



Module Specification

Engineering Principles for Civil Engineering

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Part 1: Information

Module title: Engineering Principles for Civil Engineering

Module code: UBGMXQ-30-1

Level: Level 4

For implementation from: 2023-24

UWE credit rating: 30

ECTS credit rating: 15

College: College of Arts, Technology and Environment

School: CATE School of Engineering

Partner institutions: None

Field: Geography and Environmental Management

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

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.

Features: Not applicable

Educational aims: See Learning Outcomes

Outline syllabus: You will cover:

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.)

Dynamics (kinematics, projectiles, angular motions, Newton's laws of motion, energy, work, power, relative displacement and velocity, variable acceleration and vibration).

Truss analysis.

Compression and buckling.

Deflection of beams and trusses.

Axial, bending, shear and torsional stresses.

Combined stresses.

Principal stresses and Mohr's circle.

Composite sections.

Part 3: Teaching and learning methods

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.

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

- MO1** Identify the principles of structural behaviour
- MO2** Undertake basic structural and engineering mechanics calculations
- MO3** Calculate stress and strain due to axial, bending, shear and torsion effects
- MO4** State and apply physical laws to the solution of engineering problems that arise in the study of statics and dynamics
- MO5** Analyse statically determinate beams
- MO6** Analyse statically determinate trusses
- MO7** Apply the laws of Newtonian mechanics on moving objects
- MO8** Apply principles of statics to interpret observed structural behaviour

Hours to be allocated: 300

Contact hours:

Independent study/self-guided study = 228 hours

Face-to-face learning = 72 hours

Total = 300

Reading list: The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/modules/ubgmxg-30-1.html) via the following link <https://uwe.rl.talis.com/modules/ubgmxg-30-1.html>

Part 4: Assessment

Assessment strategy: 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:

Examination:

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.

In class tests:

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.

Laboratory report:

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.

Resit is the same as the first sit

Assessment tasks:**In-class test (First Sit)**

Description: In-class test (3 hours)

Weighting: 19 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO6, MO7

Report (First Sit)

Description: Report (1000 words)

Weighting: 25 %

Final assessment: No

Group work: No

Learning outcomes tested: MO8

Examination (Online) (First Sit)

Description: Online Examination: 3 hours + 2 hours for submission

Weighting: 56 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO6, MO7

In-class test (Resit)

Description: In-class test (3 hours)

Weighting: 19 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO6, MO7

Report (Resit)

Description: Report (1000 words)

Weighting: 25 %

Final assessment: No

Group work: No

Learning outcomes tested: MO8

Examination (Online) (Resit)

Description: Online Examination: 3 hours + 2 hours for submission

Weighting: 56 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO6, MO7

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Civil Engineering [Frenchay] BEng (Hons) 2023-24

Civil Engineering [Frenchay] MEng 2023-24

Civil Engineering {Foundation} [Frenchay] BEng (Hons) 2022-23

Civil and Environmental Engineering [Sep][PT][Frenchay][5yrs] - Not Running BEng (Hons) 2022-23

Civil and Environmental Engineering {Foundation} [Sep][FT][Frenchay][4yrs] - Not Running BEng (Hons) 2022-23

Civil and Environmental Engineering {Foundation} [Sep][SW][Frenchay][5yrs] - Not Running BEng (Hons) 2022-23

Civil Engineering {Apprenticeship-UWE} [Frenchay] BEng (Hons) 2022-23

Civil Engineering [Frenchay] BEng (Hons) 2022-23

Civil Engineering [Frenchay] MEng 2022-23