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

MSDE Module Descriptor

Module Title Materials Technology	**Module Code** MSDE 311	**Semester (Sem 1 / Sem 2)** Sem 1
Credits 10	**Level** 5	**Professor and email** Jihwan An Jihwanan@seoultech.ac.kr
Delivery Method Lecture	**Delivery Location** SeoulTech, Mugung Hall	

Module Synopsis

This module provides a basic introduction to the structure and properties of engineering materials and their significance to engineering applications and design.
This course will help students to use materials properly and realize new design opportunities with materials.
Assessment is made through an exam at the mid-point, a final exam and a report based on a directed research topic

Outline Syllabus

- Atomic Structure and Bonding
- Crystal Structure and Crystal Defects
- Diffusion in Solids
- Mechanical Properties
- Electrical Properties
- Phase diagram
- Materials Selection and Design

Indicative Reading

Materials Science and Engineering: An Introduction (W.D. Callister, Jr., 7th edition, John Wiley and Sons, Inc)

NOTIONAL STUDENT WORKLOAD	**Hours**
MODE OF DELIVERY (FT / PT / DL)	FT
Lectures	45
Seminars	5
Tutorials	

Laboratories/studios/practical	
Directed learning	20
Independent Learning	30
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	
KU1,2,3	KU1. Apply advanced knowledge of the scientific and mathematical foundations of engineering to solve problems. KU2. Perform comprehensive analysis of engineering systems. KU3. Identify and utilise advanced methodologies to create solutions to a variety of engineering problems.
IPSA1,3	IPSA1. Apply a range of appropriate approaches to solving defined real world engineering problems. IPSA3. Derive solutions to sustainability and environmental issues in the engineering sector.
PVA2	PVA2. Apply creativity in the development of solutions to standard engineering problems.

Assessments	Assessment Type	Weighting %	Mid-Term/interim/final
Coursework			
Project			
Quiz			
Test			
Laboratory			
Exam	Problem solving Problem solving	40% 60%	Midterm Final
Presentation			