ES2D1-15 Manufacturing Engineering Design

26/27

Department
School of Engineering
Level
Undergraduate Level 2
Module leader
Matthew Pitts
Credit value
15
Module duration
12 weeks
Assessment
100% coursework
Study location
University of Warwick main campus, Coventry

Description

Introductory description

ES2D1-15 Manufacturing Engineering Design

Module web page

Module aims

This module will develop strategies to identify product requirements, identify design constraints, think creatively, solve problems, identify solutions and foster a holistic approach between design and manufacturing.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

- Manufacturing design strategy
- Manufacturing design criteria

- Creative design practices
- Risk reduction
- Cost reduction through manufacture
- Design review
- Management role

Learning outcomes

By the end of the module, students should be able to:

- Use computational tools to aid in decision making processes of design and identify which process parameters influence variation in final product characteristics. (C3, M3)
- Identify which design features really matter and how to modify a design to give it greater robustness against variation in the manufacturing process. (C12, C13, M12, M13)
- Apply risk reduction techniques at the design stages to reduce manufacturing and assembly problems. (C15, M15)
- Appreciate and apply the principles of value analysis for design for manufacture (DFM) and design for assembly (DFA) to identify opportunities for cost reduction. (C15, M15)
- Apply software simulation and programming tools in the analysis of functional components. (C13, M13)
- Function as part of a team and demonstrate understanding of the importance of personal and shared responsibility, teamwork, and communication e.g. by producing professional quality design documentation. (C16, C17, M16, M17)

Indicative reading list

Reading lists can be found in Talis

Specific reading list for the module

Subject specific skills

Plan and manage the design process, including cost drivers, evaluating outcomes, and working with technical uncertainty.
Ability to apply relevant practical and laboratory skills.

Transferable skills

Communicate (written and oral; to technical and non-technical audiences) and work with others.
Overcome difficulties by employing skills, knowledge and understanding in a flexible manner
Exercise initiative and personal responsibility, including time management, which may be as a team member or leader

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Study

Study time

Type	Required
Lectures	5 sessions of 1 hour (3%)
Seminars	10 sessions of 2 hours (13%)
Practical classes	5 sessions of 1 hour (3%)
Supervised practical classes	4 sessions of 4 hours (11%)
Private study	104 hours (69%)
Total	150 hours

Private study description

104 hrs Guided independent learning

Costs

Category	Description	Funded by	Cost to student
Equipment and project costs	Materials for manufacturing models for group projects.	Department	£0.00

Assessment

You must pass all assessment components to pass the module.

Assessment group A4

	Weighting	Study time	Eligible for self-certification
Assessment component			
Group Design Report	50%		No
1,000 words plus portfolio - total max 30 pages, to include peer assessment			
Reassessment component			
Individual Assignment			No
1,000 words plus portfolio - total max 10 pages			

	Weighting	Study time	Eligible for self-certification
Assessment component			
Individual Design Proposal 1,000 words plus portfolio - total max 10 pages	50%		Yes (extension)
Reassessment component is the same			

Feedback on assessment

Written feedback on group design reports.
In session feedback of developing design.
Group feedback on performance tests.

Availability

Courses

This module is Core for:

- Year 2 of UESA-H335 BEng Automotive Engineering
- Year 2 of UESA-HH75 BEng Manufacturing and Mechanical Engineering
- Year 2 of UESA-H336 MEng Automotive Engineering
- Year 2 of UESA-HH76 MEng Manufacturing and Mechanical Engineering

This module is Option list A for:

- Year 2 of UESA-HN15 BEng Engineering Business Management
- Year 2 of UESA-H112 BSc Engineering
- Year 2 of UESA-HN11 BSc Engineering and Business Studies