



<b>Module Title</b>	<b>Module Code</b>	<b>Semester (Sem 1 / Sem 2)</b>
Creative Design	MSDE 225	Sem 1
<b>Credits</b>	<b>Level</b>	<b>Professor and email</b>
10	4	Anthony Johnson a.d.johnson@seoultech.ac.kr
<b>Delivery Method</b>	<b>Delivery Location</b>	
Lecture / Project	SeoulTech, Mugung Hall	

### Module Synopsis

This course is intended to familiarize engineering students with the nature of design and how it is done as the first introductory course of engineering design. A definition of design, difference between analysis and open ended design, nine step model of design, process of design-fabrication-evaluation, way of creative design and design project are included in the course. Assessment is through tests, a term project, and assignments.

### Outline Syllabus

#### What is the Engineering Design?

Introduce the basic concept of engineering design and nature of design

#### Systematic Design Process

##### Classic Design Approach/manufacture model

Descriptive models, conceptual design, prescriptive models, integrated models

#### Product Design Specification , Concept Design Specification and Product Specification relationships to the design process

**Introduction to Sustainability in Engineering Design and the role of the Designer** Realization of design using proto-typing and using 3D CAD simulations

#### Creativity of Design

Solution Generation techniques such as Brainstorming, Heuristic redefinition, etc.

#### Concept Design

Overall procedure for concept design selection and presentation of the concept. Explanation of the Detail Design process

**Design Case study on an engineering assembly such as a gearbox. Explain design methodology, analysis overview, design elements (bearings/seals) how presented for manufacture**



### Indicative Reading

- 1) Fundamentals of Engineering Design, Barry Hyman, Prentice Hall, 2004
- 2) Engineering Design Methods Strategies for Product Design, Nigel Cross, Wiley, 2008
- 3) Sustainability in Engineering Design: Johnson and Gibson: 2014

NOTIONAL STUDENT WORKLOAD (Hours)	Hours
MODE OF DELIVERY (FT / PT / DL)	FT
Lectures	30
Seminars	
Tutorials	15
Laboratories/studios/practical	10
Directed learning	20
Independent Learning	20
Work experience/fieldwork	
Other: eg formal presentation	5
Total Workload 100 hours for a 10 credit module 200 hours for a 20 credit module	100

### Module Learning Outcomes

KU1,2,3	Demonstrate basic knowledge of the scientific and mathematical foundations of engineering to solve basic problems. Perform simple analysis of familiar engineering systems. Identify and utilise basic methodologies to create solutions to specific engineering problems.
IPSA 1,5	Demonstrate the use of fundamental approaches to solving readily defined engineering problems. Demonstrate the ability to solve open ended design problems and communicate the designs to a third party
PVA 2,3	Demonstrate creativity in discussing solutions to standard problems. Able to evaluate how sustainable engineering techniques may be applied to engineering systems and products



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## MSDE Module Descriptor

<b>Assessments</b>	<b>Assessment Type</b>	<b>Weighting %</b>	<b>Mid-Term/interim/final</b>
Coursework	Poster	20%	Mid term
Project	Final Report/ Presentation	80	Final
Quiz			
Test			
Laboratory			
Exam			
Presentation			