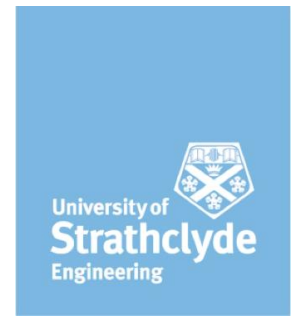


MODULE DESCRIPTOR 2019/20



CL519 CIVIL ENGINEERING DESIGN PROJECT A

Registrar: Dr Richard Lord	Taught To (Programme): MSc in Civil Engineering	
Other Lecturers Involved:	Credit Weighting: 20	Semester: 2
Assumed Pre-requisites: BEng 2/1 Hons in Civil Engineering or equivalent	Compulsory class	Academic Level: 5

Class Format and Delivery (hours):

Lecture	Tutorial	Laboratory	Coursework	Project	Private Study	Total
2	2	0	56	140	0	200

Class Aim(s)

The Group Design ("Energy") Project

This course aims to develop ability at multi-disciplinary design, working in small groups, utilising knowledge of fundamental principles of engineering science and material science to create innovative solutions. The project takes in the full breadth of the civil engineering profession from concept to detailed design, from political drivers to financial viability, from environmental issues to technical risk. Students will develop comprehensive and innovative designs that involve structural engineering, geotechnical engineering and water engineering, management, environmental and financial planning.

Learning Outcomes

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

- LO1 Apply their knowledge and understanding of mathematics, science and computer based methods to analyse and solve a substantial range of engineering problems.
- LO2 Evaluate and synthesize design concepts from a range of areas including some outside engineering and apply them creatively and effectively in engineering projects.
- LO3 Research new theories, concepts, models, methods and information in unfamiliar situations, working independently and as a team to plan, delegate and collaborate, to deliver a design project to schedule.
- LO4 Apply engineering techniques taking account of a range of commercial and industrial constraints and communicate the resulting design to the client in an appropriate level of technical detail.

Syllabus

The course will teach the following:

Background

- The strategic, political and financial context of the development of new energy resources
- The available energy resources and technology to harvest the energy
- The current state of the industry, the opportunities and constraints

The Scheme

- Outline engineering solution including project planning
- Energy yield, costs and financial viability

- Consideration of key geotechnical, structural and construction aspects of the design solution
- Technical risks and mitigation measures
- Environmental impacts and mitigation measures
- Outline (concept) design of an energy facility

The project report will be assessed on understanding and competence in these areas as well as the team's ability to bring all of these aspects together into a coherent and well written report.

Assessment Criteria

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

LO1 Apply their knowledge and understanding of mathematics, science and computer based methods to analyse and solve a substantial range of engineering problems.

- C1 Apply mathematical models to devise appropriate structural or geotechnical designs
- C2 Apply scientific principles to evaluate environmental impacts of a project
- C3 Apply computer based models to solve design challenges

LO2 Evaluate and synthesize design concepts from a range of areas including some outside engineering and apply them creatively and effectively in engineering projects.

- C1 Evaluate the political, economic and environmental factors affecting energy production in Scotland
- C2 Evaluate the applicability and potential of a range of renewable energy generation technologies
- C3 Identify opportunities for renewable energy development for particular technologies and a shortlist of potential sites

LO3 Research new theories, concepts models, methods and information in unfamiliar situations, working independently and as a team to plan, delegate and collaborate, to deliver a design project to schedule.

- C1 Identify knowledge gaps and seek appropriate sources of information
- C2 Identify component tasks and delegate workloads between group members
- C3 Coordinate the combination of tasks and informally review the combined results to meet deadlines

LO4 Apply engineering techniques taking account of a range of commercial and industrial constraints and communicate the resulting design to the client in an appropriate level of technical detail.

- C1 Estimate costs, timescales and revenue from a proposed design and evaluate the probability of variation due to key risk factors
- C2 Evaluate likely project risks and appropriate mitigation measures

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

Principles of Assessment and Feedback (<https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

- The project activities are spread throughout the semester, with the maximum possible time allowed with the constraints of exam weeks, national holidays, University closures and marks deadlines
- Feedback to each group is given at each project meeting so that they have the opportunity to improve their work on an ongoing basis.
- The design proposals allow feedback to be given at this key points in the projects so that students can incorporate the advice given into their conceptual design report.
- The group projects encourage peer dialogue covering many issues and also, structured discussion with the teacher.
- Assessment covers a range of skills and abilities (oral presentations, writing, sketching, structural calculations and AutoCad drawings) so that students who have strengths in some skills, but not others, can still do well in this class.
- Coursework is broken down into the specific topics to be covered and the proportion of the overall marks allocated to each topic is specified.

- Examples of the presentation standard required for calculations and engineering drawings plus model answers to assignments in earlier years are provided on MyPlace.

Recommended Reading

The project brief includes an extensive lists of references and key information and is available on MyPlace in the folder for CL519.

PLEASE NOTE:

Students need to gain a summative mark of 50% 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 coursework.

Resit Arrangements

Group to resubmit design report for pass mark.

Approved

Programme Director Signature:

Date of Last Modifications: 16 Aug 2019

Assessment and Feedback Schedule

Class Code	CL519	Class Title	CIVIL ENGINEERING DESIGN PROJECT A
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Brief Description of Assessment

- (1) Project proposal – formative assessment only for feedback, marked pass/fail, possible 0/20 % reduction of mark obtained for report
 (2) Design report – summative assessment for module with additional feedback, report mark provides module mark, less any penalty from a failed proposal

Indicate in the tables below the Hand-Out (H), Submission (S) and Feedback (F) dates for each lab report/coursework/project and the timing of each Exam/Class Test (E), (T). Include duration of exam in brackets (e.g. E (2)).

Semester 2

Assessment type (& title)	LOs	Weight (%)	Individual / Group	WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9	WK10	WK11	Exam Period	Spring Break onwards
(1) Project proposal	1, 2, 3, 4	20	Group	H				S	F cohort 1	F cohort 2						
(2) Design report	1, 2, 3, 4	80	Group	H												S last Mon before exams, F on MyPlace following marks submission