



Module (Course Syllabus) Catalogue
2022-2023

College/ Institute	Erbil Technology College	
Department	Department of Automotive Industrial Technology Engineering	
Module Name	Sensors and Transducer interfacing	
Module Code		
Semester	6	
Credits	5	
Module type	Core	
Weekly hours	4	
Weekly hours (Theory)	(2)hr Class	(86)hr Workload
Weekly hours (Practical)	(2)hr Class	(64)hr Workload
Lecturer (Theory)	Truska Khalid M. Salih	
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Lecturer (Practical)	Truska Khalid M. Salih	
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Course Book

<p>Course Description</p>	<p>The course provide the students with</p> <ul style="list-style-type: none"> • The principle of measurement, performance and characteristics of measurement devices. • The sensor types and their application • Application of transducer Interfacing
<p>Course Objectives</p>	<ul style="list-style-type: none"> • To make students aware about measuring instruments and the methods of measurement. • To make student familiar with the construction and working of different types of sensors and transducers interfacing
<p>Student's Obligation</p>	<p>Respect A student has an obligation to exhibit honesty and to respect the ethical standards of the profession in carrying out his/her academic assignments. Without limiting the application of this principle.</p> <p>Attendance The student's absence must not exceed 10%. In the event that this percentage is exceeded, the student is considered to have failed in this module.</p> <p>Questions Asking questions about unclear material is an important part of the classroom experience. It is not uncommon for students to have similar difficulties, so speaking up will help everyone understand the discussed information. Teachers can also benefit from a student's questions. By finding out what subjects are hard to understand, instructors can adjust their lectures to clear up confusing topics.</p> <p>Assignment A student must submit the assignment on Moodle app. every week and also write a report about what he/she was studied in the laboratory</p>
<p>Assessment Scheme</p>	<p>16% Mid Term (Theory and practical) 4% Quiz 40% Assignment (report, paper, homework, seminar...) 25% final practical 15% final theory</p>
<p>Specific Learning Outcome:</p>	<ol style="list-style-type: none"> 1. Select the right sensor for a given application 2. Design a basic circuit building block 3. Application of interference transducer

Course References:	<ol style="list-style-type: none"> 1. Patranabis.D, Sensors and Transducers, Wheeler publisher, 1994. 2. Jacob Fraden, “Hand Book of Modern Sensors: Physics, Designs and Application” Fourth edition, Springer, 2010 3. M. J. Usher, D. A. Keating, “Sensors and Transducers Characteristics, Applications, Instrumentation, Interfacing”, 1996. 	
Course Topics (Theory)	Week	Learning Outcome
Introduction and measurement units	1	
Characteristic of different types of sensors	2	
Principle of sensors’ operation	3	
Digital and analogue sensors	4	
Photo transistor Photocoupler Magnatic sensor	5	
Thermocouple Thermistor	6	
Switches Microphones	7	
Humidity sensor Ultrasonic sensor Pressure sensor	8	
Interfacing consideration <ul style="list-style-type: none"> ➤ Interfacing consideration-bridges ➤ Interfacing consideration-interference 	9	
Amplification and signal translation	10	
Offsetting and linearization	11	
Overall consideration; interference design examples	12	

Application of transducer Interfacing	13	
Topics	Week	Learning Outcome
D/A and A/D Converter	1	
Characteristic of sensors	2	
General purpose transducer	3	
AD590 Temperature transducer	4	
Thermocouple	5	
PT 100 Temperature Transducer	6	
Humidity Transducer	7	
Load cell	8	
Ultrasonic Transducer	9	
Pressure Transducer	10	
Interfacing basic sensor	11	
Line sensor interfacing	12	