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

Course Syllabus

1. **Course number and name**
   IE 312, Manufacturing processes lab

2. **Credits and contact hours**
   (0+3) 1 credit hour, 3 contact hours
3. **Course type**
   Onsite learning course

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

5. **Textbook information**

   Laboratory handouts

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

6. **Specific course information**
   a. **Catalog description**
      Differences between forming and machining processes. Safe use of industrial manufacturing equipment, materials and processes. The effects of these processes on material properties and surface quality.

   b. **Prerequisites or co-requisites**
   c. Co-requisite: IE 310 Manufacturing Processes

   The course is:
   Required in the Mechanical and Industrial Engineering program

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

1. Discuss and test selected bulk deformation processes
2. Discuss and test selected sheet forming processes
3. Discuss and test selected machining processes
4. Discuss and test selected welding processes
5. Evaluate the effects of various cutting forces, stresses and related parameters or variables on the performance of metal formation/machining processes

6. Evaluate the effects of various processes on material properties and surface quality

a. 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.

3. 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): Discuss and test selected bulk deformation processes	-	Lectures (Theoretical and experimental)	Assignment and weekly reports
CO-(2):Discuss and test selected sheet forming processes	-	Lectures (Theoretical and experimental)	Assignment and weekly reports
CO-(3): Discuss and test selected machining processes	-	Lectures (Theoretical and experimental)	Assignment and weekly reports
CO-(4): Discuss and test selected welding processes	-	Lectures (Theoretical and experimental)	Assignment and weekly reports

CO-(5): Evaluate the effects of various cutting forces, stresses and related parameters or variables on the performance of metal formation/machining processes	-	Lectures (Theoretical and experimental)	Assignment and weekly reports
CO-(6): Evaluate the effects of various cutting forces, stresses and related parameters or variables on the performance of metal formation/machining processes	-	Lectures (Theoretical and experimental)	Assignment and weekly reports
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

4. Weekly Teaching Plan

Week No.	Topic	Method of Delivery
1	Casting processes	Lecture+ Experimental
2	Cutting forces in drilling processes	Lecture +Experimental
3	Spot Welding Process	Lecture +Experimental
4	Arc Welding Process	Lecture +Experimental

5	TIG welding	Lecture +Experimental
6	Blanking	Lecture +Experimental
7	Deep drawing processes	Lecture +Experimental
8	Extrusion	Lecture +Experimental
9	Drop hammer	Lecture +Experimental
10	The Rolling deformation process	Lecture + Experimental

5. Grade Distribution:

Assessment	Grade	Week No.
- Midterm Exam	30%	6th Week
-Assignments (Reports /Quizzes/ Seminar / Tutorials/ Home works ….)	30%	1-15th Week
- Final Examination	40%	15th Week

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