Module Code	**MEU33B09**
Module Name	**3B9 Universal Design Innovation**
ECTS Weighting[1]	5 ECTS
Semester taught	Semester 1
Module Coordinator/s	Prof. Gareth J. Bennett
Module Learning Outcomes with reference to the Graduate Attributes and how they are developed in discipline	On successful completion of this module, students should be able to: LO1. Value the differences in peoples' abilities through the participation in a Universal Design/User Centred Design project working with community groups, promoting social responsibility and civic awareness LO2. Apply a user centred design process to needfind, generate ideas and evaluate design concepts. LO3. Appreciate and be skilled at different additive and subtractive manufacturing processes as well as prototyping equipment. LO4. Correctly use SOLIDWORKS to draw and to solid-model parts and assemblies. LO5. Apply engineering sciences and creativity through learning-by-doing project work to conceive, design, implement and operate simple tangible prototypes. LO6. Communicate and work effectively in teams, and be able to present their work orally through public presentation using posters and slide shows. **Graduate Attributes: levels of attainment** To act responsibly - Enhanced To think independently - Enhanced To develop continuously - Enhanced To communicate effectively – Enhanced

[1] TEP Glossary

Module Content	The student will develop skills to allow them to think creatively and critically, conduct research both independently and within a group, and will learn to analyse data and synthesize the findings to develop a solution. Presentations will be made regularly within groups and students will develop their digital, communication and group work skills. The module requires interaction with community groups, e.g. the elderly and so students will listen, interview and conduct themselves in a professional manner while developing a sense of social responsibility and civic awareness through community engagement and "Service Learning". The module provides an experiential learning environment, while applying academic knowledge and engineering science and provides a framework to encourage creativity and innovation. The students follow a "User Centred Design Process" enhanced with "Design Thinking". Each group is required to recruit their own user group of stakeholders and work with them: observing, interviewing and recording them in their own environment. This empathy stage provides the students with insight into difficulties that the users encounter with respect to the particular theme of the year, e.g. "Successful Ageing", "Blind/Limited Vision", "Cycling" etc.. The students initially develop rudimentary design prototypes to address each group's perceived "need", and then seek feedback. They repeat this process many times in order to define their group's problem, and then iterate to a design concept to address the need. The students also design and create promotional and dissemination materials for their product such as videos, posters, logos, tri-fold leaflets, presentations etc. The module is assessed completely through continuous assessment with no written exam in the examination period.
Teaching and Learning Methods	Lectures take place in semester I to introduce design, the design process, needfinding, universal design, standards, machine components etc. Each week the student's present their group work orally with a powerpoint/prezi/canva presentation and receive feedback in front of the rest of the class. This allows the students to learn from each other. The presentations will take place face-2-face on a Monday. A number of labs accompany the module to provide skills to support the core objective of the module: to build a rudimentary prototype to address a real user need. The labs teach: • Prototyping Lab to facilitate students to make their designs: will include a blue foam cutter, an acrylic bender and introduction to the workspace and tools (MakerSpace). • 3D Printing Lab for additive Manufacturing. • Hands-on experience in the Mechanical Engineering Workshop where the student will get to do welding, machining, lathing etc.

<table>
<tr><td rowspan="4">Assessment Details[2] Please include the following:
• Assessment Component
• Assessment description
• Learning Outcome(s) addressed
• % of total
• Assessment due date</td><td>Assessment Component</td><td>Assessment Description</td><td>LO Addressed</td><td>% of total</td><td>Week due</td></tr>
<tr><td>Weekly Assignment and Presentation</td><td>Need finding and Concept Definition Assignments</td><td>LO1, LO2, LO5, LO6</td><td>60</td><td>Weekly in Semester</td></tr>
<tr><td>Laboratories</td><td>Labs associated with the module to support the objectives.</td><td>LO3</td><td>10</td><td>Throughout Semester</td></tr>
<tr><td>Universal Design Project</td><td>Design and construction of a rudimentary prototype to address a real user need. Dissemination materials which will be uploaded to a dedicated website.</td><td>LO1-LO6</td><td>30</td><td>Week 12 Sem I</td></tr>
<tr><td>Reassessment Requirements</td><td colspan="5">Assignments.</td></tr>
<tr><td>Contact Hours and Indicative Student Workload[2]</td><td colspan="5">Contact hours: 43
(Lectures: 33
Labs: 4
Design Studio Support: 6)

Independent Study (preparation for course and review of materials): 10

Independent Study (preparation for assessment, incl. completion of assessment): 60
(10 Weekly Assignments X 4 = 40
Design Project: 20)</td></tr>
<tr><td>Recommended Reading List</td><td colspan="5">D. School Needfinding Materials</td></tr>
<tr><td>Module Pre-requisite</td><td colspan="5">None</td></tr>
<tr><td>Module Co-requisite</td><td colspan="5">None</td></tr>
<tr><td>Module Website</td><td colspan="5"></td></tr>
<tr><td>Are other Schools/Departments involved in the delivery of this module? If yes,</td><td colspan="5">No</td></tr>
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[2] TEP Guidelines on Workload and Assessment

please provide details.
Module Approval Date
Approved by
Academic Start Year
Academic Year of Date