

Module Title:	Product Design Project	Level:	5	Credit Value:	40
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Module code:	ENG52L	Is this a new module?	YES	Code of module being replaced:	
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Cost Centre:	GAME	JACS3 code:	H700
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Trimester(s) in which to be offered:	1, 2 & 3	With effect from:	September 17
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School:	Applied Science, Computing & Engineering	Module Leader:	Dr Fatima Mansour
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Scheduled learning and teaching hours	120 hrs
Guided independent study	280 hrs
Placement	0 hrs
Module duration (total hours)	400 hrs

Programme(s) in which to be offered	Core	Option
BEng (Hons) Applied Product Design	✓	

Pre-requisites
None

Office use only

Initial approval February 17

APSC approval of modification

Have any derogations received Academic Board approval?

Version 1

Yes ✓ No

Module Aims

To support the development of the student in the following areas:

- The conceptual design of products.
- Design evaluation and modelling.
- Project planning, management, team working and presentation skills.
- Applying advanced design principles to create a new and innovative products and solve engineering design problems.
- Experience in the use of up to date visualisation approaches and commercial computer software for design applications.
- The selection of appropriate materials and processes for economic designs.
- To provide students with the opportunity to practice the task management and problem-solving activities of a professional engineer and to explore original ideas.
- To exercise the student in applying and extending the methods, skills, information, knowledge and understanding obtained during the various parts of the programme to developing and evaluating an original design of an engineering product.

Intended Learning Outcomes

Key skills for employability

- KS1 Written, oral and media communication skills
- KS2 Leadership, team working and networking skills
- KS3 Opportunity, creativity and problem solving skills
- KS4 Information technology skills and digital literacy
- KS5 Information management skills
- KS6 Research skills
- KS7 Intercultural and sustainability skills
- KS8 Career management skills
- KS9 Learning to learn (managing personal and professional development, self-management)
- KS10 Numeracy

At the end of this module, students will be able to		Key Skills	
1	Apply structured techniques to the specification and creative phases of the design process.	KS1	KS3
2	Use analytical techniques to confirm the adequacy of conceptual solutions Including the use visualisation approaches and commercial software to model and optimise design solutions.	KS4	KS5
		KS9	
3	Select appropriate materials and processes for economic and sustainable designs.	KS5	KS6
		KS7	

4	Develop creative thinking to generate ideas, evaluate them and turn them into a new product.	KS2	KS3
5	Implement the appropriate stages of a product design (including: specification, task analysis, search of current information sources, consider options and plan and cost solutions, select and design a solution, construct/implement solution, test and evaluate the solution)	KS5	KS8
		KS6	
6	Communicate the results in the form of a formal written report and an oral presentation, with due consideration given to commercial implications.	KS3	KS10

Derogations

A derogation from regulations has been approved for this programme which means that whilst the pass mark is 40% overall, each element of assessment (where there is more than one assessment) requires a minimum mark of 30%.

Assessment:

The assessment will be contained in an overall project based portfolio. Typically the student will be tasked to provide a portfolio containing the following sections as a minimum:

Project brief & log book: An evidence portfolio built up by the student, including Concept development, Drawings, CAD, models, Detail designs, materials and component selections, planning and development notes, a diary recording progress and reflective comments, reflective analysis and conclusion.

The student will be expected to present and demonstrate their finished product for viewing by a panel of staff and invited industry representatives and designers.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)	Duration (if exam)	Word count (or equivalent if appropriate)
1	1 ,2,3,4,5	Portfolio	70%		3000
2	4&6	Presentation	30%		1000

Learning and Teaching Strategies:

Lectures - presentation of theory, facts and concepts, relating to product design, in order to convey critical information. Interaction or active learning should be implemented to develop an understanding of principles and concepts and stimulate discussion.

Tutorials – Close interaction with students ensuring that the work presented during lectures has been understood, with specific help being given in order to overcome any learning problems, should they occur.

Industrial visits - in order to demonstrate product design principles being applied.

'Break out sessions' Academic colleagues will be used to cover specific elements for sub-groups within the cohort.

Specialist knowledge and expertise from industrial partners can and will be disseminated to other students where relevant, e.g. design & production techniques.

Syllabus outline:

- Design process management, structured techniques such as failure modes and effects analysis, brainstorming, synectics, functional analysis.
- Design evaluation and modelling methods.
- Visualisation and advanced prototyping techniques.
- Project planning, team working and networking.
- Use of software in static and dynamic analysis.
- Materials and Process selection methods.
- Application of knowledge to solve an engineering design problem.

Bibliography:

Essential reading

Milton, A & Rogers, P (2013) *Research Methods For Product Design* Laurence King Publishing Ltd.

Lesko, J (2008). *Industrial Design: materials and manufacturing guide*. John Wiley & Sons, Inc.

Other indicative reading

Hannah, B (2004) *Becoming a Product Designer*, John Wiley & Sons, Inc.

Monteiro, M.(2012) *Design is a Job* Jeffrey Zeldman

Pipes, A (2007). *Drawing for Designers* Laurence King Publishing Ltd.

Norman, D.A. (2013) *The Design of Everyday Things* Basic books.