

WM9N5-15 Product Design

24/25

Department

WMG

Level

Taught Postgraduate Level

Module leader

Ali Ahmad

Credit value

15

Module duration

4 weeks

Assessment

100% coursework

Study location

University of Warwick main campus, Coventry

Description

Introductory description

The design, development and introduction of new products is essential for the competitiveness of start-ups and corporations. Product design has tremendous bearing in entrepreneurship success, it can imbibe any new business with intellectual property and other key differentiators that create "value". Effective product design knowledge can help entrepreneurs create products that meet the needs of their target customers and differentiate themselves from competitors.

Intensification of competition, rapidly changing technologies and shorter product life cycles, require an integrated approach to the management of product development. Expert designers can create products with the "right" capabilities, at attractive prices while compressing time-to-market cycles.

This module is designed to equip students with the skills and knowledge needed to create innovative and highly functional products. It blends both theoretical and practical instruction, where students will be taken through the various stages of the product design process, including research, ideation, prototyping, and testing. They will also be introduced to design thinking and user-centered design methodologies, ultimately equipping them to create products that are user-friendly and meet the needs of customers.

In addition, students will gain introductory knowledge in material science, manufacturing processes, and engineering principles. This will allow them to make better design choices, where the outcomes would not only be aesthetically pleasing but also functional and efficient.

As a part of the course, students will be required to work on individual and group design tasks. These will allow the application of knowledge and skills to real-world challenges, and gain hands-on experience while designing products following client briefs.

Module aims

This module will provide non-engineering students, and those with little prior background knowledge or experience in the topic, with the knowledge, skills, and expertise necessary to design innovative and functional products that meet the needs of consumers and businesses. Specifically, its aims include:

1. Develop advanced knowledge of the product design process: to provide students with an understanding of the product design process, including advanced research methods, ideation techniques, prototyping and testing strategies, and design management principles.
2. Foster expertise in design thinking and user-centered design: design thinking and user-centered design methodologies will enable students to design products that are not only functional but also emotionally resonant and contextually relevant.
3. Build a range of technical skills: students will build technical skills in material science, manufacturing processes, engineering principles, and other aspects of product design, enabling them to design products that are not only aesthetically pleasing but also functional, efficient, and manufacturable.
4. Foster a sustainability and ethics mindset: enabling students to design products that are environmentally responsible, socially responsible, and ethically sound.

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.

- Product development process
- Effective Design Management
- Lean New Product Introduction
- The relationship of tangible product and brand
- Management of creativity
- Concurrent Engineering
- Organisation for effective product design and development
- Design protection and intellectual property rights

Learning outcomes

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

- Critically appraise the main features of the product design process
- Critically evaluate design options to generate a novel and feasible product prototype to solve a specified user problem

- Apply technical skills as a part of a team to prototype a product that is functional, efficient and manufacturable
- Analyse funding and goto-market strategies as a part of a team using appropriate methodologies

Indicative reading list

Lockwood, T. (2010). Design Thinking: Integrating Innovation, Customer Experience, and Brand Value. Allworth Press.

Ulrich, K. T., & Eppinger, S. D. (2017). Product Design and Development. McGraw-Hill Education.

Olsen, D. (2015). The Lean Product Playbook: How to Innovate with Minimum Viable Products and Rapid Customer Feedback. Wiley.

[View reading list on Talis Aspire](#)

Subject specific skills

Ideation and brainstorming: Students will learn how to generate new and innovative product ideas using various ideation and brainstorming techniques.

Research and analysis: Students will learn how to conduct market research, user research, and competitive analysis to identify user needs and market opportunities.

Sketching and prototyping: Students will learn how to create sketches and prototypes of their product ideas using various tools and materials, such as paper, 3D printing, and digital prototyping software.

Design thinking and user-centered design: Students will learn how to apply design thinking and user-centered design methodologies.

Technical design skills: Students will learn how to apply technical design skills in areas such as material science, manufacturing processes, and engineering principles.

Transferable skills

Project management: Students will learn how to manage product design and development projects, including project planning, execution, risk management, and evaluation.

Collaboration and teamwork: Students will learn how to work effectively in teams, including cross-functional teams, multidisciplinary teams, and international teams.

Communication and presentation skills: Students will learn how to effectively communicate and present their design concepts to a variety of audiences, including clients, stakeholders, and users.

Entrepreneurship and business skills: Students will learn how to identify market opportunities, develop business models, and create value propositions, and gain a deep understanding of the product development process from ideation to launch.

Study

Study time

Type	Required
Lectures	6 sessions of 1 hour (4%)
Seminars	16 sessions of 1 hour (11%)
Practical classes	8 sessions of 1 hour (5%)
Online learning (independent)	25 sessions of 1 hour (17%)
Private study	35 hours (23%)
Assessment	60 hours (40%)
Total	150 hours

Private study description

Completing the set design tasks, learning to use design software, readings, podcasts and videos.

Costs

Category	Description	Funded by	Cost to student
Equipment and project costs	There are costs associated with the purchase of illustration stationary and 3D printing.	Department	£0.00

Assessment

You must pass all assessment components to pass the module.

Assessment group A1

Assessment component	Weighting	Study time	Eligible for self-certification
Group Product Design Project	70%	42 hours	No
Students allocated in teams will be asked to develop a product design project, from ideation to prototyping, testing, and final validation. The project will be based on a real-world design problem, and will be evaluated based on creativity, feasibility, functionality, aesthetics, and user			

	Weighting	Study time	Eligible for self-certification
experience. Each student team member will be expected to take ownership of a particular component of the supplied assignment brief. Peer assessment will be used to generate individual scaling factors.			

Reassessment component

Prototyping based on a Design Brief: Requirements & Challenges

Yes (extension)

Critically appraise the design for manufacture process used to prototype a new product. Explain how the client brief was understood, validated and then turned into a design ideas. Further, highlight the various steps taken to determine the most appropriate strategy which would lead to a new prototype. Explain how the prototype would be able to capture the essential requirements set in the client brief.

Assessment component

In-Module Design Challenge Presentation 30%

18 hours

No

Students working in teams will be asked to participate in a design challenge, where they will be assigned a specific design problem and a limited amount of time to come up with a solution. The challenge will be evaluated based on creativity, feasibility, functionality, aesthetics, and user experience. Peer assessment will be used to generate individual scaling factors.

Reassessment component

Crowdfunding Strategy

Yes (extension)

Critically evaluate the potential of crowdfunding to launch a new tangible product.

Feedback on assessment

Verbal feedback will be provided after case studies / practical workshops, which will be focused upon the learning targets of each session. Feedback will also be provided to any questions which arise from students with the lecture session.

Written feedback will be provided using the standard WMG feedback templates.

Availability

There is currently no information about the courses for which this module is core or optional.