Module Descriptor

Module Title: Innovation in Product Development

Module Code: 5E3

Level: MAI

Credits: 15 ECTS

Prerequisites: 4MEMS9 or 3E8

Semester 1 & 2

Lecture/Week: 3-5

Aims/Objectives

5E3 is a project based module, where teams of students work, within a user-centred design framework, to conceptualize and manufacture a high quality prototype to real-world problem. Each team will work to a specific project brief from a project sponsor – typically a business with global scale. Project briefs will be significantly open-ended to facilitate truly innovative solutions to be developed. Students will work with an academic mentor/supervisor, teaching assistants and with a project liaison in the sponsor company. Some of the projects will require liaison with project teams, in other universities, working on other aspects of the problem. Students will be expected to deliver a working prototype solution of commercial quality at the conclusion of the project.

Syllabus

- Successful team formation and management
- Introduction to user-centred design
- Ideation and use of personas and POVs
- Embedded Microcontrollers for consumer products
- Human factors in engineering design
- Critical Experience and Critical Function Prototyping
- Dark Horse and ‘Funky’ prototyping
- Rapid prototyping and manufacturing
- Design for manufacture
- User testing
- Use of video/electronic media for communication
- Start-ups and entrepreneurship
- Intellectual Property

Recommended Texts: None

Learning Outcomes
On successful completion of the module, students will be able to:
1. Work in multidisciplinary teams on a technically ambitious and challenging project
2. Identify user needs and develop solution concepts to meet those needs
3. Analyse potential market and societal benefits of developed solutions
4. Conduct patent searches and analyse prior intellectual property
5. Liaise with professional engineers (and other staff in the commercial sector) in a professional and timely manner
6. Pitch design concepts at an advanced level, utilising prototypes and multi-media tools.

Teaching Strategies

Learning will be predominantly self-directed, with significant guidance and supervision from staff and teaching assistants. Occasional lectures on topics of mutual benefit and interest will be organized. Students will follow a structured innovation paradigm, closely modelled on the Stanford ME310 curriculum.

Assessment Mode(s)

The module marks are derived solely from continuous assessment.