

<b>Module Title:</b>	<b>Product Design</b>	<b>Level:</b>	6	<b>Credit Value:</b>	20
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<b>Module code:</b>	ENG666	<b>Is this a new module?</b>	YES	<b>Code of module being replaced:</b>	
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<b>Cost Centre:</b>	GAME	<b>JACS3 code:</b>	H700
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<b>Trimester(s) in which to be offered:</b>	1, 2 & 3	<b>With effect from:</b>	September 16
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<b>School:</b>	Applied Science, Computing & Engineering	<b>Module Leader:</b>	Martyn Jones
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Scheduled learning and teaching hours	60 hrs
Guided independent study	140 hrs
Placement	0 hrs
<b>Module duration (total hours)</b>	<b>200 hrs</b>

<b>Programme(s) in which to be offered</b>	Core	Option
BEng (Hons) Industrial Engineering	<input type="checkbox"/>	<input checked="" type="checkbox"/>

<b>Pre-requisites</b>
None

<b>Derogations</b>
None

Office use only

Initial approval June 16

APSC approval of modification *Enter date of approval*

Have any derogations received SQC approval?

Version 1

Yes  No

**Module Aims**

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

- The conceptual design of products.
- Project planning, management, team working and presentation skills.
- Applying advanced design principles to solve engineering design problems.
- Experience in the use of up to date commercial computer software for design applications.
- The selection of appropriate materials and processes for economic designs.

**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

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	
		KS10	
2	Use analytical techniques to confirm the adequacy of conceptual solutions. Including the use of commercial software to model and optimise design solutions.	KS4	
		KS5	
		KS10	
3	Select appropriate materials and processes for economic and sustainable designs.	KS5	
		KS6	
		KS7	
4	Develop creational, analytical and team working skills.	KS2	
		KS3	
		KS5	
		KS8	

**Assessment:**

The assessments 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  
Design Specification  
Concept development  
Detail designs, materials and component selections  
Drawings, CAD, models and calculations  
Reflective analysis and conclusions

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	Portfolio	100		4000

**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' and guest lecturers 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, thought showers, synectics, functional analysis.
- Advanced machine element designs.
- 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.

<b>Bibliography:</b>
<b>Essential reading</b>
Norman, D.A. (2002) <i>The Design of Everyday Things</i>
<b>Other indicative reading</b>
Monteiro, M. (2012) <i>Design is a Job</i>