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

Course Syllabus

1. **Course number and name**
   ME 462 Measurements and Instrumentations Lab.

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

3. **Course type**
   Blended Learning Course (2+1)

4. **Instructor's or course coordinator's name**
   Dr. Mohammad Nasir

5. **Textbook information**
   Manual of Measurements and instrumentation Lab.

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

6. **Specific course information**
   a. **Catalog description**
      The lab contains different topics related to measurements: Principles of measurements and the analysis of experimental data, the basics of electrical measurements and sensing devices, the measurements of pressure, temperature, level, speed, torque, fluid flow and others.

   b. **Prerequisites or co-requisites**

      Co-requisite: ME 461 Engineering Instrumentation and Measurements

   c. **The course is:**
      Required in 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. Conduct linear measurements and surface finish measurements.
2. Measure and control of pressure, temperature, liquid level.
3. measure and control proximity, speed, flow rate & humidity.
4. design the monitoring & measurement devices and DAC systems .

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): Conduct linear measurements and surface finish measurements.	-	Lab experiment	Discussion boards
CO-(2): Measure and control of pressure, temperature, liquid level.	-	Lab experiment	Assignment
CO-(3): measure and control proximity, speed, flow rate & humidity	-	Lab experiment	Project
CO-(4): design the monitoring & measurement devices and DAC systems	-	Lab experiment	Final exam
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	1, 3	Term Project	Term Project-Part 2

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.	1	Term Project	Term Project-Part 1

9. Weekly Teaching Plan

Week No.	Lab	Topic	Method of Delivery
1		Linear Measurement – calipers, height gauges, depth gauges,	Laboratory experiment
2		Micrometers and block Block gauge	Laboratory experiment
3		surface texture	Laboratory experiment
4		Temperature Switches, Thermostat, curi relay, capillary tube	Laboratory experiment
5		Temperature Measurements RTD, TC, Thermistors	Laboratory experiment
6		Pressure Measurements	Laboratory experiment

7		Liquid Level Measurements	
8		Flow measurements in pipes	
9		Flow measurements V notch	
10		Speed Measurements	
11		Force measurement	
12		Proximity measurements	
13		Humidity Measurements.	

10. Grade Distribution:

Assessment	Grade	Week No.
- Midterm Exam	30%	7th Week
-Assignments (Reports /Quizzes/ Home works ….)	30%	1-16th Week
- Final Examination	40%	16th Week

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