

## PROGRAMME SPECIFICATION – POSTGRADUATE PROGRAMMES

### KEY FACTS

Programme name	MSc Advanced Mechanical Engineering MSc Advanced Mechanical Engineering with Placement
Award	MSc
School	School of Science & Technology
Department or equivalent	Engineering
Programme code	PSAMEE ROU code TBC
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 (6 core and 2 elective modules) totalling 120 credits and a 60-credit dissertation/project. The programme is offered as either full time 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-art best engineering practice. This also involves 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, transport and manufacture sectors, but also acquire professional industrial management and personal skills required for a career in engineering and also develop your awareness of professional as well as engineering competence on market analysis, commercial operational and regulatory constraints.

#### Aims

The overall aim of the programme is to impart knowledge of current state-of-art aspects in different areas of Mechanical Engineering (e.g. thermofluids, manufacture and robotics) and to disseminate the latest research advances and professional best practice. A specific aim of the programme is to train 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:

- Critically discuss the general areas of Mechanical Engineering subjects.
- Assess the behaviour of mechanical and aeronautical systems.
- Discuss how major, modern projects require input from many distinct branches of engineering.
- Apply advanced methods of analysis to mechanical, aeronautical or electrical systems.
- Synthesis underlying principles of modern methods of design of mechanical, aeronautical systems with appropriate methods, e.g. CFD and FEM.

Critically evaluate how the System Engineering methodology offers a coordinated approach to managing the complexities of major modern projects.

### Skills:

- Use cutting-edge experimental technique, simulation software and computer-aided design tools to address problems in energy systems, internal combustion engines, gas turbine.
- Lead the industry with ability and confidence
- Formulate and evaluate hypotheses in a suitable environment e.g. engineering or computer laboratories, and solve complex engineering problems using advanced scientific software packages.
- Formulate, analyse and test concepts and hypotheses for innovation solutions.
- Collect information and data from different sources in order to write scientific reports of publishable standard.
- Locate relevant referenced research publications and appreciate their application to best professional practice.
- Critically discuss how organisational structures have a major influence on the outcome 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:

- Converse on advance technologies as fundamental to the fields of Mechanical and Energy Systems.
- Analyse the current state-of-art engineering on Mechanical and Energy Systems and their impact on environment, 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.
- Synthesis 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 and tutorial. 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's 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. Engineering is a practical discipline which benefits from significant supervised study, but it cannot be learnt through lectures alone. The supervised and guided contact hours through lectures, tutorials and laboratories are designed to assist you to carry out further private study. The private study hours in each week are essential to the achievement of the learning outcomes and are guided using both formative and summative coursework tasks set during the academic year. Your private study is also supported by the use of Moodle, City's online learning environment. This provides online access to module content, feedback, guidance on completing coursework, audio-visual resources etc.

The project (or dissertation) will involve a literature search, assimilation of previous work, experimental or theoretical investigations and applications to current design problems. A workshop on research skills is also organised for you before the start of the project.

### **WHAT TYPES OF ASSESSMENT AND FEEDBACK CAN I EXPECT?**

#### Assessment and Assessment Criteria

Assessment for the programme is based on coursework, posters, lab reports and written examinations.

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 to 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 are provided in programme

handbooks, module specifications, on the virtual learning environment (i.e. Moodle) or attached to a specific assessment task.

### Feedback on Assessment

Feedback for assessment is generally given in a written form on submitted reports returned back to you or in Moodle page. In addition to this, 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 are normally given within three weeks according to university rules. Feedback is vital for your understanding of the subject material within modules and preparation for formal examinations.

For end of module examinations or an equivalent significant task (e.g. an end of module project), feedback will be provided within four weeks. The timescale for feedback on 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](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, 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 aggregated 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 exam by the date specified, you will not progress and the Assessment Board will require you to 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](http://www.city.ac.uk/data/assets/word_doc/0003/69249/s19.doc)

### WHAT AWARD CAN I GET?

#### Master's Degree:

The first exit route 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

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

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

#### Masters Degree with Placement::

	HE Level	Credits	Weighting (%)
Dissertation	7	60	30
Taught	7	120	60
Placement	7	120	10

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

#### Postgraduate Diploma:

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.

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

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

**Postgraduate Certificate:**

The final 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.

Part	HE Level	Credits	Weighting (%)
Taught	7	60	100

Class	% required
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/Compulsory/ Elective	Can be Compensated?	Level
Gas Turbine Engineering	AEM406	15	Compulsory	Yes	7
Advanced Structural Mechanics	MEM410	15	Compulsory	Yes	7
Advanced Computational Fluid Dynamics	MEM411	15	Compulsory	Yes	7
Project Management	MEM412	15	Core	No	7
Advanced Manufacturing	EG4204	15	Core	No	7
Dissertation	EPM949	60	Core	No	7
Advanced Heat Transfer	MEM413	15	Compulsory	Yes	7
Vehicle Propulsion	MEM414	15	Elective	Yes	7
Robotics Imaging and Vision	EPM110	15	Elective	Yes	7
Experimental Methods in Aerospace Engineering	EPM222	15	Elective	Yes	7

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

Placement route:

Module Title	SITS Code	Module Credits	Core/Compulsory/ Elective	Can be Compensated?	Level
Industrial Placement and Professional Development	EPM967	120	Elective	No	7

You will have the opportunity to resit any failed assessments, if you fail these resits you are still able to progress, but your degree title would not state 'with placement year' and your placement year would not count towards your final award.

Please refer to the WHAT PLACEMENT OPPORTUNITIES ARE AVAILABLE? Section for more information.

#### **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, the industries can be companies ranging from large established industries to SMEs (Small and Medium Enterprises).

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?**

The opportunity to undertake a 12-month placement is available to students. Placements are not guaranteed.

Fulltime students who secure an approved placement will be required to complete the 120 credit EPM967 Industrial Placement and Professional Development module. Students will only be transferred to EPM967 on submission of their individual project. Only students who pass their project can undertake a placement.

The 120 credits accrued for the placement will be in addition to the 180 credits accrued for the MSc programme.

The weighting of the placement year will contribute 10% to the overall MSc grade.

The onus is on students to secure a placement, however support will be provided by the School Corporate Relations & Employability Unit (CREU).

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 spin-outs of other commercial activity of the University.

### **WILL I GET ANY PROFESSIONAL RECOGNITION?**

**Accrediting Body: Institution of Mechanical Engineers**

**Nature of Accreditation:** Further learning for Chartered Engineer

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.

For those overseas applicants, whose first language is not English or their country has not been exempted from the English language requirement by the UK Home Office, they will need to provide one of the following English test qualifications:

IELTS: 6.5

TOEFL 92

Version: 9.1

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