides authoritative guidance on policy and procedure to the Panel. Proposals are reviewed in line with the UK Quality Code for Higher Education. 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 guiding principles to meet the Expectations and Core Practices of the UK Quality Code for Higher Education. 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 UK Quality Code for Higher Education. The delivery of new partnership provision is ultimately approved by the Universities 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.

## **10. 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.