DEPARTMENT OF MECHANICAL AND INDUSTRIAL ENGINEERING
MECHANICAL ENGINEERING PROGRAM, BSC.

Course Syllabus

1. **Course number and name**
   IE311, Manufacturing Processes II

2. **Credits and contact hours**
   (3+0) 3 credit hours, 3 contact hours

3. **Course type**
   Onsite learning course

4. **Instructor's or course coordinator's name**
   Dr. Sinan Faouri

5. **Textbook information**

   Groover, M.P. Fundamentals of Modern Manufacturing, John Wiley & Sons Inc., 4th. Edition, 2010, ISBN-13: 978-0470467008

   a. **Other supplemental materials**
      Instructor's notes

6. **Specific course information**
   a. **Catalog description**
      To introduce the students with the fundamentals of: theory of metal machining, machining operations and machine tools, cutting tool technology, economic and product design considerations in machining, grinding and other abrasive processes, and non-traditional machining and thermal cutting processes.

   b. **Prerequisites or co-requisites**
      Prerequisite: IE 310 Manufacturing processes

   c. **The course is:**
      Elective in industrial and mechanical engineering program

7. **Specific goals for the course**
   a. **Course outcomes:**
   After completion of the course, students are expected to be able to:

DEPARTMENT OF MECHANICAL AND INDUSTRIAL ENGINEERING
MECHANICAL ENGINEERING PROGRAM, BSC.

1. Distinguish the basic principles of material-removal processes and mechanics of chip formation
2. Design a sense of practical experience to approach and solve problems.
3. Effectively communicate in all means (e.g. writing) for assignments and projects as well as enhance teamwork spirit.
4. Increasing the awareness of safety issues for personals and environment.
5. Distinguish how cutting conditions in machining determines to a large extent the economic success of a given operation.

b. The following student outcomes are addressed by the course:

SO-(2) An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

SO-(4) An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environmental, and societal context.

SO-(pc) The structure of the curriculum must provide both breadth and depth across the range of engineering topics implied by the title of the program.

8. Learning Outcomes and their Alignment with Program Educational Objective (PEO's), Methods of Delivery, and Assessment Methods:

Learning Outcomes	Program PEOs	Method of Delivery	Assessment Method
Course Outcomes			
CO-(1): Distinguish the basic principles of material-removal processes and mechanics of chip formation	-	Lectures (Example and Problems)	Assignment
CO-(2): Design a sense of practical experience to approach and solve problems.	-	Lectures (Example and Problems)	Project
CO-(3): Effectively communicate in all means (e.g. writing) for assignments and projects as well as enhance teamwork spirit.	-	Lectures (Example and Problems)	Assignment

CO-(4): Increasing the awareness of safety issues for personals and environment.	-	Lectures (Example and Problems)	Assignment
CO-(5): Distinguish how cutting conditions in machining determines to a large extent the economic success of a given operation.	-	Lectures (Example and Problems)	Assignment
Student Outcomes			
SO-(2) An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	2	Lectures (Example and Problems)	Midterm Exam
SO-(4) An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environmental, and societal context.	1, 3	Term Project	Term Project-Part 2
SO-(pc) The structure of the curriculum must provide both breadth and depth across the range of engineering topics implied by the title of the program.	1	Term Project	Term Project-Part 1

9. Weekly Teaching Plan

Week No.	Lecture	Topic	Method of Delivery
1	Sun (9-10)	Chapter 21: Theory of metal machining	Lecture
	Tue (9-10)	Chapter 21: Theory of metal machining	Lecture
	Thu (9-10)	Interactive videos- Chapter 21	Lecture
2	Sun (9-10)	Chapter 21: Theory of metal machining	Lecture
	Tue (9-10)	Chapter 21: Theory of metal machining	Lecture
	Thu (9-10)	Assignment- Chapter 21: Theory of metal machining	Lecture

DEPARTMENT OF MECHANICAL AND INDUSTRIAL ENGINEERING
MECHANICAL ENGINEERING PROGRAM, BSC.

3	Sun (9-10)	Chapter 22: Machining operations and machine tools	Lecture
	Tue (9-10)	Chapter 22: Machining operations and machine tools	Lecture
	Thu (9-10)	Chapter 22: Machining operations and machine tools	Lecture
4	Sun (9-10)	Chapter 22: Machining operations and machine tools	Lecture
	Tue (9-10)	Chapter 22: Machining operations and machine tools	Lecture
	Thu (9-10)	Chapter 22: Machining operations and machine tools	Tutorial/synchronous lecture
5	Sun (9-10)	Chapter 22: Machining operations and machine tools	Lecture
	Tue (9-10)	Chapter 22: Machining operations and machine tools	Lecture
	Thu (9-10)	Chapter 22: Machining operations and machine tools	Lecture
6	Sun (9-10)	Chapter 23: Cutting tool technology	Lecture
	Tue (9-10)	Chapter 23: Cutting tool technology	Lecture
	Thu (9-10)	Chapter 23: Cutting tool technology	Lecture
7	Sun (9-10)	Chapter 23: Cutting tool technology	Lecture
	Tue (9-10)	Chapter 23: Cutting tool technology	Lecture
	Thu (9-10)	Chapter 23: Cutting tool technology	Lecture
8	Sun (9-10)	Chapter 24: Economic and product design considerations in machining	Lecture
	Tue (9-10)	Chapter 24: Economic and product design considerations in machining	Lecture
	Thu (9-10)	Chapter 24: Economic and product design considerations in machining	Lecture
9	Sun (9-10)	Chapter 24: Economic and product design considerations in machining	Lecture
	Tue (9-10)	Chapter 24: Economic and product design considerations in machining	Lecture
	Thu (9-10)	Chapter 24: Economic and product design considerations in machining	Lecture

DEPARTMENT OF MECHANICAL AND INDUSTRIAL ENGINEERING
MECHANICAL ENGINEERING PROGRAM, BSC.

10	Sun (9-10)	Chapter 24: Economic and product design considerations in machining	Lecture
	Tue (9-10)	Chapter 24: Economic and product design considerations in machining	Lecture
	Thu (9-10)	Chapter 24: Economic and product design considerations in machining	Lecture
11	Sun (9-10)	Chapter 25: Grinding and other abrasive processes	Lecture
	Tue (9-10)	Chapter 25: Grinding and other abrasive processes	Lecture
	Thu (9-10)	Discussion boards- Chapter 25: Grinding and other abrasive processes	Lecture
12	Sun (9-10)	Chapter 25: Grinding and other abrasive processes	Lecture
	Tue (9-10)	Chapter 25: Grinding and other abrasive processes	Lecture
	Thu (9-10)	Chapter 25: Grinding and other abrasive processes	Lecture
13	Sun (9-10)	Chapter 26: Non traditional machining and thermal cutting processes	Lecture
	Tue (9-10)	Chapter 26: Non traditional machining and thermal cutting processes	Lecture
	Thu (9-10)	Chapter 26: Non traditional machining and thermal cutting processes	Lecture
14	Sun (9-10)	Chapter 26: Non traditional machining and thermal cutting processes	Lecture
	Tue (9-10)	Chapter 26: Non traditional machining and thermal cutting processes	Lecture
	Thu (9-10)	Chapter 26: Non-traditional machining and thermal cutting processes	Lecture
15	Sun (9-10)	Chapter 26: Non-traditional machining and thermal cutting processes	Lecture
	Tue (9-10)	Chapter 26: Non-traditional machining and thermal cutting processes	Lecture
	Thu (9-10)	Discussion boards- Chapter 26: Non-traditional machining and thermal cutting processes	Lecture

DEPARTMENT OF MECHANICAL AND INDUSTRIAL ENGINEERING
MECHANICAL ENGINEERING PROGRAM, BSC.

10. Grade Distribution:

Assessment	Grade	Week No.
- Midterm Exam	30%	7th Week
-Assignments (Reports /Quizzes/ Seminar / Tutorials/ Home works ….)	20%	1-16th Week
- Final Examination	50%	16th Week

Note: Make-up exams will be offered for valid reasons. It may be different from regular exams in content and format.