



## Subject Description Form

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| <b>Subject Code</b>                                   | ME39002/IC348  |
| <b>Subject Title</b>                                  | Appreciation of Manufacturing Processes  |
| <b>Credit Value</b>                                   | 3 Training Credits   |
| <b>Level</b>  | 3  |
| <b>Pre-requisite/<br/>Co-requisite/<br/>Exclusion</b> | ME29003/IC2105   |
| <b>Objectives</b>                                     | <p>This subject aims at developing students' understanding on:</p> <ul style="list-style-type: none"><li>• the principles and operations of common manufacturing processes, and</li><li>• the properties and application of different materials.</li></ul>   |
| <b>Intended Learning<br/>Outcomes</b>                 | <p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"><li>a) demonstrate a holistic understanding on the working principle, capability and operation of common manufacturing processes.</li><li>b) justify appropriate manufacturing processes for different materials and specific product requirements.</li><li>c) select and use various common engineering materials for specific purpose.</li><li>d) collaboratively execute an application-oriented project through group work and discussions and inspires oneself to learn continuously about the latest industrial practices and technologies.</li></ol> |



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| <b>Subject Synopsis/<br/>Indicative Syllabus</b> | <ol style="list-style-type: none"><li>1) Properties and uses of common engineering materials such as metal, alloy and polymers</li><li>2) Working principles and operation of<ul style="list-style-type: none"><li>• Common metal removing processes such as CNC machining;</li><li>• Common production processes such as casting and moulding;</li><li>• Common sheet metal parts fabrication processes such as forming and turret pressing;</li><li>• Common joining and cutting processes such as welding and laser cutting;</li><li>• Common surface finishing processes such as electro-plating;</li><li>• Rapid prototyping and production technologies;</li><li>• Manufacturing metrology and part inspection.</li></ul></li></ol> |
| <b>Learning Methodology</b>                      | <p>Min-lectures aim at providing students an understanding of the principles and application of common manufacturing technologies, properties and selection of common engineering materials.</p> <p>Hands-on activities will be used for students to appreciate the working principles, capability and operation procedures of common manufacturing processes.</p> <p>Group product assembly will be used to enable students to apply acquired practical knowledge and skills to produce a functional product, and to facilitate students in performing group collaboration and problem solving skills learning.</p>  |



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| <b>Assessment Methods in Alignment with Intended Learning Outcomes</b> |  |                      | <b>Intended Learning Outcomes Assessed</b> |          |          |                |
|  | <b>Assessment Methods</b>  | <b>Weighting (%)</b> | <b>a</b>                                   | <b>b</b> | <b>c</b> | <b>d</b>       |
|  | 1. Individual Assignments  | 60                   | ✓  | ✓        | ✓        |                |
|  | 2. Product Assembly  | 10                   |  |          |          | ✓              |
|  | 3. Individual Report   | 30                   | ✓  | ✓        | ✓        | ✓              |
| Total  | 100  |                      |  |          |          |                |
|  | <p>The Individual Assignments are aimed at assessing student's practical ability in using various processes to produce the components for the product.</p> <p>The Product Assembly is aimed at assessing student's group collaboration, organization, time management and problem solving capability.</p> <p>The Individual Report is aimed at assessing student's appreciation, understanding and application of all the processes involved in the product.</p> |                      |  |          |          |                |
| <b>Student Study Effort Expected</b>                                   | <b>Class Contact</b>   |                      |  |          |          |                |
|  | Min-lecture /Hands-on Practice/ Product Assembly /Report Writing   |                      |  |          |          | 90 Hrs.        |
|  | <b>Other Study Effort</b>  |                      |  |          |          | 0 Hrs.         |
|  | <b>Total Study Effort</b>  |                      |  |          |          | <b>90 Hrs.</b> |
| <b>Reading List and References</b>                                     | <p>1. Fundamental of machining processes: Conventional and nonconventional processes, Hassan El Hofy, CRC, 2006</p> <p>2. Reading Materials published by the Industrial Centre</p>   |                      |  |          |          |                |