نموذج (هـ)

Summarized Course Description

Course number: ECE 446	Course name: Industrial Electronics
لغة تدريس المقرر: English	Pre-requisites: ECE 342
Credit hours: 4 (**3-2-0**)	Course level: Level – 8 or 9

Course Description وصف المقرر :

Introduction to measurements systems and basic definitions. Sensors (temperature, humidity, light, piezoelectric , hall effect, pressure, flow and strain gauges) and, signal conditioning circuits (bridge, instrumentation amplifier, scaling circuits, comparators, A/D and D/A, 555 timer). Remote control. Ultrasound systems. Measurements techniques (temperature and humidity measurements, level and displacement measurement, pressure and flow measurement). Introduction to foundation field bus. 555 timers. Power switches (power transistors, SCR, Triac, UJT, PUT). Structure and application in power control. Instrumentation amplifier. Opto electronic sensors. LCD and 7 segment interface. Ultrasonic transistors and applications. Voltage regulators (series, shunt, 3 terminals, switched mode). Power inverter and its applications. Introduction to microcontroller industrial applications.

Course objectives أهداف المقرر :

1. Introduce the principles of measurement and sensing.
2. Presents different types of conditioning circuits needed in industrial applications.
3. Introduce power electronics components.
4. Design of industrial applications using commercially available components.

Course Outcomes مخرجات التعليم:

On successful completion this course, the student should be able to:

1. Use the 555 Timer and its applications.
2. Utilize Power semiconductor devices, Thyristors (SCR, Diacs, Triacs, UJT).
3. Be familiar with some examples of industrial electronic circuits
4. Use sensors (Temperature sensors, Pressure sensors, etc.)
5. Design Instrumentation Amplifier, Comparators, Schimit Trigger.
6. Be familiar with Opto electronic sensors.
7. Design LCD and 7 segment interface.
8. Utilize ultrasonic transistors in related applications.
9. Design voltage regulators (series, shunt, 3 terminals, switched mode).
10. Understqand the operation of power inverter and its applications.
11. Be familiar with microcontroller industrial applications.

Textbook and references الكتاب المقرر والمراجع المساندة:

Text Book:

Timothy J. Maloney, Modern Industrial Electronics, Prentice Hall, 2004 5th edition. ISBN 13: 9780130156761, ISBN 10: 0130156760.

References:

Muhammad H. Rashid, Power Electronics: Circuits, Devices & Applications, Prentice Hall, 2014 4th edition, ISBN 978-0133125900.

J. Rehg, and G. Sartori, Industrial Electronics, Prentice Hall, 2006 1st edition.

Colin D. Simpson, Industrial Electronics, 1st edition, ISBN-13: 978-0024106223, ISBN-10: 0024106224