

## Liverpool John Moores University

Title: STRUCTURAL DESIGN AND RISK MANAGEMENT  
Status: Definitive  
Code: **6503CVQR** (127370)  
Version Start Date: 01-08-2021

Owning School/Faculty: Civil Engineering and Built Environment  
Teaching School/Faculty: Oryx Universal College WLL

Team	Leader
Michaela Gkantou	Y

**Academic Level:** FHEQ6  
**Credit Value:** 20  
**Total Delivered Hours:** 79  
**Total Learning Hours:** 200  
**Private Study:** 121

### Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	44
Seminar	11
Tutorial	11
Workshop	11

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	GROUP STRUCTURAL DESIGN AND RISK EVALUATION	30	
Exam	AS2	EXAMINATION	70	2

### Aims

*This module is designed to give students an up-to-date knowledge of the structural design of structural members made from a variety of materials. Alongside the structural design they will develop their understanding of Risk Assessment and the*

*associated Risk Management within a construction project environment. Students will develop and consolidate the structural application, design, evaluation and analysis introduced at Level 4 and 5 with more advanced application to, in particular, concrete, steel, masonry building elements/structures, using the current codes of practice including the Eurocodes.*

## **Learning Outcomes**

After completing the module the student should be able to:

- 1 Critically analyse the design process and apply it to complex structural elements using a variety of building materials and under different environmental and loading conditions.
- 2 Produce and critically review safe and economical design in accordance with the current codes of practice.
- 3 Design more advanced structural elements (such as ribbed slab, composite construction, slender column).
- 4 Apply knowledge and understanding of risk issues to engineering design, and critically evaluate current practices of risk management
- 5 Exercise initiative, personal responsibility and leadership skills as a member of a design team, and critically evaluate the success of team working.

## **Learning Outcomes of Assessments**

The assessment item list is assessed via the learning outcomes listed:

GROUP STRUCTURAL DESIGN & RISK EXAMINATION	1	2	3	4	5
	1	2	3	4	

## **Outline Syllabus**

- Reinforced concrete work to EC2: Frame analysis-design and detailing, design of ribbed floor slabs. Pre-stressed concrete; Pre-tensioned and post-tensioned flexural members, losses of pre-stress force.*
- Use of Structural Design software*
- Health and safety management*
- Programming, resource implications, time cost applications and project acceleration*
- Financial risks*
- Risk management strategy: hazard and risk, definitions and interpretation, strategic risks, political and business implications of risks, understanding the management strategy;*
- Current practices of risk management: what it is; why it is used; how it is applied; when it should be undertaken; and who should be responsible for it, including the deployment of appropriate practices and procedures for the effective management of risk in construction*
- Risk perception and identification, risk analysis and assessment, qualitative assessment, quantitative assessment, risk response and mitigation, risk controls,*

*monitoring and audit, risk outcomes.*

## **Learning Activities**

Lectures, workshops and Tutorial sessions.

## **Notes**

This module is intended to extend, develop and consolidate the structural design introduced at Levels 4 and 5, with particular reference to the use of the current EC Codes of Practice and other Standards in practical and more advanced design levels using different loading and environmental conditions. Students will consider the risks associated with the design.