

## Subject Description Form

<b>Subject Code</b>	ISE2121/IC2121
<b>Subject Title</b>	Appreciation of Manufacturing Technologies
<b>Credit Value</b>	3 Training Credits
<b>Level</b>	2
<b>Pre-requisite / Co-requisite/ Exclusion</b>	ISE2105 or IC2105
<b>Objectives</b>	<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 and operation of different manufacturing processes, and properties 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>
<b>Intended Learning Outcomes</b>	<p>Upon completion of the subject, students will be able to:</p> <ul style="list-style-type: none"><li>a) identify working principle and capability of different manufacturing technologies.</li><li>b) justify appropriate manufacturing processes for specific product requirements.</li><li>c) collaboratively execute an application oriented training through group work and discussions and inspires oneself to learn continuously about current industrial technologies</li></ul>

<p><b>Subject Synopsis/ Indicative Syllabus</b></p>	<p>The extent of the training will depend on the nature of the product that students work on, not all listed activities are likely to be undertaken for all projects.</p> <ol style="list-style-type: none"> <li>1. Application and Selection of Engineering Materials</li> <li>2. Application and Operation of <ul style="list-style-type: none"> <li>▪ Common Manufacturing Processes for Metal Parts</li> <li>▪ Common Manufacturing Processes for Plastic Parts</li> <li>▪ Common Manufacturing Processes for PCBA</li> <li>▪ Processes for Surface Treatment</li> <li>▪ Operation of Common Joining Processes</li> <li>▪ Operation of Computer-Aided Systems</li> <li>▪ Rapid Prototyping and Production Technologies</li> <li>▪ Manufacturing metrology</li> <li>▪ Reverse Engineering</li> </ul> </li> </ol>																												
<p><b>Teaching/Learning Methodology</b></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 in the training.</p>																												
<p><b>Assessment Methods in Alignment with Intended Learning Outcomes</b></p>	<table border="1" data-bbox="478 1294 1473 1780"> <thead> <tr> <th rowspan="2">Specific Assessment Methods/Tasks</th> <th rowspan="2">Weighting (%)</th> <th colspan="3">Intended Learning Outcomes to be assessed</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> </tr> </thead> <tbody> <tr> <td>1. Assignment</td> <td>50</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>2. Product Assembly</td> <td>10</td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>3. Individual Report</td> <td>40</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td><b>Total</b></td> <td><b>100</b></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	1. Assignment	50	✓	✓		2. Product Assembly	10			✓	3. Individual Report	40	✓	✓		<b>Total</b>	<b>100</b>			
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<b>Student Study Effort Expected</b>	<b>Class Contact</b>	
	▪ Short lecture, Demonstrations, Hands-on practices and Presentation	90 Hrs.
	<b>Other Student Study Effort</b>	<b>0 Hrs.</b>
	<b>Total Student Study Effort</b>	<b>90 Hrs.</b>
<b>Reading List and References</b>	<p>A. Interpreting Engineering Drawings, Cecil Jensen, Delmar Cengage Learning, 2006</p> <p>B. Fundamental of machining processes: Conventional and nonconventional processes, Hassan El Hofy, CRC, 2006</p> <p>C. Reading Materials published by the Industrial Centre</p>	