ME 591 – Mechatronics

Hour: Lecture: 2 Hrs.　　　　Tutorial: 2 Hrs.　　　　Credit: 3.

Coordinator: Salem Haggag

Text Book:

- D. Shetty & R.A.Kolk " Mechatronics System design", PWS Publishing Company, Latest Edition

Reference Books:

- J.P. Holman, W.J Gaida, "Experimental Methods for Engineer", McGraw Hill, Latest Edition.

Specific course information

a. Introduction to Mechatronics and measurement instruments and systems-sensors and transducers temperature sensing devices. Actuating devices analog signal processing and digital circuits and systems. Analog digital and digital to analog conversion data acquisition system and applications.

b.　Prerequisite: CC 442

c. Designation: Required

Specific goals for the course:

- Design a system, process, or component to meet desired needs subject to given constraints. Analyze and evaluate alternative solutions.
- An ability to function on multidisciplinary teams.
- Use oral, written, and audio-visual techniques effectively for successful communication.
- To carry out feasibility analyses and optimization procedures in mechanical engineering projects.
- Ability to put forward the design requirements and considerations and manage the different design steps for any mechanical systems.

Course instruction outcomes:

- The students will be able to Understand the basic principles of Mechatronics and Measurement systems,
- The students will be able to Provide a review of basic electrical relations, circuit element and circuit analysis,
- The students will be able to Provide an overview of the sensors, amplifiers, conditioning circuits, and actuators, and
- The students will be able to Understand the Data Acquisition Systems (DAS).

Student outcomes:

C, D, G

Topics Covered:

- Introduction to Mechatronics and Measurement Systems
- Mechatronics Key Elements
- Introduction to Sensors and Transducers
- Position and Motion Sensors
- Temperature Sensing Devices
- Pressure, Flow, Stress, and Strain Sensors
- Actuating Devices
- Analog Signal Processing
- Digital Circuits and Systems
- Analog to Digital and Digital to Analog Conversion
- Data Acquisition Systems
- Case Studies I

Course / credit hours	Math & Basic Sciences	Engineering Topics	General Education
Mechatronics (ME 591)//3		3	