

Module Information

2022.01, Approved

Summary Information

Module Code	7500UCEPG
Formal Module Title	Advanced Structural Design and Bridge Engineering
Owning School	Civil Engineering and Built Environment
Career	Postgraduate Taught
Credits	20
Academic level	FHEQ Level 7
Grading Schema	50

Teaching Responsibility

LJMU Schools involved in Delivery
LJMU Partner Taught

Partner Teaching Institution

Institution Name
Unicaf

Learning Methods

Learning Method Type	Hours
Online	66

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
JAN-PAR	PAR	January	12 Weeks

Aims and Outcomes

Aims	Appreciate the underlying differences in the behaviour and analysis of bridges and large structures and develop critical understanding of the philosophies of current Codes of Practice and in using appropriate methods for the design of steel, composite, prestressed concrete, tensile cables and bridge elements/deck structures.
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After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Critically evaluate the use of common structural materials in large structures.
MLO2	2	Evaluate a range of structural theories and methods of analysis and their relevance to large structures according to current codes of practice.
MLO3	3	Perform advanced structural analysis and design of steel, composite, prestressed concrete, tensile cables, bridge deck structures/elements, and apply knowledge to the design in varying environments

Module Content

Outline Syllabus	<p>Large span steel trusses & Lattice girder: design methods/principles, types, selection of elements; connections, analysis and design.</p> <p>Lightweight tension steel cable structures: analysis and design principles for cables and cable systems</p> <p>Large span continuous composite steel beam: Plastic analysis of composite section.</p> <p>Foundations & holding-down systems: Plate and base plate steel strength; resistance in bearing; resistance in tension of an anchor bolt row; holding-down systems; grouting; bedding; examples-foundations and holding-down systems.</p> <p>Fire protection and fire engineering: prevention of steelwork from fire, fire engineering design codes, structural performance in fire, advanced fire engineering and worked examples.</p> <p>Bridge engineering: Types, uses, materials, foundations, analysis and design of; large span reinforced concrete slab deck, large span prestress beams supporting a bridge deck, composite steel deck. Worked examples.</p>
Module Overview	
Additional Information	This module expands student knowledge from the design of relatively small structures to the design of Large structures such, large span roof trusses, cable bridge structures, composite, reinforced and prestressed concrete bridge decks.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Essay	Summative Assessment 1	70	0	MLO1, MLO2, MLO3
Report	Summative Assessment 2	30	0	MLO1, MLO2, MLO3

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Hassan Al Nageim	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings
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