

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information					
معلومات المادة الدراسية					
Module Title	Control and Measurements systems		Module Delivery		
Module Type	S		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar		
Module Code	ATU12061				
ECTS Credits	4				
SWL (hr/sem)	100				
Module Level		4	Semester of Delivery		8
Administering Department		ATU12	College		
Module Leader				e-mail	
Module Leader's Acad. Title		Lecturer	Module Leader's Qualification		Ph.D.
Module Tutor		Name (if available)	e-mail		E-mail
Peer Reviewer Name		Name	e-mail		E-mail
Scientific Committee Approval Date		01/06/2023	Version Number		1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	KEMG3311	Semester	5

Co-requisites module		Semester	
----------------------	--	----------	--

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	This course covers the basic use and application of sensors, transducers, mechanical and electronic measuring instruments. The theory of analogue DC and AC measuring instruments is first established which is then used to study analog electronic and digital meters. Different types of sensors and transducer are studied with their analog and digital interfacing. The use and application of different measuring instruments are also covered.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1: Describe mathematically and physically the designed measuring instruments and their use for measurements. 2: Express the integration of transducers with analog and digital hardware and use of software to achieve required output for measurement system. 3: Analyze the design of instruments and measurement of parameters using instruments. 4: Design a variety of electronic instruments and measuring systems used in different fields. 5: Use various mechanical and electrical measurements devices in field.

Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Fundamentals of Measurement Systems (8hr) Instrument Types and Performance Characteristics (12hr) Measurement Uncertainty (18hr) Calibration of Measuring Sensors and Instruments (8hr) Electrical Indicating and Test Instruments (8hr) Display, Recording, and Presentation of Measurement Data (8hr) Variable Conversion Elements(8hr) Measurement Signal Transmission(6hr)
	Mass, Force, and Torque Measurement(8hr) Temperature Measurement(6hr) Pressure Measurement (6hr) Flow Measurement(6hr) Level Measurement(6hr) Translational Motion, Vibration, and Shock Measurement (6hr)

Learning and Teaching Strategies استراتيجيات التعلم والتعلي م	
Strategies	Type something like: The main strategy that will be adopted in delivering this mod is to encourage students’ participation in the exercises, while at the same time refin and expanding their critical thinking skills. This will be achieved through class interactive tutorials and by considering types of simple experiments involving so sampling activities that are interesting to the students.

Student Workload (SWL)			
الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوع			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعي	3.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	52	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعي	3.5
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	100		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	#1, to #10,
	Assignments	2	10% (10)	2 and 12	#1, to #12
	Projects / Lab.	1	10% (10)	Continuous	All
Summative assessment	Report	1	10% (10)	Continuous	All
	Exam	2hr	10% (10)	8 and 13	#1 - #13
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المناهج الاسبوعي النظري

	Material Covered
Week 1	Fundamentals of Measurement Systems
Week 2	Instrument Types and Performance Characteristics
Week 3	Measurement Uncertainty
Week 4	Calibration of Measuring Sensors and Instruments
Week 5	Electrical Indicating and Test Instruments
Week 6	Display, Recording, and Presentation of Measurement Data
Week 7	Variable Conversion Elements
Week 8	Measurement Signal Transmission
Week 9	Intelligent Devices
Week 10	Mass, Force, and Torque Measurement
Week 11	Temperature Measurement
Week 12	Pressure Measurement
Week 13	Flow Measurement
Week 14	Level Measurement
Week 15	Translational Motion, Vibration, and Shock Measurement
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1 & 2	Lab 1: Fundamentals of Measurement Systems and instrument types

Week 3 & 4	Lab 2: Measurement Uncertainty
Week 5 & 6	Lab 3: Calibration
Week 7 & 8	Lab 4: Display, Recording, and Presentation of Measurement Data
Week 9	Lab 5: Mass, Force, and Torque Measurement
Week 10	Lab 6: Temperature Measurement
Week 11	Lab 7: Pressure Measurement
Week 12	Lab 8: Flow Measurement
Week 13	Lab 9: Level Measurement
Week 14	Lab 10: Translational Motion, Vibration, and Shock Measurement

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library
Required Texts	Measurement and Instrumentation Theory and application by Reza Langari and Alan S. Morris	-
Recommended Texts	- Mechanical Measurements, Beck With, Marangoni, Linehar, PHI Publisher - Measurement Systems: Applications & design / D.S Kumar/McGraw Hill Publishers - Mechanical Measurements /Shawney/McGraw Hill Publishers	No
Websites	https://elearning7.uokufa.edu.iq/eng/	

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				