

Subject Description Form

Subject Code	ISE2170/IC2170
Subject Title	Appreciation of Manufacturing Processes and Metrology
Credit Value	4 Training Credits
Level	2
Pre-requisite	ISE2105 or IC2105
Objectives	<p>This subject aims at developing student's knowledge on technologies applied in the product development workflow through an integrated application-oriented learning. The practical use of principles, operation of different manufacturing processes, measuring techniques and application of common materials will be involved. It can enhance student's recognition of the working principle, process capability (e.g. accuracy, limitations) and application in order to strengthen students' engineering competence.</p>
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ul style="list-style-type: none">a) identify working principle and capability of different manufacturing technologies.b) apply proper measuring techniques in different manufacturing processesc) justify appropriate manufacturing processes for specific product requirements.d) collaboratively execute an application oriented training through group work and discussions and inspires oneself to learn continuously about current industrial technologies

<p>Subject Synopsis/ Indicative Syllabus</p>	<p>The extent of the training will depend on the nature of the product that students work on, not all listed activities in Item 3 are likely to be undertaken for all projects.</p> <ol style="list-style-type: none"> 1. Application and Selection of Engineering Materials 2. Application and Selection of Manufacturing Metrology 3. Application and Operation of <ul style="list-style-type: none"> ▪ Common Manufacturing Processes for Metal Parts (Casting) ▪ Common Manufacturing Processes for Plastic Parts (Injection Moulding and Rapid tooling) ▪ Common Manufacturing Processes for PCBA ▪ Processes for Surface Treatment ▪ Operation of Common Joining Processes (Sheet Metal and Welding) ▪ Operation of Computer-Aided Systems ▪ Rapid Prototyping and Production Technologies ▪ Reverse Engineering 																																		
<p>Teaching/Learning Methodology</p>	<p>Short lectures introduce the principle of different manufacturing processes and their applications.</p> <p>Demonstrations provide students with understanding on the operation procedures of processes involved in the training.</p> <p>Hands-on activities will be used for students to apply the working principles that learned in the training.</p>																																		
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1" data-bbox="511 1222 1432 1654"> <thead> <tr> <th rowspan="2">Specific Assessment Methods/Tasks</th> <th rowspan="2">Weighting (%)</th> <th colspan="4">Intended Learning Outcomes to be assessed</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> </tr> </thead> <tbody> <tr> <td>1. Assignment</td> <td>50</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>2. Product Assembly</td> <td>10</td> <td></td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>3. Individual Report</td> <td>40</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>Total</td> <td>100</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>The assignment is designed to facilitate students to reflect and apply the knowledge periodically throughout the class.</p> <p>Product Assembly is designed to facilitate students to show their group performances, collaboration and problem solving capability.</p> <p>Written report is designed to facilitate students to show the recognition and their reflection to the training.</p>	Specific Assessment Methods/Tasks	Weighting (%)	Intended Learning Outcomes to be assessed				a	b	c	d	1. Assignment	50	✓	✓	✓		2. Product Assembly	10				✓	3. Individual Report	40	✓	✓	✓		Total	100				
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Student Study Effort Expected	Class Contact	
	Short lectures, Demonstrations , Hands-on Practices and Presentation	120 Hrs.
	Other Study Effort	0 Hrs.
	Total Student Study Effort	120 Hrs.
Reading List and References	Reading Materials published by Industrial Centre	