

Summary Information

Module Code	5205CIV
Formal Module Title	Structural Analysis and Design
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	12
Tutorial	22
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 beams, rectangular portal frames and columns
MLO2	2	Evaluate deflection in beams and frames.
MLO3	3	Design and detail flexural and compression elements in reinforced concrete and structural steel.
MLO4	4	Design and detail continuous flanged beams in reinforced concrete.
MLO5	5	Design connections between steel elements.
MLO6	6	Collect, process and report on data from laboratory experiments

Module Content

Outline Syllabus	Analysis of beams. Statically indeterminate beams, deflection, composite (flitch) beams. Analysis of Frames, including sway Moment distribution, plastic analysis, virtual work, slope deflection. Analysis of columns. Reinforced concrete design and detailing to EC2 of rectangular and flanged beams, slabs, pad foundations and stocky columns. Structural steelwork design and detailing to EC3 of laterally restrained and unrestrained beams, columns and connections.
Module Overview	This module introduces to you the analysis of statically indeterminate structures and the analysis of the plastic behaviour of steel structures. You will develop your analytical skills to include the analysis of redundant structures, and will learn to apply the Eurocodes in the design of simple concrete and steel structures. You will also be introduced to industry standard analysis and design software.
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 simple concrete and steel structures. They will also be introduced to industry standard analysis and design software. Where this module is part of a Degree Apprenticeship programme, the knowledge learning outcomes are K2 and K4.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Centralised Exam	Examination	70	2	MLO1, MLO2, MLO3, MLO4, MLO5
Report	ANALYSIS & DESIGN REPORT	30	0	MLO1, MLO2, MLO3, MLO4, MLO6

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
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Partner Module Team

Contact Name	Applies to all offerings	Offerings
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