Engineering Tripos Part IIA Project, GD2: Structural Modelling, 2018-19

Leader

Prof A McRobie [1]

Timing and Structure

Group

Prerequisites

3D4 essential

Aims

The aims of the course are to:

- To study precedents of successful structural-dominated projects through presentations and research
- To gain an understanding of the design process in the built environment
- To undertake a design project which embeds creativity, structural approximation and construction process

Content

This project runs in conjunction with Constructionarium. At its heart lies the premise that design in the built environment is an extraordinarily creative endeavour, which relies on a vast range of influences. You will undertake a design project in small groups, which will instil in you the importance of the holistic design process, which includes how to have ideas, how to test these ideas using simple tools, how to use approximation and qualitative analysis as part of your structural development of the concept, sketching, model making and communication to your peers. To help you along, you will receive extended presentations from leading structural designers. You will also benefit from workshops exploring the design process and how you have your best ideas, on an individual basis. These will be run by a leading trainer for our industry in design thinking. By the end of this project you will have a profound feel for the creative and technical design process, and you will know what it feels like to experience those first hours and days of excitement at the start of the design for a major project where initial conceptual design decisions will stick throughout the subsequent months, or even years, of construction. The project timing is subject to change, but will be such that students will be able to attend Constructionarium in Norfolk during this design project.

FORMAT

Students work in small groups to undertake the conceptual and preliminary design of a wonderful building, across an holistic set of design criteria.

ACTIVITIES

- Thursday 10 May to Friday 18 May: Design an extraordinary building through the conceptual phase, supplemented by presentations and workshops.
- Attend Constructionarium.
- Monday 28 May to Friday 8 June: Carry out the preliminary design of the building and present this design.

MINI LECTURES

- Introduction to building design
- Tensile structure design
- Timber and bamboo
- Compressive shell structure design
- Fabric formed concrete
- The holistic design process

Coursework

Coursework
Group design report of 10 pages, to include precedent studies, development of ideas, testing of ideas and the chosen solutio
Group presentation ('crit'), to include drawings for the design, models and the construction process
Individual report of 16 pages covering an aspect of the design which you undertook in a specialist manner, to include rational sketches of details, risk assessment and a reflective piece on what you have learned

Examination Guidelines

Please refer to Form & conduct of the examinations [2].

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Links
[1] mailto:fam20@cam.ac.uk
[2] https://teaching.eng.cam.ac.uk/content/form-conduct-examinations