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| **Module code** | TG-1211 | | |
| **Module Title** | Engineering Design 1 | | |
| **Degree/Diploma** | Bachelor of Engineering Degree | | |
| **Type of Module** | **Major Core** | | |
| **Modular Credits** | 2 | **Total student workload** | 5 hours/week |
| | | **Contact hours** | 3 hours/week |
| **Prerequisite** | None | | |
| **Anti-requisite** | None | | |

**Aims**

This module introduces students to the process of design and seeks to engage their enthusiasm for engineering from the beginning of the program. The engineering method is used in the design and manufacture of a product. Product dissection is exploited to evaluate how others have solved design problems. Development is started on competencies in professional practice topics, primarily: effective group participation, project management, cost estimation, communication skills, and ethics.

**Learning Outcomes:**

*On successful completion of this module, a student will be expected to be able to*:

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| Lower order : | 10% | - read and interpret data on basic engineering assembly and subassembly drawings |
| Middle order : | 10% | - evaluate and recommend alternative designs to improve function, cost, and performance<br>- effectively use common hand tools and fasteners, electronic soldering tools, and machine tools such as a drill press, belt sander, etc. |
| Higher order: | 80% | - effectively engage in team building activities and cultivated interpersonal relations<br>- function as part of a multi-disciplinary team, collectively adhering to project management schedules to achieve on time completion of scheduled work, reporting and presentation. |

**Module Contents**

- Introduction to Engineering as a career, available development paths/opportunities
- Introduction to Total Design and the Engineering design process, emphasizing a systems approach
- Identifying stakeholders and their requirements
- Generating and evaluating design concepts, brainstorming, creativity
- Understanding design drawings, including assembly, subassembly and cross section views
- Reverse engineering and design improvement via product disassembly
- Multidisciplinary design including aspects of electrical, computer and mechanical engineering via a project based learning experience (robot project)

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| **Assessment** | Formative assessment | Quizzes and MCQs |
| | Summative assessment | Examination: 0% |
| | | Coursework: 100%<br>- 6 reports (10% each)<br>- 1 final project report (20%)<br>- 1 final presentation (20%) |