Module Synopses for Specialist Diploma in Design Innovation for Engineering

PDC 1 Certificate in Design Principles and System Innovation

1. Product Design (MAD)

This module introduces students to the essential and critical functions of product design in its ability to create buy-in with the audience. It equips students with knowledge and practice in design aesthetics, influence, value creation, and design communication.

2. User Experience Fundamentals (MAD)

This module introduces students to the fundamental knowledge of User Experience (UX) design. Students will immerse in understanding digital product design processes and tools to create digital experiences that meet the needs of customers and enable positive connection between digital mediums and the user.

3. Design-led Engineering System 1 (EEE)

This module introduces students to an incremental learning approach beginning with the design of a simple product, gradually combining computing and communication elements that scaffolds towards a large interconnected engineering system. Fundamental concepts in designing, analysing and evaluating engineering systems will be explained with various case studies.

4. Design-led Engineering System 2 (MAD)

This design module is paired to and supports the Engineering Systems module; Systems Design is the process of designing the cumulative interaction between elements and touchpoints in creating something of exponential value. The module covers how to develop an effective understanding of human needs through a user's perspective for both the business consumer and public services.

PDC 2 Certificate in Digital Prototyping and Applied Innovation

5. Mechanical Engineering Design 1 (MAE)

This module equips participants in the systematic process of the concept development cycle and the introduction of various manufacturing processes such as additive manufacturing and reverse engineering; to understand the fundamental knowledge of these manufacturing processes, their capability and limitations, and the selection or application of these processes for any given product.

6. Mechanical Engineering Design 2 (MAD)

This design module is paired with and supports the Mechanical Design Engineering Module. The module leans heavily on the mastery of NURB modelling CAD software, in the development of

3D forms, organic surface modelling, and CMF. The module concludes with learning of rendering techniques for visualisation.

7. Innovation Design Project 1 (FabLab)

The Innovation Project sees the cumulative skill sets of design and engineering gained from previous modules turning ideas into reality through applying these into a hands-on collaborative project. Students of diverse engineering backgrounds are tasked to bring in their expertise to create a cohesive outcome involving design, electronics, IOT and mechanical design through creative ideation, prototyping, iteration and testing.

8. Innovation Design Project 2 (MAD)

This design module is paired with and supports the Innovation Project Module. In a climate of accelerating technology and incremental customer expectations, the module looks through the lens of trend-driven innovation as well as the synthesizing of ethnographic insights of the modern consumer, in order to create a valuable, uniquely superior, and marketable proposition in a sea of conventional solutions.