

PROGRAMME SPECIFICATION – POSTGRADUATE PROGRAMMES

KEY FACTS

Programme name	Advanced Mechanical Engineering
Award	MSc
School	School of Mathematics, Computer Science and Engineering
Department or equivalent	Department Mechanical Engineering and Aeronautics
Programme code	PSMEEN
Type of study	Full Time Part Time
Total UK credits	180
Total ECTS	90
Partner (partnership programme only)	
Type of Partnership	

PROGRAMME SUMMARY

The MSc programme course totals 180 credits (1800 study hours), which consist of 8 taught modules totalling 120 credits and a 60 credit dissertation/project. The programme is offered as either full or part-time. The full-time programme follows a normal 12-month pattern with taught modules over typically 20 contact weeks, six examination weeks, four reflective learning (private study) weeks and eight vacation weeks (which may be used for private study), followed by 16 relevant project weeks which will involve current issues in Mechanical Engineering practice and theory and acquaint you with state-of-the-art best practice. This may involve an overlap with current research projects.

At the end of the programme, you will have acquired not only the in-depth knowledge and understanding of fundamentals and analytical and practical skills to solve and appreciate the latest developments in mechanical engineering solutions in the energy and transport sectors, but also acquire professional industrial management and personal skills required for a career in engineering and also to develop your awareness of professional as well as engineering competence on market analysis, commercial operational and regulatory constraints.

Postgraduate Certificate of Higher Education

The first exit route is for Postgraduate Certificate of Higher Education in Mechanical Engineering which you are entitled to if you successfully complete and gain 60 credits of all the taught modules in the Programme.

Postgraduate Diploma of Higher Education

The second exit route is for Postgraduate Diploma of Higher Education in Mechanical Engineering which you are entitled to if you successfully complete and gain 120 credits of all the taught modules in the Programme.

MSc Degree

The final exit route is for the award of the MSc degree in Mechanical Engineering which you are entitled to if you successfully complete and gain 180 credits of all the taught modules and the dissertation in the Programme.

Aims

The overall aim of the programme is to impart knowledge of current state-of-the-art aspects in specific areas of Mechanical Engineering, particularly in thermo-fluids applications and to disseminate the latest research advances and professional best practice. A specific aim of the programme is to produce graduates who can specialise in topics of current research and master the widely accepted techniques and knowledge. Such skills and knowledge can then be applied in industry and research environments and offer an excellent platform for career development

WHAT WILL I BE EXPECTED TO ACHIEVE?

On successful completion of this programme, you will be expected to be able to:

Knowledge and understanding:

- Demonstrate a knowledge and understanding of the general areas of Mechanical Engineering subjects and to extended knowledge of underlying principles of modern methods of control and design of vehicle and powder train systems
- Assessment of the behaviour of mechanical, aeronautical or electrical systems.
- Understand how major, modern projects require input from many distinct branches of engineering.
- Application of advanced methods of analysis to mechanical, aeronautical or electrical systems.
- Extended knowledge of underlying principles of modern methods of design of mechanical, aeronautical or electrical systems with appropriate methods. Appreciate advanced computer methods, e.g. CFD and CAD, using different software techniques.
Apply how the Systems Engineering methodology offers a coordinated approach to managing the complexities of major, modern projects.

Skills:

- Have had practical experience of leading cutting-edge on computer-aided design, energy systems and management, combustions, IC engines, screw compressors and expanders, experimental techniques, mechatronics, dynamics of structures and computer software.
- Have the ability and confidence to be a leader in industry.
- Formulate and evaluate hypotheses in a suitable environment e.g. engineering or computer laboratories. Solve complex engineering problems using advanced scientific software packages.

- Ability to formulate, critically analyse and test concepts and hypotheses for innovation solutions. Synthesise information and data from different sources in order to write scientific reports of publishable standard.
- Be able to locate relevant referenced research publications and appreciate their application to best professional practice.
- Understand how organisational structures have a major influence the outcome, good or bad, of projects, and how systems engineering techniques may be applied to large engineering projects.
- Recognise the potential pitfalls, engineering and economic, associated with a large project and strategies for avoidance and recovery.

Values and attitudes:

- To be conversant of advance technologies as fundamental to the fields of Mechanical and Energy Systems.
- Understand the current state of art engineering on Mechanical and Energy Systems and their impact on environmental e.g. automobile pollution, carbon free power generation.
- Recognise the role of engineering in society, nothing moves without Mechanical Engineering, social economic and political implications of global manufacturing.
- Develop an ability to apply Research Skills and Techniques.
- Understand the complex and interactive nature of the engineering process, and the need to avoid a compartmentalised view.
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This programme has been developed in accordance with the QAA Subject Benchmark for generic master's level programmes.

HOW WILL I LEARN?

The teaching and learning strategy is based on lectures, supported wherever appropriate by laboratory coursework. Assessment for the taught elements of the programme is based on coursework and written examinations. There is an element of engineering design in some modules and in the project, which is used to integrate material taught in other modules.

Being a master level programme you are expected to be self-motivated and also self-reliant. A professional approach is anticipated and you are unlikely to succeed without it.

The project (or dissertation) will involve a literature search, assimilation of previous work, experimental or theoretical investigations and applications to current design problems.

WHAT TYPES OF ASSESSMENT AND FEEDBACK CAN I EXPECT?

Assessment and Assessment Criteria

Assessment for the programmes is based on coursework and written examinations. Computer orientated modules are assessed by coursework and theoretical modules are assessed by examination.

Assessment Criteria are descriptions, based on the intended learning outcomes, of the skills, knowledge or attitudes that you need to demonstrate in order to complete an assessment successfully, providing a mechanism by which the quality of an assessment can be measured. Grade- Related Criteria are descriptions of the level of skills, knowledge or attributes that you need to demonstrate in order achieve a certain grade or mark in an assessment, providing a mechanism by which the quality of an assessment can be measured and placed within the overall set of marks. Assessment Criteria and Grade-Related Criteria will be made available to you to support you in completing assessments. These may be provided in programme handbooks, module specifications, on the virtual learning environment or attached to a specific assessment task.

Feedback on assessment

Feedback for assessments is generally given in a written form on submitted reports returned back to you. In addition to this, classes are sufficiently small that additional feedback can be given in the classroom during lecture/tutorial periods. Lecturers often give feedback when common misunderstandings in coursework or class tests are apparent. Marking and feedback is normally given within three weeks according to University rules. Feedback is vital for your understanding of the subject material within Modules and preparation for testing of this understanding in formal examinations.

For end of module examinations or an equivalent significant task (e.g. an end of module project), feedback will normally be provided within four weeks. The timescale for feedback on final year projects or dissertations may be longer. The full policy can be found at:

https://www.city.ac.uk/_data/assets/pdf_file/0008/68921/assessment_and_feedback_policy.pdf

Assessment Regulations

In order to pass your Programme, you should complete successfully or be exempted from the relevant modules and assessments and will therefore acquire the required number of credits.

If you fail an assessment component or a module, the following will apply:

1. Compensation: where you fail up to a total of 20 credits at first or resit attempt (15 for a Postgraduate Certificate), you may be allowed compensation if:
 - Compensation is permitted for the module involved (see the What will I Study section of the programme specification), and
 - It can be demonstrated that you have satisfied all the Learning Outcomes of the modules in the Programme, and
 - A minimum overall mark of no more than 10% below the module pass mark has been achieved in the module to be compensated, and
 - An aggregate mark of 50% has been achieved overall.

Where you are eligible for compensation at the first attempt, this will be applied in the first instance rather than offering a resit opportunity.

If you receive a compensated pass in a module you will be awarded the credit for that module. The original component marks will be retained in the record of marks and your original module mark will be used for the purpose of your Award calculation.

2. Resit: Where you are not eligible for compensation at the first attempt, you will be offered one resit attempt.

If you are successful in the resit, you will be awarded the credit for that module. The mark for each assessment component that is subject to a resit will be capped at the pass mark for the module. This capped mark will be used in the calculation of the final module mark together with the original marks for the components that you passed at first attempt.

If you do not meet the pass requirements for a module and do not complete your resit by the date specified you will not progress and the Assessment Board will require that you be withdrawn from the Programme.

If you fail to meet the requirements for the Programme, the Assessment Board will consider whether you are eligible for an Exit Award, as per the table below.

If you would like to know more about the way in which assessment works at City, please see the full version of the Assessment Regulations at:
http://www.city.ac.uk/_data/assets/word_doc/0003/69249/s19.doc

WHAT AWARD CAN I GET?

Master's Degree:

Part	HE Level	Credits	Weighting (%)
Taught	7	120	67
Dissertation	7	60	33

Class	% required
With Distinction	70
With Merit	60
Without classification	50

Postgraduate Diploma:

Part	HE Level	Credits	Weighting (%)
Taught	7	120	100

Class	% required
With Distinction	70
With Merit	60
Without classification	50

Postgraduate Certificate:

Part	HE Level	Credits	Weighting (%)	Class	% required
Taught	7	60	100	With Distinction	70
				With Merit	60
				Without classification	50

WHAT WILL I STUDY?

You must complete 8 taught modules overall, and complete a 60 credit dissertation/project.

Module Title	SITS Code	Module Credits	Core/ Elective	Can be Compensated?	Level
Advanced Heat Transfer	MEM107	15	C	Y	7
Advanced Computational Fluid Dynamics	AEM301	15	C	Y	7
Dissertation	EPM949	60	C	N	7
Advanced Structural Mechanics	MEM106	15	C	Y	7
IC Engine and Vehicle propulsion	MEM108	15	C	Y	7
Gas Turbine Engineering	AEM305	15	C	Y	7
Professional Industrial Management Studies	ETM051	15	C	N	7
Combustion Fundamentals and Applications	MEM102	15	E	Y	7
Renewable Energy Fundamentals & Sustainable Energy Technologies	EPM879	15	E	Y	7
Finite Element Methods	EPM707	15	E	Y	
Mathematical Modelling in CAD	EPM767	15	E	Y	7
Power Electronics	EPM501	15	E	Y	7

You are normally required to pass all taught modules before progressing to the dissertation.

TO WHAT KIND OF CAREER MIGHT I GO ON?

Graduates from the Programme go onto a variety of careers both within engineering and outside which can be financial services. The analytical skills acquired have great value as transferrable skills into many areas.

In engineering, again the industries can be wide as can the companies ranging from large established industries to SMEs (Small and Medium Enterprises). For example two graduates are now working at an SME based in South West London; the company is

producing compressors for Electric Superchargers and industrial energy recovery technology.

If you would like more information on the Careers support available at City, please go to: <http://www.city.ac.uk/careers/for-students-and-recent-graduates>.

WHAT STUDY ABROAD OPTIONS ARE AVAILABLE?

From time to time opportunities could arise for study abroad. Such opportunities are usually through Erasmus programmes and you would be encouraged to apply.

WHAT PLACEMENT OPPORTUNITIES ARE AVAILABLE?

No formal scheme exists for offering placements but there are opportunities to link the individual project with companies with which academic staff have connections. These companies may be entirely separate from the University, have contractual relationships where City undertakes research or may be associated with spins-outs of other commercial activity of the University. For example, an individual project is being undertaken in conjunction with the company AVL Powertrain based in Essex, close to London. You will visit the company regularly and will work along side engineers of AVL. This has arisen due to professional links between an academic and persons on the company. Another example concerns the Centre for Positive Displacement Compressors which works closely with sixty compressor manufacturers worldwide. Many of the projects are linked to efforts to commercially exploit new developments in the field.

WILL I GET ANY PROFESSIONAL RECOGNITION?

Accrediting Body: Institution of Mechanical Engineers

Nature of Accreditation: Further learning for CEng

Satisfied academic requirements for application to become a Chartered Mechanical Engineer.

HOW DO I ENTER THE PROGRAMME?

The normal requirement is an honours degree (2:2 minimum) in Mechanical Engineering or another appropriate subject. If you hold a Diploma of Technology in an appropriate subject and holding Chartered Engineer status are also accepted, although if you have relevant industrial experience potential and enthusiasm may be considered.

English language requirements:
IELTS: 6.5 with a minimum of 6.0 in each component

Please note that TOEFL is not accepted as evidence of English language ability for students that require a Confirmation of Acceptance for Studies.

Version: 5.0

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