Subject Description Form

Subject Code	ISE2121/IC2121
Subject Title	Appreciation of Manufacturing Technologies
Credit Value	3 Training Credits
Level	2
Pre-requisite/ Co-requisite/ Exclusion	ISE2105 or IC2105
Objectives	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 for mechanism design. 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.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a) identify working principle and capability of different manufacturing technologies. b) justify appropriate manufacturing processes for specific parts and product requirements. c) collaboratively execute mechatronics tasks with basic mechanism design and engineering control.

Subject Description Form

Subject Synopsis/ Indicative Syllabus	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 tasks. 1. Application and Selection of Engineering Materials 2. Application and Selection of Mechanism 3. Application and Operation of ▪ Common Manufacturing Processes for Metal Parts ▪ Common Manufacturing Processes for Plastic Parts ▪ Common Manufacturing Processes for PCBA ▪ Processes for Surface Treatment ▪ Operation of Common Joining Processes ▪ Operation of Computer-Aided Systems ▪ Rapid Prototyping and Production Technologies ▪ Manufacturing Metrology ▪ Reverse Engineering ▪ Composites Fabrication
Learning Methodology	Mini lectures introduce the principle of different manufacturing processes and their applications. Demonstrations provide students with understanding on the operation procedures of processes involved in the training Hands-on activities will be used for students to apply the working principles in the training.

Subject Description Form

Assessment Methods in Alignment with Intended Learning Outcomes

Specific Assessment Methods/Tasks	Weighting (%)	Intended Learning Outcomes to be assessed		
		a	b	c
1. Individual Assignments	60	✓	✓	
2. Product Assembly	10			✓
3. Individual Report	30	✓	✓	
Total	**100**			

Individual Assignments are designed to facilitate students to reflect and apply the knowledge periodically throughout the class.

Product Assembly is designed to facilitate students to show their group performances, collaboration and problem-solving capability.

Written report is designed to facilitate students to show the recognition and their reflection to the training.

Student Study Effort Expected

Class Contact	
▪ Mini lecture, Demonstrations and Hands-on practices	90 Hrs.
Other Student Study Effort	**0 Hrs.**
Total Student Study Effort	**90 Hrs.**

Reading List and References

A. Interpreting Engineering Drawings, Cecil Jensen, Delmar Cengage Learning, 2006

B. Fundamental of machining processes: Conventional and nonconventional processes, Hassan El Hofy, CRC, 2006

C. Reading Materials published by the Industrial Centre