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| <b>Module code</b>   | TM-4203   |   |               |
| <b>Module Title</b>  | Research Project (Engineering Design VII & Engineering Design VIII for Manufacturing Systems)                   |   |               |
| <b>Degree/Diploma</b>  | Bachelor of Engineering (Systems Engineering) for Manufacturing Systems   |   |               |
| <b>Type of Module</b>  | Major Core  |   |               |
| <b>Modular Credits</b>   | 8   | <b>Total student Workload</b>   | 16 hours/week |
|  |   | <b>Contact hours</b>  | 8 hours/week  |
| <b>Prerequisite</b>  | None  |   |               |
| <b>Anti-requisite</b>  | TM-4201 Engineering Design VII (Manufacturing Systems); TM-4202 Engineering Design VIII (Manufacturing Systems) |   |               |
| <b>Aims</b>  |   |   |               |
| To implement and integrate the concepts and theories of research methodologies as well as the acquired practical skills when performing an independent research project. It also aims to teach students about research attitude, research ethics and data analyses and interpretation where applicable.  |   |   |               |
| <b>Learning Outcomes</b>   |   |   |               |
| <i>On successful completion of this module, a student will be expected to be able to:</i>  |   |   |               |
| Lower order :  | 10%   | - describe research methodologies and research ethics   |               |
| Middle order :   | 10%   | - review research subject areas pertaining to the respective topic of study<br>- design research proposal and experiments<br>- analyse and collect experimental data  |               |
| Higher order:  | 80%   | - use equipment and follow instructions according to standard procedures<br>- interpret and critically appraise study design, research procedure and findings<br>- manage project tasks and timeline in order to successfully accomplish given project<br>- frequent verbal and written communication with supervisor<br>- present experimental data and observations orally<br>- write a research project report in journal article format |               |
| <b>Module Contents</b>   |   |   |               |
| <ul style="list-style-type: none"> <li>- Identify research problem and research topic in manufacturing systems engineering related subjects</li> <li>- Investigate and explore the application of the concepts of related subjects</li> <li>- Research methodology, laboratory skills and scientific reporting skills</li> <li>- Research proposal writing</li> <li>- Field work for data collection</li> <li>- Conduct of research including physical measurements, data analysis &amp; interpretation and time management</li> <li>- Report writing in the form of academic journal article</li> </ul> |   |   |               |
| <b>Assessment</b>  | Formative assessment  | Weekly discussions about progress of project with supervisor(s)   |               |
|  | Summative assessment  | Examination: 0%<br>Coursework: 100%<br>- 1 research proposal (20%)*<br>- 1 research project report in journal article format (40%)*<br>- 2 oral presentations of project report (15% each)*<br>- Assessment of student's initiative (10%)**<br>Notes: *by two assessors (other than supervisor); **by supervisor  |               |