

Liverpool John Moores University

Title: Design Project I
Status: Definitive
Code: **4003PDE** (120078)
Version Start Date: 01-08-2016

Owning School/Faculty: Electronics and Electrical Engineering
Teaching School/Faculty: Electronics and Electrical Engineering

Team	Leader
Adam Papworth	Y

Academic Level: FHEQ4
Credit Value: 30
Total Delivered Hours: 72
Total Learning Hours: 300
Private Study: 228

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24
Practical	24
Tutorial	24

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	Report	Creativity Report	30	
Portfolio	Book	Process Book	60	
Self Awareness Statement	WoW	Reflective Statement	10	

Aims

Introduce the principles of the creative thinking and idea generation within the design process.

Learning Outcomes

After completing the module the student should be able to:

- 1 Demonstrate an understanding of the five stages of the creative model
- 2 Identify a design problem and its constraints through fact-finding research techniques
- 3 Use idea generation techniques to create conceptual designs
- 4 Develop a final conceptual design to solve a design problem
- 5 Identify and reflect upon the following aspects of personal development: strengths and weaknesses, motivations and values, ability to work with others.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Creativity Report	1	2
Process Book	3	4
Reflective Statement	5	

Outline Syllabus

Module introduction

Module guide; aims; learning outcomes; assessment and marking schemes. Outline syllabus; module timetable and student feedback.

Contemporary designers and case study perspectives:

Design Movements and notable Figures. Case studies: Olympic torch; Knelt furniture; AK-47; Mini; Genius of Design DVD series.

Careers in design:

The importance of design. The design profession; design sectors and skills; career guidance; work placement process.

Creativity and the design process:

The 5 stage creative model and the design process. Creative thinking, critical thinking, idea generation, brainstorming, mind mapping, synectics, morphological charts, design evaluation and optimization methods - convergent and divergent approaches. Participatory / ethnography design. The design brief: e.g. function, performance, intended markets, quantity, styling, quality, cost, size, timescales, product / market research, conceptual design and material selection. Product design specification (PDS). PDS developed using suitable techniques from client brief and containing product design details, function, features of products: eg performance, size, weight, cost, appearance, quality, material details and constraints, production standards and quality details.

Determining form and function:

Fundamental design principles. The geometry of design. Aesthetics, ergonomics and

anthropometrics – elements of the human form. User requirements; what qualities make the product attractive to potential users? Performance requirements; what are the technical considerations that must be achieved within the product? Material and component requirements; how should materials and components perform within the product? Scale of production and cost; how does the design allow for scale of production and what are the considerations in determining cost?

Develop a product: Undertaking research, Importance of research and development: eg primary and secondary consideration of client needs, market requirements and trends, new technologies, innovation, existing products in the market, improving existing products, refining current processes.

Range of factors including: eg demand pull – driven by market research, technology push – driven by new technologies, new developments in materials and processes.

generating ideas, gathering feedback, e.g. by interview, questionnaire, survey; responding to client feedback, e.g. changing design solution, providing detailed explanations; final modified design proposal should reflect research results and client's needs to develop the product.

Generate ideas: eg alternative concepts, imaginative ideas.

Synthesis: eg development of chosen concept or idea.

Evaluation: testing and checking against PDS.

Final product specification: eg a range of details that would allow the solution to be manufactured.

Prototype: eg provides a 3D mock-up or scaled version of the product under development, usually for client consideration and feedback.

Design skills:

Creative group work; contributing to design reviews; presenting research; design report writing; WoW Bronze "Self Awareness" statement; student design competitions; preparing for a design show.

Learning Activities

This module will be delivered through an integrated series of lectures, tutorials, practical sessions, guided design activities and case studies. The learning activities are to be student focused and develop the students design knowledge through experiential learning.

Notes

This module is delivered using a variety methods including lectures, seminars, tutorials and practical sessions. The module will be delivered from a engineering and product design perspective.