

## Structural Analysis and Design II

### Module Information

2022.02, Approved

#### Summary Information

Module Code	5305CIV
Formal Module Title	Structural Analysis and Design II
Owning School	Civil Engineering and Built Environment
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 5
Grading Schema	40

#### Teaching Responsibility

LJMU Schools involved in Delivery
Civil Engineering and Built Environment

#### Learning Methods

Learning Method Type	Hours
Lecture	44
Practical	8
Tutorial	11
Workshop	5

#### Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
SEP-CTY	CTY	September	12 Weeks

#### Aims and Outcomes

Aims	To introduce the analysis of statically indeterminate structures and the analysis of the plastic behaviour of steel structures. To design and detail structural elements in reinforced concrete and structural steelwork using Eurocode 2 and 3. Introduce students to the use of software for the analysis and design of structures.
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**After completing the module the student should be able to:**

### Learning Outcomes

Code	Number	Description
MLO1	1	Analyse indeterminate structures using force methods.
MLO2	2	Apply displacement methods to solve indeterminate structures.
MLO3	3	Design and detail reinforced concrete continuous flanged beams, slabs and columns.
MLO4	4	Design and detail of complex steel elements.
MLO5	5	Collect, process and report on data from laboratory experiments.

### Module Content

Outline Syllabus	Statically indeterminate beams, deflection, composite (flitch) beams. Analysis of Frames, including sway. Structural analysis of indeterminate structures using force and displacement methods (Moment distribution, plastic analysis, virtual work, slope deflection). Reinforced concrete design and detailing to Current Code of Practice of rectangular and flanged beams, slabs, and stocky columns. Structural steelwork design and detailing to Current Code of Practice of laterally unrestrained beams, columns and plate girders.
Module Overview	
Additional Information	The analysis and design of structures. Students will develop their analytical skills to include the analysis of redundant structures, and will learn to apply the Eurocodes in the design of concrete and steel structures with due consideration for sustainability. They will also be introduced to industry standard analysis and design software.

### Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Centralised Exam	Examination	60	2	MLO2, MLO3, MLO4, MLO1
Portfolio	Practical Based Report	40	0	MLO3, MLO4, MLO5

### Module Contacts

#### Module Leader

Contact Name	Applies to all offerings	Offerings
Georgios Kamaris	Yes	N/A

#### Partner Module Team

Contact Name	Applies to all offerings	Offerings
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