



Module Specification

Bridge Engineering

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Part 1: Information

Module title: Bridge Engineering

Module code: UBGMTR-15-M

Level: Level 7

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: Engineering, Design and Mathematics

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: The Bridge Engineering module provides a comprehensive exploration of bridge design, assessment, and maintenance, focusing on various bridge types and their structural elements. Students delve into the structural behavior and design principles of bridges, gaining insights into construction methods and loading specifications. The module emphasizes the importance of inspection and maintenance techniques, preparing students to evaluate existing structures effectively.

Features: Not applicable

Educational aims: The module aims to introduce students to the principles of bridge design, assessment and maintenance. Bridge types and elements, design and construction methods will be covered. Existing bridges will be considered in terms of inspection, testing, and maintenance techniques, particularly for concrete, steel and masonry bridges.

In addition to Learning Outcomes, students will also develop team working and field working skills.

Outline syllabus: Indicative content:

Bridge types and elements.

Structural behaviour of concrete, steel and masonry bridges.

Design of concrete, steel and masonry bridges.

Assessment and loading specifications.

Inspection and maintenance.

Health and safety.

Innovations in bridge engineering.

Part 3: Teaching and learning methods

Teaching and learning methods: The module will be delivered through lectures, tutorials, case studies and field visits. Bridges from around the world will be used as case studies and guest speakers will be invited from industry. Hands-on experience in inspection, testing and monitoring will be gained through field visits. Group work carried out during field visits will form the basis of the individual technical report.

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

MO1 Critically evaluate design concepts and demonstrate the ability to carry out appropriate design procedures for concrete, steel and masonry bridges.

MO2 Critically inspect and evaluate failure modes and types of defects for concrete, steel and masonry bridge and propose appropriate maintenance/strengthening methods.

MO3 Demonstrate awareness of health and safety issues and how they may be addressed the during design, construction and maintenance stages.

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](https://uwe.rl.talis.com/modules/ubgmtr-15-m) via the following link <https://uwe.rl.talis.com/modules/ubgmtr-15-m>

Part 4: Assessment

Assessment strategy: The learning outcomes are addressed through lectures, tutorials and field visits to design, analyse and develop solutions to complex engineering problems. Summative assessment will comprise:

The assessment for this module is a technical report based on:

- Bridge design covered during lectures and tutorials; and
- Field work activities on inspection and damage assessment of existing bridges.

In the technical report students will submit a detailed bridge design for a new bridge and assessment /evaluation of an existing bridge of their choice based on gathered field data.

Requirements for resit coursework will be the same as the original submission but students can either improve their original submission or select a case study of their choice without the need for field work.

Formative feedback will be given during tutorial sessions and field work.

Assessment tasks:**Report (First Sit)**

Description: Technical report (4000 words equivalent)

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3

Report (Resit)

Description: Technical report (4000 words equivalent)

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Civil Engineering [Frenchay] MSc 2025-26

Civil Engineering [Frenchay] MSc 2025-26

Civil Engineering {Foundation} [Frenchay] MEng 2021-22

Civil and Environmental Engineering [Sep][PT][Frenchay][7yrs] - Withdrawn MEng 2020-21

Civil Engineering [Sep][PT][Frenchay][7yrs] MEng 2020-21

Civil Engineering [Sep][SW][Frenchay][5yrs] MEng 2021-22

Civil Engineering [Frenchay] MEng 2022-23