

Design, Build and Test

Module Code:	ENG4006-B
Academic Year:	2018-19
Credit Rating:	20
School:	(OUT OF USE FROM 2018/9) School of Engineering
Subject Area:	Engineering
FHEQ Level:	FHEQ Level 4

Pre-requisites:

Co-requisites:

Contact Hours

Type	Hours
Practical classes and	10
Supervised time in	62
Directed Study	128

Availability Periods

Occurrence	Location/Period
BDA	University of Bradford / Academic Year (Sept - May)

Module Aims

Outline Syllabus

The interactive workshops will focus on critical aspects designed to help students understand fundamental concepts in engineering and solve real-world problems in discipline specific topics as well as interdisciplinary aspects of engineering. They include basic concepts of design and manufacturing, relevant mathematical modelling, materials, and other technologies as appropriate for the projects.

Prototypes will be constrained by a limited budget and students will be able to use given materials and tools (hardware and software) to realise the projects.

In addition, the module establishes professional skills with supplementary lectures on; Presentation skills (Semester 1), and Technical Report Writing including searching for and referencing information (Semester 2).

Module Learning Outcomes

On successful completion of this module, students will be able to...

- 1 Explain the design process as applied to simple engineering systems, critique a solution and recognise opportunities for design improvements
- 2 Analyse the role of professional conduct and engineering ethics in the design and development of an engineering product
- 3 Apply knowledge of basic design methods to the analysis and solution of simple engineering problems.
- 4 Effectively utilise appropriate laboratory equipment, computer software and instrumentation in order to accomplish the objectives of a project
- 5 Participate effectively in the operation of a team and collaborate effectively with members of the team.
- 6 Deliver a paper or presentation that succeeds in communicating effectively with members of the team.
- 7 Analyse data using appropriate tools and techniques

Learning, Teaching and Assessment Strategy

The Learning strategy is to develop skills and knowledge through active learning activities. In line with CDIO principles. The learning strategy harnesses active learning and experiential learning is key drivers. The module will be taught through a series of design and build challenges supported by targeted interactive workshops. Each student will complete 3 group projects over two semesters. The first two projects will be discipline-specific and the third project will be a common interdisciplinary project shared with all Engineering disciplines. The project briefs may vary from year to year.

Groups will be selected to include mixed gender, ethnicity and technical ability and will vary from one project to another. Furthermore, groups in the interdisciplinary Project 3 will include students from all four disciplines.

Student assessment will be directly linked to each of the projects. Each group project will be assessed based on the effectiveness of the project to meet the project brief, design quality and build, with a detailed justification of design, materials, and manufacturing methodologies taking into account ethical and sustainability implications of the project. Students will need to demonstrate lessons learned in all aspects of the work during the presentation stage. A peer evaluation, formative and summative, of participation and commitment to the projects will form part of the assessment.

The 3 competitive projects, which will address LOs 1 to 7, will be assessed as follows:

- Project 1: Group demonstration/Presentation of the deliverable (e.g. product, solution), including formative peer assessment of members in the same group as well as peer assessment between groups.
- Project 2: Coursework (group work + individual work in the form of specific tasks proposed by the students and agreed by academic staff). Plus, group demonstration/presentation of the deliverable, including formative peer assessment of members in the same group as well as peer assessment between groups.
- Project 3: Group demonstration/Presentation of the deliverable (e.g. product, solution), this time including summative peer assessment of members in the same group as well as peer assessment between the multidisciplinary groups

Mode of Assessment

Type	Method	Description	Length	Weighting	Final Assess'
Summative	Examination - practical/lab ratory	Group Project 3 Demonstration with peer assessment of contribution	20 minutes	40%	Yes
Summative	Examination - practical/lab ratory	Group Project 2 Demonstration / Presentation	20 minutes	20%	No
Summative	Examination - practical/lab ratory	Group Project 1 Demonstration	20 minutes	20%	No
Formative	Coursework	Project 2 Peer Assessment		%	No
Referral	Coursework	Evaluative Report on projects (including personal reflection)	3500- words	100%	Yes
Formative	Coursework	Project 1 Peer Assessment		%	No
Summative	Coursework	Individual written reflection on specific assigned task from Project 2	1000- words	20%	No

Legacy Code (if applicable)

Reading List

To view Reading List, please go to [rebus:list](#).