



MODULE SPECIFICATION

Part 1: Information			
Module Title	Engineering Principles for Civil Engineering		
Module Code	UBGMXQ-30-1	Level	Level 4
For implementation from	2019-20		
UWE Credit Rating	30	ECTS Credit Rating	15
Faculty	Faculty of Environment & Technology	Field	Geography and Environmental Management
Department	FET Dept of Geography & Environmental Mgmt		
Module type:	Standard		
Pre-requisites	None		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p>Overview: This module will introduce you to the fundamentals of statics and dynamics; different types of stresses, buckling and composite sections through lectures, tutorials and laboratory work.</p> <p>Educational Aims: See Learning Outcomes</p> <p>Outline Syllabus: You will cover:</p> <p>Statics (forces, moments, centre of gravity, equilibrium, reactions in statically determinate structures, shear and moment diagrams and functions, qualitative analysis of beams, determinacy and stability.)</p> <p>Dynamics (kinematics, projectiles, angular motions, Newton's laws of motion, energy, work, power, relative displacement and velocity, variable acceleration and vibration).</p> <p>Truss analysis.</p> <p>Compression and buckling.</p> <p>Deflection of beams and trusses.</p>

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Axial, bending, shear and torsional stresses.

Combined stresses.

Principal stresses and Mohr's circle.

Composite sections.

Teaching and Learning Methods: The module is taught through a lecture series which introduces students to the key concepts and theories of the module. This is supported by tutorial sessions where students apply to theory to solve engineering problems. Formative feedback on their progress is provided in these sessions.

Part 3: Assessment

The module is taught over two semesters and includes a diverse range of engineering principles that are to be assessed. This is done primarily through examinations or tests. A series of in class tests are used to sequentially assess the learning outcomes in detail with a final exam providing a synoptic assessment of the entire module.

Depth is added to the assessment through a coursework exercise which looks in to structural behaviour in detail and develops students' ability to write and present formal engineering calculations:

Component A1 – Examination (3 hour). Learning outcomes 1-7

A written examination that synthesises all the learning outcomes of the module through the use of questions that focus on application of the theory to non-classical questions, e.g. real life scenarios. These questions represent an increased level of complexity to the in class tests.

Component A2 – In class tests. Learning outcomes 1-7

In class tests that assess the basics of the learning outcomes as the module progresses; in the form of classical engineering questions. The students able to practice the questions, and receive detailed automated feedback before their final summative attempt.

The in class test represent an assessment for learning approach to support the student's development through the module, and will largely be prepared for and completed in the timetable sessions.

Component B – Laboratory report (1000 words). Learning outcome 8

The laboratory report allows the students to observe measure and analyse the engineering principles of stress, strain and structural behaviour. As a coursework element, it allows the concepts to be explored in more depth than the examination and in physical context.

First Sit Components	Final Assessment	Element weighting	Description
Report - Component B		25 %	Report (1000 words)
In-class test - Component A		18.75 %	In-class test
Examination - Component A	✓	56.25 %	Examination (3 hours)
Resit Components	Final Assessment	Element weighting	Description
Report - Component B		25 %	Report (1000 words)
In-class test - Component A		18.75 %	In-class test
Examination - Component A	✓	56.25 %	Examination (3 hours)

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Part 4: Teaching and Learning Methods																			
Learning Outcomes	<p>On successful completion of this module students will achieve the following learning outcomes:</p> <table border="1"> <thead> <tr> <th>Module Learning Outcomes</th> <th>Reference</th> </tr> </thead> <tbody> <tr> <td>Identify the principles of structural behaviour</td> <td>MO1</td> </tr> <tr> <td>Undertake basic structural and engineering mechanics calculations</td> <td>MO2</td> </tr> <tr> <td>Calculate stress and strain due to axial, bending, shear and torsion effects</td> <td>MO3</td> </tr> <tr> <td>State and apply physical laws to the solution of engineering problems that arise in the study of statics and dynamics</td> <td>MO4</td> </tr> <tr> <td>Analyse statically determinate beams</td> <td>MO5</td> </tr> <tr> <td>Analyse statically determinate trusses</td> <td>MO6</td> </tr> <tr> <td>Apply the laws of Newtonian mechanics on moving objects</td> <td>MO7</td> </tr> <tr> <td>Apply principles of statics to interpret observed structural behaviour</td> <td>MO8</td> </tr> </tbody> </table>	Module Learning Outcomes	Reference	Identify the principles of structural behaviour	MO1	Undertake basic structural and engineering mechanics calculations	MO2	Calculate stress and strain due to axial, bending, shear and torsion effects	MO3	State and apply physical laws to the solution of engineering problems that arise in the study of statics and dynamics	MO4	Analyse statically determinate beams	MO5	Analyse statically determinate trusses	MO6	Apply the laws of Newtonian mechanics on moving objects	MO7	Apply principles of statics to interpret observed structural behaviour	MO8
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Reading List	<p>The reading list for this module can be accessed via the following link:</p> <p>https://uwe.rl.talis.com/modules/ubgmxq-30-1.html</p>																		

Part 5: Contributes Towards	
<p>This module contributes towards the following programmes of study:</p> <p>Civil and Environmental Engineering {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2018-19</p> <p>Civil and Environmental Engineering [Sep][PT][Frenchay][7yrs] MEng 2018-19</p> <p>Civil and Environmental Engineering {Apprenticeship} [Sep][PT][Frenchay][5yrs] BEng (Hons) 2018-19</p> <p>Civil and Environmental Engineering [Sep][PT][Frenchay][5yrs] BEng (Hons) 2018-19</p> <p>Civil and Environmental Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19</p>	