University of the West of England
BRISTOL

PROGRAMME SPECIFICATION

Section 1: Basic Data

Awarding institution/body	University of the West of England, Bristol
Teaching institution	University of the West of England, Bristol
Delivery Location(s)	UWE, Frenchay
Faculty responsible for programme	Environment and Technology
Modular Scheme title	
Professional Statutory or Regulatory Body Links (type and dates)	Royal Aeronautical Society www.raes.org.uk Institution of Mechanical Engineers: www.imeche.org Institution of Engineering and Technology: www.theiet.org RAeS and IMechE have accredited existing awards (2008 – 2013 and 2008 – 2009 intakes respectively) – petition underway to have accreditation transferred to this award. Working with IET for accreditation for this award.
Highest award title	MSc Aerospace
Default award title	
Interim award titles	PG Diploma Aerospace PG Certificate Aerospace
UWE progression route	
Mode(s) of delivery	
Codes **UCAS code**	**JACS code** H400
ISIS code	**HESA code**
Relevant QAA subject benchmark statements	
On-going	
Valid from (insert date if appropriate)	September 2010
Original Validation Date:	
Latest Committee Approval…	**Date:…**

Version Code 1

Section 2: Educational aims of the programme

This programme specification for the MSc in Aerospace is submitted to replace the two existing Masters programmes within the Bristol and West of England Consortium for Continuing Professional Development in Aerospace (CPDA). It also provides clarification of the role of the Postgraduate Certificate and Postgraduate Diploma within the MSc programme.

The CPDA is a framework enabling the provision of academic awards to industry, specifically developed to meet the industry need for a mixture of engineering and business skills and learning amongst graduates and equivalent, within the Aerospace sector. It is entering its third decade and is now a University of the West of England-led consortium. This programme specification amalgamates the good aspects of the previous Masters awards within the framework and removes some of the anomalies that have developed over time.

The Masters degree will enable skill development in the global marketplace, across the whole Aerospace Sector, especially in research capability and implementation. The programme equips graduates or people with equivalent experience in the Aerospace engineering and manufacturing industry, both from the UK and international companies, with the management, business and technical skills and the vision to prepare them for the challenges of their future or existing careers. Companies that send students on the programme will benefit from:

1. New staff skills in innovative and competitive management;
2. New staff skills in innovative and competitive technology;
3. Greater business and advanced technical knowledge;
4. Greater awareness of expertise within the academic institutions and within other companies involved in the scheme;
5. The ability to implement these skills, knowledge and expertise in real-time situations;
6. The ability to reflect upon and to critically evaluate such implementation
7. Enhanced staff motivation.

This Masters programme aims to:

- Enhance students' technical and business awareness
- Provide a range of professional skills required to meet company business objectives and to prepare people for higher level positions
- Meet the requirements for both deepening and broadening students' knowledge and skills within the industry-desired subject areas
- Equip graduates - or equivalent - in the Aerospace industry with technical and business skills and the capability and vision to prepare them for the challenges of the future
- Enable students to obtain a postgraduate qualification
- Enable skills development in the global marketplace and across the whole Aerospace Sector.

All modules and the MSc Project are presented at Masters level, Level M.

It is expected that the Masters and the Postgraduate Certificate awards will be the most popular options within this part time, continuing professional development programme. The latter is especially important to companies developing graduate training programmes, as it enables then to "fast-track" graduates' learning, knowing the standard and quality of the material is at Masters level.

This specification provides a concise summary of the main features of the Masters programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the module specifications.

This programme takes the student on a staged route from Postgraduate Certificate to Masters: it allows career progression at the student's own rate and level of need, and also allows employers to develop their people in incremental steps.

Section 3: Learning outcomes of the programme

The award route provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas: …

A Knowledge and understanding

Learning outcomes	Teaching, Learning and Assessment Strategies
A Knowledge and understanding of: The programme aims to enhance business and engineering acumen, enabling professionals in Engineering and Engineering-related roles to broaden their skills to benefit their businesses and their own professional development. This is achieved by providing Masters level tuition across a range of skill areas, as follows: 1. Generic Engineering processes and practices in the Aerospace Industry • 2. The techniques available to companies to design new products that are competitive in today's Aerospace marketplace 3. The generic business and management knowledge needed by the student for the next stage of his or her career 4. The techniques surrounding design and manufacturing in the Aerospace Industry, especially important as the industry becomes more globalised. The learning and teaching in these skills areas meet the SEEC Level Descriptors for Masters learning outcomes: a. Achieving depth and systematic understanding of knowledge in specialised and applied areas and across areas b. Working with theoretical and research-based knowledge at the forefront of the discipline c. Have the awareness and ability to manage ethical implications and work towards solutions d. Have a comprehensive understanding of applicable techniques / methodologies e. Are able to reflect upon and critically evaluate their activities to ensure implementation of solutions can be achieved. In each field there are a range of core modules, from which the student must choose a set number depending on the award for which s/he is studying (see section 4). This is to ensure the student receives a wide range of learning	**Teaching/learning methods and strategies:** All activities and assessment are organised to ensure Masters level learning outcomes are achieved. **Assessment:** The SEEC Level Descriptors for Masters learning outcomes are achieved as followed: a. The project and many assignments are designed to fulfil this Descriptor. In addition, the integrating module - Aerospace Design Process: Concept to Compliance – is built directly around systematic learning and application of knowledge. b. The project and all assignments require the comprehensive and critical review of relevant literature and organisational information, to ensure the solutions presented are at the forefront of the discipline. c. The code of practice within the Aerospace industry provides inherent ethical considerations, which are fully supported throughout the award, especially in areas of safety, technical and societal risk assessment and legal constraints and controls. d. The project and every module demand comprehensive training in, understanding of and the ability to use the applicable techniques and methodologies within the topic. e. The key to project and module assessment is that the ability to critically reflect upon and evaluate activities is the only way to achieve both successful implementation of the solutions proposed and to show the academic learning outcomes have been met. This is developed both as part of the training activities, using, for example, group work, and also as part of the reflection process demanded within the assignment. The marking process displays this by considering innovative thought and self-critical reflection. On the taught programme students are required

opportunities to support the aims of the CPDA. (Note, the above holds for students taking the MSc or the Postgraduate Diploma. Postgraduate Certificate students will require a combination of the above, within the constraints of the particular Certificate itself – see section 4). The main emphasis of the research dissertation for the MSc is for the candidate to give a detailed comprehensive account of the depth of their understanding and knowledge acquired from previous taught components how this is applicable to research within their professional life. This demands a sound understanding of a wide range of research methods. The student is required to sustain independent study incurring a substantial amount of work and to demonstrate a high level of expertise in relation to the problems being explored.	to carry out assignments of approximately 50 - 60 hours of work per module. This involves the application of what has been taught in the module to a particular problem, normally of interest to the employer. This can be combined with a session within the module ("short course teaching") week itself, involving attendees giving a presentation to the module leader and the rest of the group. Over the period of the programme, the assignments submitted reflect the changing nature of the student's business and identify areas where the student is managing change and development within their workplace. Thus, the student is able to develop and manage him/herself in the changing environment, and develop innovative ideas for and solutions to ongoing issues. A successful student is able to demonstrate, via the assignments, that he / she has not only understood but can implement successfully the techniques and knowledge required to be both academically recognised and also have his /her skills recognised and utilised by the sponsoring business. The research project undertaken is used to demonstrate the understanding and application of new theoretical knowledge and skills obtained from the taught programme, which students are expected to practice in the professional arena. The MSc project activity incorporates academic knowledge and applies it to immediate issues within organisations. Industrial and academic supervisors provide continuing support throughout the research activity, ensuring that it meets the application needs. There is a viva to ensure the work is the student's own. **Curriculum:** There are a wide range of modules offered which cover the key areas of relevance to the Aerospace Industry, from design through to manufacture and business. Modules are normally presented as short courses and last 3 to 5 days. Modules consist of lectures, visits, case studies / exercises and guest speakers, predominantly from the Aerospace Industry. Where relevant, there is some laboratory work and flying time. On-line learning and blended learning is used where appropriate, to ensure the identified learning outcomes are achieved within the taught scope of the modules. Acquisition of 1 is through a number of technical modules, including one compulsory module for students who have not obtained a first degree in Aerospace / Aeronautical Engineering: Introduction to Aeronautics. Some modules have been specifically added to the programme in order to form the overview module (e.g. Aerospace Manufacturing and Assembly). Students can then go deeper into particular

	subjects, e.g. manufacturing by taking modules with deeper technical focus including Manufacturing Systems Engineering and Decision Making for Manufacturing. Acquisition of 2 is through further technical modules. Strongly recommended is the core module dealing with concurrent engineering: Aerospace Design Process – Concept to Compliance. Acquisition of 3 is through a range of business and management module options. Strongly recommended are the core modules in these subject areas – Business Systems Excellence, Project Management, People in Organisations, Aerospace Strategic Management, Corporate Culture and Management of Change. Acquisition of 4 is through a range of options, for example: Reliability and Maintainability Throughout, the learner undertakes independent reading both to supplement and consolidate what is being taught and to broaden their individual knowledge and understanding of the subject. Dissertation work for the MSc is undertaken in the company with the support of academic supervisors. Industrial supervision is also given to ensure that company requirements are met. In this way companies immediately benefit from the strategies used in the work.

B Intellectual Skills

B Intellectual Skills	**Teaching/learning methods and strategies**
Able to progress through each stage of the award to: 1 Be familiar with recent technology developments in Aerospace Industry. 2 Assimilate wide ranging technical and non-technical information; 3 Undertake critical thinking, problem solving and reflection 4 Manage change and development in their employing organisations; 5 Have the ability to critically evaluate information and demonstrate decision-making based on the outcome; 6 Produce innovative solutions to problems arising, both within their speciality area and across the relevant business process. By completion of the PG Diploma stage many students will be occupying a management position in the engineering industry. Points 5 and 6 especially relate to the MSc project, emphasising how the skills and learning achieved in the taught stage of the programme can be used to solve a real, organisation-based problem. It is expected that most students will opt for either the MSc or Postgraduate Certificate awards. This is based on the CPDA's experience to date and the expectations of the CPDA's industrial partners. However, the Postgraduate Diploma gives a good opportunity for students who want to broaden their learning without starting any research activity.	Intellectual skills are demonstrated as students progress through points 1 to 6. Students are required to amalgamate their existing background skills alongside their new found skills, as they undertake their chosen modules to meet 1 and 2. The assignment activities require 3 and 4, as the projects they undertake for each module directly affect their own and others' working environments, processes and habits. The MSc project activity requires the students to reflect on their learning to date and develop and follow a project activity through to completion for the assessment (5 and 6) – fulfilling the requirement to demonstrate their abilities not only in a given topic but in translating that into a project others can and do use. In many cases, the industrial sponsors will recommend modules the students should take to ensure the company's business and technical requirements are achieved. Advice is given by the CPDA to students to ensure they meet their own development needs, in accordance with the business requirements. All module Leaders whose modules run in an academic year are available before and after the intensive week of teaching of their module to help students understand their assignments and develop the skills required to pass the assignment. Academic support generally is available when requested, ensuring knowledge is assimilated and utilised by the student for the assignments. The student in the workplace can then develop this utilisation. **Assessment:** Assignments are key to ensuring the student has attained the learning outcomes from the module. The intellectual skills and attributes attained by the student are refined through the process of writing a successful assignment - in its style, in its content and its level of intellectual detail. Where applicable, examinations are also used to ensure technical understanding is achieved. The MSc project dissertation will be assessed in the same manner as a standard MSc. The student will be expected to show his/her examiners the skills learnt and implemented to support the thesis and how the thesis developed to support the company requirement. A viva is used to confirm the work is the student's own.

C Subject, Professional and Practical Skills

C Subject/Professional/Practical Skills:

Students are able to:

1. Communicate effectively across subjects and functional boundaries, verbally and in written format (technical and non technical).

2. Obtain the benefits of networking:
   - with the student's peers at other Aerospace companies;
   - with students from the Armed Forces and outside the UK;
   - with local universities

   as a result of meeting people at modules.

3. Work effectively, both as an individual and as part of a cross functional team.

4. Express and implement ideas, concepts, proposals and solutions, both to their peer group and within their managerial, technical hierarchies and company.

5. Apply skills/knowledge to new and unusual situations and to seek optimal solutions to multifaceted problems.

6. Collate all of the above and implement across the industrial sector.

Teaching/learning methods and strategies

Successful participation in the modules can only be achieved if the students are able to effectively communicate progress through case studies and the assignments. The first involves working in teams, in most cases, whilst the assignments are the individuals' own work.

Attending a module programme with students from a range of Aerospace organisations establishes a number of contacts across the industry. module presentation by CPDA university partners and their associates ensures that students are aware of expertise in all relevant Aerospace fields.

Assessment:

Successful module completion is primarily assessed by identifying whether the students can cope with the concepts taught and effectively relay them to the people with whom they work. This is achieved by assignment activities and where required, examination.

The module Leader may use case studies to help individuals progress through the week and therefore is aware of any problems or issues before the module assignment is marked, allowing him / her to guide the student if required. Some also use presentations during which the student either alone or in a group delivers information and ideas to the rest of the group.

In addition, there should be a progressive improvement in the quality of the assessed assignments carried out as a result of interaction with the developing network.

The MSc project examination will examine the research techniques used and consider how the student plans to implement the results. The dissertation will be marked and followed-up by a viva voce, to ensure the academic requirements have been met. In addition, there will be consideration of whether the industrial expectations have been met and communicated adequately.

D Transferable Skills and other attributes

D Transferable skills and other attributes	Teaching/learning methods and strategies
Students are able to: 1. Apply skills/knowledge to new and unusual situations and to seek optimal solutions to multifaceted problems. 2. Work effectively, both as an individual and as part of a cross-functional team. The students will be able to demonstrate: 3. Communication skills: effective dissemination of the assessment material within their organisation to their peers and/or the "problem owners" 4. Self-management skills: identifying, managing and completing the assessment in the given timescales 5. IT skills in context: via the assessment, being able to show what IT skills are required and why, what software is needed and how to interpret the findings 6. Problem formulation: the expression of problems in abstract terms, to undertake analysis and interpretation in the context of the subject and to interpret the results of finding in appropriate terms 7. Progression to independent learning: gaining experience of and developing skills in learning independently of structured classroom work 8. Awareness of professional literature: being aware of, reading and using literature sources relevant to the discipline to support learning activities 9. Working with others: being able to work as a team member and being aware of the benefits and problems inherent within team working	Skill one is developed through exercises in the modules and further learning back in the company. Skill two is developed through a variety of methods and strategies including undertaking group exercises with the other students as well during the modules, and as individual assignments where the student needs to apply what he/she is learning within the context of their organisation. This practical application requires an understanding of where real benefit can be provided to the company and also requires support from company individuals in terms of information and focus. In some technical modules there are practical laboratory sessions. Skill three is developed through a variety of methods and strategies between the student and the academics and managers including participating in the short course workshops and group-work sessions, discussions in tutorials and individual dissertation sessions with supervisors. Skill four is developed through group exercises for design and management, through their assignments, explicitly through the material of the management modules and through their balancing of part-time study with a full-time job. Skill five is developed through some subject-specific modules (e.g. holistic gas turbines), through tools for multi-disciplinary modules (e.g. life cycle analysis), and subject research for assignments and dissertation. Skill six is developed through a variety of methods and strategies including students using new and known problem solving programs for real problems within their company. Skill seven is developed through a variety of methods and strategies including where students develop design concepts, use problem-solving programmes, research relevant topics through published professional literature, and considering the use of new and novel methods entering industry. The student is then required to synthesize these methodologies into the strategies required for project completion. Skill eight is developed through a variety of methods and strategies including the students accessing a range of material including both printed and online sources. **Assessment:** The module Leader may use case studies, require presentations through the week and identify key areas for research. All assignments are required to contain a section on peer review, based on what the module leader suggests and what the student learns independently.

Section 4: Programme structure

Use next page to provide a structural chart of the programme showing:

- *Level and credit requirements*
- *Interim award requirements*
- *Module diet, including compulsory/core/optional modules*

ENTRY	Level	Module Code	Module Title	Credit Points	Core (C) Optional (O)
		Aerospace Technology			
		UFMF3S-10-M *	Introduction to Aeronautics	10	**C**
		UFMEBL-10-M	Aircraft Structural Design & Stress Analysis	10	O
		UFMF3T-10-M *	Aircraft Propulsion	10	O
		UFMF3U-10-M *	Avionic Systems	10	O
		UFMEUG-10-M	Flight Test Principles & Practice	10	O
		UFMF3V-10-M *	Airworthiness	10	**C**
		UFMF3W-10-M *	Aerospace Materials Engineering	10	O
		UFMF3X-10-M *	Aerodynamics and Performance	10	O
		UFMEQ3-10-M	Civil Aircraft Maintenance	10	O
		UFMF3Y-10-M *	Introduction to Helicopter Design	10	O
		UFMF43-10-M *	Aircraft Systems Technology	10	O
		UFMF44-10-M *	UAV Systems	10	O
		UFMEVL-10-M	Sustainable Aviation	10	O
		UFMF3H-10-M *	Holistic Gas Turbine Design	10	**C**
		UFMEVS-10-M	Avionics Product Development *(Closed Module)*	10	
		Manufacture			
		UFMEDW-10-M	Aircraft Manufacture and Assembly	10	**C**
		UFMEDP-10-M	Manufacturing Systems Engineering	10	**C**
		UFMEDN-10-M	Decision Making for Manufacturing	10	O
		UFMF3J-10-M *	Manufacturing Technology	10	O
		Design			
		UFMF45-10-M *	Reliability & Maintainability	10	O
		UFMEDU-10-M	Aerospace Life Cycle Analysis and Cost Modelling	10	**C**
		UFMF46-10-M *	Non-Linear Flight Mechanics	10	O
		UFMEP3-10-M	Foundations of Systems Engineering	10	O
		UFMEJM-10-M	Aerospace Design Process: Concept to Compliance	10	**C**
		UFMEUH-10-M	Requirements Engineering	10	O
		UFMEUN-10-M	Control of Engineering Systems	10	O
		UFMF3K-10-M *	Gas Turbine Performance	10	O
		UFMF3L-10-M *	Introduction to Materials Engineering	10	O
		UFMF3M-10-M *	Gas Turbine Materials	10	O
		UFMF3N-10-M *	Basic Stress Loads	10	O
		Business & Management			
		UMSCD8-10-M	Aerospace Strategic Management	10	**C**
		UMKC8Y-10-M	Aerospace Marketing	10	O
		UFMEDT-10-M	Business Systems Excellence	10	**C**
		UMMC4A-10-M	Management of International Aerospace Projects	10	O
		UMOCBK-10-M	People in Organisations	10	**C**
		UFMEDR-10-M	Project Management	10	**C**
		UFMF47-10-M *	Financial Management and Control	10	O
		UFMF48-10-M *	Product Liability & Contract Law	10	O
		UMOCPT-10-M	Corporate Culture & Management of Change	10	**C**
		UFMF49-10-M *	Aerospace Risk Management	10	O
		UFMF3P-10-M *	Lean Thinking for Continuous Business Improvement	10	O
		UFMF3Q-10-M *	Excellence Through Programme Management	10	**C**

Stage 1	M	**Postgraduate Certificate in:** **Aerospace**	**60**	
Stage 2	M	**Postgraduate Diploma in:** **Aerospace**	**120**	
		UFMETM-60-M: MSc Project	60	
Stage 3	M	**MSc in:** **Aerospace**	**180**	

Pass, Merit and Distinction will be awarded as determined by UWE Regulations.

The taught modules are split into four areas, as shown in the table above. These four areas each contain core modules. Students are required to take at least one core module from each of the four areas. This is to ensure they have the breadth of learning required to optimise the benefit they can achieve from studying for this MSc in Aerospace.

Modules marked with * are currently going through the Faculty process for validation at the University of the West of England.

Note that new modules will be developed when a need is identified and support from Industry is provided. Any new module will be put through the standard approval routes.

Progression Award/Requirements:

MSc in: **Aerospace**		
Compulsory modules • 'Introduction to Aeronautics' must be completed by any student without an Aero-based first degree. • Project module UFMETM-60-M of 60 credits **Core modules** A minimum of four core modules (40 credits) is required as part of the final MSc awarded. There must be at least one core module from each of the four areas of Aerospace Technology, Design, Manufacture and Management. These 40 credits must be chosen from the core modules shown in the module table above.	**Optional modules** Maximum of 80 credits from module table above.	**Highest Award:** **MSc Aerospace** • An MSc can be awarded on attainment of 120 credit points, plus a 60 credit project • MSc students must complete a minimum of 4 of the core modules • Modules must be from all the four areas of Aerospace, Design, Manufacture and Management. • Up to 90 credits can be from Management modules. However, students wishing to use the award for Chartered Engineer Registration with the IET must limit Management modules to 60 credits.^

		Interim Awards: **i) PGDip Aerospace** **ii) PGCert Aerospace**

^ Professional Institutions

This MSc programme can be used to provide the academic qualifications students require for Chartered Engineer Status through the relevant Professional Institution. An individual study / development programme will need to be agreed by the student with the Professional Institution prior to the student being accepted onto the programme.

Section 5: Entry requirements

The university's minimum requirements for entry to a Master's degree apply to this programme.

Additionally, the student should:

i. Have a minimum of three years' relevant graduate level work experience in the Aerospace or related industry
ii. Be industry-sponsored.

Application from non-standard entrants will be considered on an individual basis taking account of qualifications achieved and years of experience in an appropriate setting.

Section 6: Assessment Regulations

The University's Academic Regulations and Procedures apply to this programme.

Section 7: Student learning: distinctive features and support

The CPDA framework is part of the Bristol and West of England Consortium for Continuing Professional Development in Aerospace (CPDA), led by the University of the West of England and supported by the University of Bristol, plus associates from both Higher Education and Industry. All modules are provided and funded by the Consortium. This MSc in Aerospace will offers a selection of over 40 modules, which provide topics across both technical and business/management subject areas. In addition, further modules are available if there is a specific, or "bespoke", need for them, which can be part of the MSc in Aerospace study programme.

This MSc is a part time postgraduate award programme to provide continuing professional development opportunities for students already based in industry. This meets the individuals' own career development needs and the skills and knowledge requirement of their organisations are being met with up to date academic and industrial practices. Each module can be taken as a single module – as a short course, or as part of one of the postgraduate awards within the MSc programme.

All students on the programme study on a part-time basis and are already in full-time professional employment. Therefore, students are encouraged to make full use of the resources and environment available to them at the place of work as they pursue their studies.

All applications are reviewed before admission to the programme with a view to ensuring that the student meets the minimum entry requirements and has the potential to undertake learning and research at the Masters level. As all students are employed full time, induction has been developed to be undertaken on-line. There is a Project Seminar day offered roughly half way through the programme to allow students to develop their project activity.

Students have some freedom to select and plan their programme of study, subject to the assessment regulations, core modules, advice from the Programme Leader and the supervisory team. The study programme will vary between students depending on their background and qualifications – and on the needs and demands of their sponsoring organisations. Students may decide on a programme of study with advice and assistance from the Programme Leader. Factors affecting students' decisions are that:

i. At least four core modules will have been taken by the end of the PG Diploma stage;
ii. Students are encouraged by their sponsors and their academic supervisors to pursue certain optional subjects in a coherent sequence, in order to increase technical complexity towards the end of the programme;
iii. The taught programme will be planned in such a way to enable students to prepare for the research required for the MSc project;
iv. Students are recommended to start considering their research project in the middle of their period of study, with the aim of starting the project by year 3 of the programme. For each student there will be both an academic and industrial supervisor, the latter being a senior member of staff at the student's place of work.

The CPDA framework's partnership with Aerospace companies allows the MSc in Aerospace to offer the taught modules relevant to Industry today. This complements well with other long term University

/ Industry partnerships. The framework includes a large market of Aerospace companies, big and small, offering relevant training in affordable packages.

The CPDA is unique in that it combines the following features that are not present in any other UK postgraduate award framework:

(i) Industrial partners are full partners with the Universities, enabling immediate input and response from all parties on issues being faced by the companies involved;
(ii) Collaboration between the University of the West of England, Bristol and the University of Bristol, offering a comprehensive range of modules as part of the MSc in Aerospace covering the main processes within the Aerospace Industry;
(iii) The framework integrates generic management and technology elements, plus aerospace-specific requirements into one postgraduate award programme
(iv) Technical topics cover general aerospace, design and manufacturing elements of the Industry
(v) All optional modules can be chosen to meet individuals' specific educational requirements, within the programme's remit
(vi) All modules may be attended as short courses for those requiring professional development but not seeking an award
(vii) Industrial experts are used to help maintain currency of the programme
(viii) Where requested by UWE on industry's behalf, other HEIs and external providers may supply modules in specific topics, to ensure the relevant expertise is captured.

MSc in Aerospace students will be registered at UWE and have:

- Provision of Open Access and other available computer laboratories that provide access to a range of relevant computer based applications. Open Access computer areas are never time-tabled and give students the opportunity to access machines at all times during opening hours. This is a mixed environment consisting of PCs and Unix workstations.
- Provision of the Faculties and University's System Support Helpdesk that provides a range of support for learning to students including:
    - Support for a wide range of applications used by the students;
    - Help in the form of Assistants who are trained to resolve many common student problems and help in the form of a large set of 'help-sheet documents', developed over a number of years, which cover a variety of common student requests for information.
- Some computer laboratories include specialist software for aerospace applications and have dedicated technical support staff available.

Pastoral Care

Pastoral care is provided through the CPDA Office staff whose responsibilities are solely to the students on the MSc in Aerospace and the legacy awards. Hence this team provides a comprehensive, full-time student support service on a drop-in basis or by appointment. The staff are trained to provide advice on matters commonly of concern, including regulatory and other matters. When necessary, the student may be advised to seek advice from other professional services including the university's Centre for Student Affairs or from members of academic staff.

Academic Support

- The MSc in Aerospace Programme Leader provides academic advice and support to students on an individual basis, as required.
- Academic support on each module is the responsibility of the staff delivering a module from the preparatory study advice in the pre-delivery week, through the delivery week itself and afterwards in the assignment weeks until the assignment deadline.
- Support in mathematics is available to students throughout their programme on an individual basis, on-demand. Some of the mathematics support is specific to certain modules, e.g. Aircraft Structural Design and Stress Analysis.
- Support in report writing is available to students throughout their programme on an individual basis, on-demand.
- Support in developing independent study skills, research methods & methodologies and for preparing for the Masters research project. Taught modules are structured to develop independent study skills, and staff are available to aid a student's progression. In the research studies for the master's thesis, the supervisory teams provide guidance throughout until submission of the thesis.

Section 8: Reference points/benchmarks

In designing this MSc programme, the following external reference points have been drawn upon:

1. The QAA framework for Higher Education Qualifications in England, Wales and Northern Ireland: providing an outline for what is required at Master's level. All modules are designed to meet as many of the attributes and skills required of Master's students and the learning outcomes of the programme are fully consistent with the qualification descriptor on the Framework – so that graduates will be able to demonstrate that they meet the expectations of the Framework.

2. *QAA Subject Benchmark statement* for *Engineering (MEng) (2006)*
   AND
3. Engineering UK-Spec specific Learning Outcomes, with respect to the requirements from the Professional Engineering Institutions.

The latter two outline the set of objectives that a typical graduate of an Engineering Masters should reach, including:

- originality in application of knowledge, together with a practical understanding of how established techniques of research and enquiry are used to create and interpret knowledge in the discipline
- deal with complex issues both systematically and creatively, make sound judgements in the absence of complete data, and communicate their conclusions clearly to specialist and non-specialist audiences
- Lead teams and develop staff to meet changing technical and managerial needs

Such skills and the others like them map very closely to the learning outcomes of this programme and therefore there is confidence that the programme is in accordance with the precepts of the Statement.

4. UWE's Learning and Teaching Strategy, which has been used to inform the faculty's policy's for the delivery of its programmes.

5. Feedback from the CPDA Industrial Advisory Board, which helped determine and update the core modules and structure of the programme, ensuring it meets the needs of the Aerospace industry.

This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of individual modules can be found in module specifications. These are available on the University Intranet.

Programme monitoring and review may lead to changes to approved programmes. There may be a time lag between approval of such changes/modifications and their incorporation into an authorised programme specification. Enquiries about any recent changes to the programme made since this specification was authorised should be made to the relevant Faculty Academic Registrar.