Module Specification

Structural Analysis

Version: 2025-26, v7.0, Approved

Contents

Part 1: Information

Module title: Structural Analysis

Module code: UBGMV9-15-2

Level: Level 5

For implementation from: 2025-26

UWE credit rating: 15

ECTS credit rating: 7.5

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: Engineering Principles for Civil Engineering 2024-25, Mathematics for Civil and Environmental Engineering 2025-26

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: The Structural Analysis module provides second-year civil engineering students with foundational knowledge and analytical skills to assess the behaviour of both statically determinate and indeterminate structures under various loading and boundary conditions. Emphasising the importance of both elastic and plastic analysis, the module guides students through qualitative and quantitative methods to evaluate internal forces, stability, and collapse mechanisms in beams and frames.

Through a combination of lectures, tutorials, and extensive problem-solving exercises, students will gain hands-on experience using manual calculations and software tools to simulate real-world structural scenarios. The module reflects industry practices and encourages collaborative learning, preparing students for further study and professional practice in structural engineering.

Features: Not applicable

Educational aims: In this module students will develop the necessary knowledge, understanding and skills to analyse and solve problems relating to multi-variable structural systems of both statically determinate and indeterminate structure types.

Outline syllabus: Subjects covered are likely to include but not limited to:

Introduction to reactions, determinacy and stability
Internal loading functions.
Qualitative analysis of beams and frames and the use of computers.
Introduction to reactions, determinacy and stability
Elastic analysis of statically indeterminate structures (e.g. moment distribution method).
Plastic analysis to calculate collapse loads of beams and frames.

Part 3: Teaching and learning methods

Teaching and learning methods: The theory and concepts of the module will be taught by lectures, supported by tutorial sessions where the theory will be applied to set problems. Formative feedback will be provided on the students work in tutorial sessions.

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

MO1 Understand the key difference between determinate and indeterminate structures and between plastic and elastic analysis with reference to equilibrium, compatibility and material properties

MO2 Use qualitative methods to analyse determinate and indeterminate structures elastically

MO3 Use quantitative methods to analyse determinate and indeterminate structures elastically

MO4 Use plastic methods to analyse determinate and indeterminate structures

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://uwe.rl.talis.com/modules/ubgmv9-15-2.html

Part 4: Assessment

Assessment strategy: The learning outcomes can be effectively demonstrated through the application of the taught theory to classical engineering problems. The use of an unseen written examination ensures that the work is individual.

On-line Examination (3 hours)

Assessment tasks:

Examination (First Sit)
Description: Online Examination (3 hours include of scanning and uploading)
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO4

Examination (Resit)

Description: Online Examination (3 hours include of scanning and uploading)
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO4

Part 5: Contributes towards

This module contributes towards the following programmes of study:

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

Civil Engineering {Apprenticeship-UWE} [Frenchay] BEng (Hons) 2023-24

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

Civil Engineering [Frenchay] MEng 2023-24

Civil Engineering [Frenchay] - WITHDRAWN BEng (Hons) 2024-25

Civil Engineering [Frenchay] - WITHDRAWN MEng 2024-25

Civil Engineering [Frenchay] MEng 2023-24