Seoul National University of
Science & Technology
232 Gongneung-ro,Nowon-gu,
Seoul 01811 Korea

MSDE Module Descriptor

Module Title Introduction to Manufacturing	**Module Code** MSDE 231	**Semester (Sem 1 / Sem 2)** Sem 2
Credits 10	**Level** 4	**Professor and email** Hyuk-Dong Kwon atom@seoultech.ac.kr
Delivery Method Lecture / Project	**Delivery Location** SeoulTech, Mugung Hall	

Module Synopsis

The characteristics of the whole manufacturing process methodologies such as machining, casting, metal forming, and rapid prototyping are covered, along with the related processes and techniques such as surface finishing, electronic fabrication, automation and integration of the production systems.

Outline Syllabus

Material Properties and Product Attributes
Nature of Materials. Mechanical Properties of Materials. Physical Properties of Materials. Dimensions, Tolerances, and Surfaces

Engineering Plastics and Applications

Engineering Materials Overview
Metals. Ceramics

Solidification Processes Overview
Metal Casting Processes. Shaping Processes for Plastics

Particulate Processing of Metals and Ceramics Overview
Power Metallurgy. Processing of Ceramics and Cermets

Metal Forming and Sheet Metalworking
Metal Forming. Bulk Deformation Processes in Metal Working. Sheet Metalworking

Introduction to Fabrication Methods
Welding methods, introduction to laser cutting and water jet cutting

Introduction to Rapid Prototyping
Stereo lithography. Laminated Object Manufacturing. 3D Printing

Material Removal Processes
Theory of Metal Machining. Machining Operations and Machine Tools

Case study of an Engineering Assembly

Indicative Reading

1. Fundamentals of Modern Manufacturing (Materials, Processes, and Systems) The 4th Edition by Mikell P. Groover, 2012.

2. Manufacturing Engineering and Technology S. Kalpacjian & SR Schmid: Pearson 2013

NOTIONAL STUDENT WORKLOAD	**Hours**
MODE OF DELIVERY (FT / PT / DL)	FT
Lectures	50
Seminars	20
Tutorials	20
Laboratories/studios/practical	
Directed learning	
Independent Learning	10
Work experience/fieldwork	
Other: eg formal presentation	
Total Workload 100 hours for a 10 credit module 200 hours for a 20 credit module	100

Module Learning Outcomes	
KU3	KU3. Identify and utilise basic methodologies to create solutions to specific engineering problems.
IPSA4	IPSA4. Illustrate solutions to basic engineering problems.
PVA 1,2	PVA1. Describe standard solutions to benefit society by applying sound engineering practise with an awareness of ethical considerations. PVA2. Demonstrate creativity in discussing solutions to standard problems.

Assessments	Assessment Type	Weighting %	Midterm/interim/final
Coursework			
Project			
Quiz			
Test			
Laboratory			
Exam	Written	60	Final exam
Presentation	Team presentation	40	Midterm