MODULE DESCRIPTION FORM

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

CL435/976 Prestressed Concrete, Steel-concrete Composite and Structural Stability

Module Registrar: Dr. Enrico Tubaldi	**Taught To (Course): BEng/MEng Civil/Civil and Environmental Engineering**		
Other Lecturers Involved:	**Credit Weighting:**	**Semester: 2**	
Assumed Prerequisites: CL134, CL207, CL313	**Compulsory for BEng/MEng Civil Engineering, Optional for BEng/MEng Civil and Environmental Engineering**	**Academic Level: 4**	**Suitable for Exchange: Y**

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	**Total**
12	10	0	0	0	0	0	10	68	0

Educational Aim

This module aims to introduce the students to the analysis and design of prestressed concrete and steel-concrete composite members commonly adopted in the construction industry.

Learning Outcomes

On completion of the module the student is expected to be able to

LO1 Understand the structural behaviour of steel prestressed concrete and concrete-steel composite members.
LO2 Perform structural design of prestressed concrete and concrete-steel composite members.
LO3 Prepare structural design details

Syllabus

The module will include the following:

Prestressed Concrete:
Principles of prestressed concrete structures
Losses of prestressing force
Serviceability Limit State (SLS) analysis of sections
SLS design of concrete section
SLS design of prestress force
Ultimate Limit State (ULS) analysis of sections
Structural design detail
Shear design

Composite Construction
Principle of composite construction
Analysis of composite members

Most of the classes are delivered by solving a tutorial that reflects a real-world example.

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

LO1 Understand the structural behaviour of steel prestressed concrete and steel-concrete composite members.
- C1 use the concepts of engineering mechanics, stress, strain and strength to determine the response of members under practical loading.
- C2 assess the serviceability of designed elements under limit state.

LO2 Perform structural design of prestressed concrete and concrete-steel composite members.
- C1 use the principles of prestressed concrete and steel-concrete composites to check the design adequacy of members under practical loading.
- C2 apply current code of practice procedures to the design and verification of prestressed concrete and composite elements.

LO3 Prepare structural design details
- C1 apply current code of practice procedures to the design of structural details of prestressed concrete and composite elements.

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback
(within Assessment and Feedback Policy at: https://www.strath.ac.uk/staff/policies/academic/)

These are incorporated in this module as follows:

1. Marking criteria are outlined clearly in the assignment handout and multiple opportunities for questions are available, either in class or through electronic correspondence. Each marking sheet is taken directly from this handout.

2. Tutorial questions are provided to support student self-assessment and reflection.

3. Departmental policy is to carry out mid-term class assessments and provide feedback to students.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

	Examinations				**Courseworks**		**Projects**	
	Number	Month(s)	Duration	***Weighting***	Number	***Weighting***	Number	***Weighting***
	1	May	2hrs	70%	1	30%		
L/Outcomes	1, 2, 3				1, 2, 3			

Indicate which learning outcomes (L01, L02 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines (*academic weeks*):
Semester 2, week 7

Resit Assessment Procedures:
2 hr examination in August diet

PLEASE NOTE:
Students must gain a summative mark of 40% / 50% *(delete as appropriate)* to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam / coursework / viva *(delete as appropriate)*. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

*****Purchase recommended **Highly recommended reading *For reference**

***Hurst, M.K., Prestressed concrete design, Taylor & Francis, 1998,

*Gilbert, R.I., Mickleborough, N.C., Design of prestressed concrete, Unwin Hyman, 1990.

*Johnson, R. P., Buckby, R. J., Composite structures of steel and concrete, Collins, 1996.

Additional Student Feedback
(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session:

Approved:

Course Director Signature:
Date of Last Modifications: August 2022

(Updated May 2018)

MODULE TIMETABLE

Module Code:	**CL435**	**Module Title:**	**Prestressed Concrete, Steel-concrete Composite and Structural Stability**

Brief Description of Assessment:

Coursework – 30%, End of term exam – 70%

Assessment Timing:-

Indicate on the table below the start/submission dates for each assignment/project and the timing of each exam/assessment using the dropdowns provided. Dropdowns can be left blank. Add extra notes below the dropdowns.

Please note: Timings can and will change, this should only be used as a guide.

Semester Two	C&D Wk	WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9	WK10	WK11	Exam Period
					Course work Set			Course work Submit					Exam