### MODULE SPECIFICATION – UNDERGRADUATE PROGRAMMES

#### KEY FACTS

<table>
<thead>
<tr>
<th>Module name</th>
<th>Foundation Year Module</th>
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<tbody>
<tr>
<td>Module code</td>
<td>ME0001</td>
</tr>
<tr>
<td>School</td>
<td>Mathematics, Computer Science and Engineering</td>
</tr>
<tr>
<td>Department or equivalent</td>
<td>Mechanical Engineering and Aeronautics</td>
</tr>
<tr>
<td>UK credits</td>
<td>120</td>
</tr>
<tr>
<td>ECTS</td>
<td>20</td>
</tr>
<tr>
<td>Level</td>
<td>3</td>
</tr>
<tr>
<td>Delivery location</td>
<td>Westminster and Kingsway College</td>
</tr>
<tr>
<td>(partnership programmes only)</td>
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#### MODULE SUMMARY

**Module outline and aims**

A good foundation in mathematics and scientific principles is essential for engineering studies at degree levels. This module provides you with the mathematical and scientific background necessary to progress to Stage 1 of BEng programmes in Mechanical Engineering, BEng Aeronautical Engineering or BEng Engineering. These programmes are accredited by the Engineering Council UK through the Institution of Mechanical Engineers and The Royal Aeronautical Society.

**Content outline**

This module stimulates educational development and intellectual awareness, thus providing the optimum basis for the acquisition of successful habits and skills.

To provide you with the essential mathematical and scientific background necessary to progress to Stage 1 of the following programmes:

- BEng Mechanical Engineering
- BEng Aeronautical Engineering
- BEng Engineering

To encourage the development of the student's awareness of the learning process and foster their intellectual development in order to produce you with a well-established sense of their competence as learners.

**1 MATHEMATICS**

Core Unit CEM1 - Number
Core Unit CEM2 - Introduction to Algebra Core Unit CEM3 - Introduction to Graphs
Further Unit FEM1 - Introduction to Calculus Further Unit FEM2 - Trigonometry & Series Further Unit FEM3 - Further Calculus
Further Unit FEM4 - Vector Algebra & Complex Numbers
WHAT WILL I BE EXPECTED TO ACHIEVE?

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

Knowledge and understanding:

Demonstrate a substantial foundation in Mathematics, Physics and Mechanics, consistent with the further study of these and related subjects in the common Stage 1 of the Mechanical Engineering, Aeronautical Engineering and Engineering Programmes.

Skills:

Demonstrate the skills required in a science laboratory

Formulate problem solving strategies and plan and record individual and group work progress and activities

Demonstrate competence in the communication skills necessary for Higher Education

Be familiar with a range of techniques appropriate to learning independently and in lectures, tutorials and practical work
Values and attitudes:
Reflect appropriately upon lectures and demonstrations attended during the course

HOW WILL I LEARN?
Lectures, tutorials, coursework and use of computer programs.

Lectures are used as a means of covering the essential principles in sufficient detail to allow you to achieve the Knowledge and Understanding of the principles relevant to the subject matters.

Table 1: Teaching pattern:

<table>
<thead>
<tr>
<th>Teaching component</th>
<th>Teaching type</th>
<th>Contact hours (scheduled)</th>
<th>Self-directed study hours (independent)</th>
<th>Placement hours</th>
<th>Total study hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanics</td>
<td>Lecture</td>
<td>126</td>
<td>150</td>
<td>0</td>
<td>27</td>
</tr>
<tr>
<td>Computing &amp; IT</td>
<td>Practical classes and Workshops</td>
<td>54</td>
<td>60</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Communication &amp; Study Skills</td>
<td>Practical classes and workshops</td>
<td>36</td>
<td>52</td>
<td>0</td>
<td>88</td>
</tr>
<tr>
<td>Mathematics</td>
<td>Lecture</td>
<td>180</td>
<td>210</td>
<td>0</td>
<td>39</td>
</tr>
<tr>
<td>Physics</td>
<td>Lecture</td>
<td>162</td>
<td>170</td>
<td>0</td>
<td>33</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>558</td>
<td>642</td>
<td>0</td>
<td>12</td>
</tr>
</tbody>
</table>

WHAT TYPES OF ASSESSMENT AND FEEDBACK CAN I EXPECT?
Assessments

Unseen examinations provide a controlled, objective environment in which to assess learning outcomes, however some skills are best assessed continuously through coursework and practical assignments. Assessment spread over the academic year also helps develop and measure time & quality management skills.

Table 2: Assessment pattern:

<table>
<thead>
<tr>
<th>Assessment component</th>
<th>Assessment type</th>
<th>Weighting</th>
<th>Minimum qualifying mark</th>
<th>Pass/Fail?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanics</td>
<td>Written Exams and set exercises</td>
<td>22</td>
<td>65</td>
<td>N/A</td>
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<tr>
<td>Computing and IT</td>
<td>Written Exams and set exercises</td>
<td>18</td>
<td>60</td>
<td>N/A</td>
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<td>Communication and Study Skills</td>
<td>Written Exams and set exercises</td>
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<td>60</td>
<td>N/A</td>
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<tr>
<td>Maths</td>
<td>Written Exams and set exercises</td>
<td>24</td>
<td>65</td>
<td>N/A</td>
</tr>
<tr>
<td>Physics</td>
<td>Written Exams and set exercises</td>
<td>28</td>
<td>65</td>
<td>N/A</td>
</tr>
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</table>

Assessment criteria

Assessment Criteria are descriptions of the skills, knowledge or attributes students need to demonstrate in order to complete an assessment successfully and Grade-Related Criteria are descriptions of the skills, knowledge or attributes students need to demonstrate to achieve a certain grade or mark in an assessment. Assessment Criteria and Grade-Related Criteria for module assessments will be made available to students prior to an assessment taking place. More information will be available from the module leader.

Feedback on assessment

Following an assessment, students will be given their marks and feedback in line with the Assessment Regulations and Policy. More information on the timing and type of feedback that will be provided for each assessment will be
available from the module leader.

Assessment Regulations

For progression to an engineering degree programme at City, the Pass mark for the module is overall 65% plus pass mark 65% for individual assessment components listed in the Table 2 above except for Study Skills and Computing which must be passed at minimum 60%. The weighting for the different components can also be found above. The Programme Specification contains information on what happens if you fail an assessment component or the module.

INDICATIVE READING LIST

Mathematics

Physics

Mechanics

Version: 5.0
Version date: Feb 2019
For use from: 2019-20

Appendix: see http://www.hesa.ac.uk/content/view/1805/296/ for the full list of JACS codes and descriptions

<table>
<thead>
<tr>
<th>CODES</th>
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<tr>
<td>HESA Code</td>
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<td>120</td>
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<table>
<thead>
<tr>
<th>JACS Code</th>
<th>Description</th>
<th>Percentage (%)</th>
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<tbody>
<tr>
<td>Code</td>
<td>Description</td>
<td>Credits</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------</td>
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<tr>
<td>F300</td>
<td>The study of the properties of matter and energy and the relationships between them, making extensive use of mathematical techniques and models. May include mechanics, optics, electricity, magnetism and acoustics. May also include atomic, nuclear, particle and solid state studies.</td>
<td>25</td>
</tr>
<tr>
<td>G100</td>
<td>The rigorous analysis of quantities, magnitudes, forms and their relationships, using symbolic logic and language, both in its own right and as applied to other disciplines.</td>
<td>50</td>
</tr>
<tr>
<td>G500</td>
<td>The study, design or application of computers systems which capture, process and transmit information.</td>
<td>25</td>
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