

# Introduction to Engineering Design

Basic Course Information		
Course Number	0105073	Subject Category
Class Format	Lecture	Credit Type and Number of Credits
Department	Microelectronics	Student Category
Period of Study	Semester 1	Classes per Week
Required Materials		
Instructor	Sara Tabatabaie	

**Course Objective**  
 The course provides students with an introduction of Engineering design. The concept of Engineering design is very important to solve problems and develop products. Student study mechanical technology from the viewpoint of Engineering design. The students will also study the Project life-cycle process, Reliability, and Risk management. This subject is correlated with "Reverse Engineering" and "Introduction to Engineering Approach".

Evaluation/Rubric	Ideal Level of Achievement (Very Good)	Standard Level of Achievement (Good)	Unacceptable Level of Achievement (Fair)
Understanding Engineering Design Concept	Demonstrates very good knowledge and understanding of Engineering Design concept	Demonstrates good knowledge and understanding of Engineering Design concept	Lacks the appropriate knowledge and understanding of Engineering Design concept
Understanding Project life-cycle process, Reliability and Risk management	Demonstrates very good knowledge and understanding of Project life-cycle process, Reliability and Risk management	Demonstrates good knowledge and understanding of Project life-cycle process, Reliability and Risk management	Lacks the appropriate knowledge and understanding of Project life-cycle process, Reliability and Risk management
Application of Engineering Design concept	Apply Engineering Design to products/systems properly to analyze for improvement.	Apply Engineering Design to products/systems to analyze for improvement.	Introduce application of Engineering Design to products/systems
Presentation	Presentation slides are well organized. Effectively presents ideas and information in logical sequence which audience can follow.	Presentation slides are well organized. Presents ideas and information in logical sequence which audience can follow.	Presentation slides are not well organized. Presents ideas and information, but the audience feel difficulty to follow the sequence of
Group work	Almost always listens to and assist others. Shares ideas with others positively, and help the team to solve the problem.	Usually or try to listen to others. Shares ideas with, and possibly supports others.	Rarely listens to others. Do not share with and supports others. Often is not a good team player.

**Relationship with Learning Outcomes**

**M(1) Ability to design, process and develop robotic/ mechatronic systems to solve specific problems**

**M(2) Ability to design, process and develop electrical and electronic systems for robotic/ mechatronic systems**

**M(3) Ability to design, process and develop mechanical solutions/ systems for robotic/ mechatronic systems**

Teaching Method	
Outline	Students will study the concept and methodology of Engineering Design. Student will apply their skills, knowledge and learning through case study.
Class Format	Lecture and group work
Prerequisite	Students are required to ask any questions after sufficient self-learning.

Course Plan		Goals	Related MCC
Semester 1	Contents and Method of Course		
Week 1	Introduction to Engineering Design	Explaining Introduction to Engineering Design	MTH 8 20 MTH 8 27
Week 2	Basic Concept of Engineering Design	Explaining Basic Concept of Engineering Design	MTH 8 20 MTH 8 27
Week 3	Project life-cycle process flow (1)	Explaining Project life-cycle process flow (1)	MTH 4 17
Week 4	Project life-cycle process flow (2)	Explaining Project life-cycle process flow (2)	MTH 4 17
Week 5	Case study 1 (1)	Explaining Case study 1 (1)	MTH 5 19 MTH 5 20 MTH 5 21
Week 6	Case study 1 (2)	Explaining Case study 1 (2)	MTH 5 22 MTH 5 23 MTH 5 24
Week 7	The Engineer and Design of Products	Explaining The Engineer and Design of Products	MCA 1 1 1
Week 8	Reliability Engineering	Explaining Reliability Engineering	MCA 1 1 2
Week 9	Midterm Examination	For week 1 - 8	
Week 10	Risk management	Explaining Risk management	MCA 1 1 2
Week 11	Development of specification	Explaining Development of specification	MTH 2 4 4
Week 12	Feasibility study	Explaining Feasibility study	MTH 2 5 5
Week 13	Cost Aspect of System Engineering	Explaining Cost Aspect of System Engineering	MCA 1 1 1
Week 14	Intellectual properties: patent and others	Explaining Intellectual properties: patent and others	MTH 6 10
Week 15	Patent search 1	Explaining Patent search 1	MTH 6 10
Week 16	Patent search 2	Explaining Patent search 2	MTH 6 10
Week 17	Case study practice 1	Explaining Case study practice 1	
Week 18	Case study practice 2	Explaining the past work	
Week 19	Final Examination	For week 11 - 18	
Week 20	Wrap-up of the semester (Review)	Review and summarize learning	

Emphasis	Assessment	Used in other programs	Assess / Include / Other
Design Ability	30		20 / 10
Technical Ability			
Interpersonal Ability			

Do not