



## **Module Specification**

### **Bridge Engineering**

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#### **Contents**

<b>Module Specification .....</b>	<b>1</b>
<b>Part 1: Information .....</b>	<b>2</b>
<b>Part 2: Description .....</b>	<b>2</b>
<b>Part 3: Teaching and learning methods .....</b>	<b>3</b>
<b>Part 4: Assessment.....</b>	<b>4</b>
<b>Part 5: Contributes towards .....</b>	<b>5</b>

## Part 1: Information

**Module title:** Bridge Engineering

**Module code:** UBGMTR-15-M

**Level:** Level 7

**For implementation from:** 2023-24

**UWE credit rating:** 15

**ECTS credit rating:** 7.5

**Faculty:** Faculty of Environment & Technology

**Department:** FET Dept of Geography & Environmental Mgmt

**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:** Not applicable

**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 evaluate failure modes and types of defects for concrete, steel and masonry bridge

**MO3** Carry out data collection through field work

**MO4** Critically evaluate inspection and test data and propose appropriate maintenance/strengthening methods

**MO5** 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 = 24 hours

Total = 150

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

## **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:

Assessment Task 1: Individual 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 individual 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, MO4, MO5

**Report (Resit)**

Description: Technical report (4000 words equivalent)

Weighting: 100 %

Final assessment: Yes

Group work: No

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

**Part 5: Contributes towards**

This module contributes towards the following programmes of study:

Civil Engineering [Frenchay] MSc 2023-24

Civil Engineering [Frenchay] MSc 2023-24

Civil and Environmental Engineering [Sep][FT][Frenchay][4yrs] - Not Running MEng 2020-21

Civil Engineering [Sep][FT][Frenchay][4yrs] MEng 2020-21

Civil and Environmental Engineering [Sep][SW][Frenchay][5yrs] MEng 2019-20

Civil and Environmental Engineering [Sep][PT][Frenchay][7yrs] MEng 2018-19