

MODULE DESCRIPTION FORM

Module Information			
Module Title	Workshop Technology		Module Delivery
Module Type	Support		☐ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	COE121		
ECTS Credits	5		
SWL (hr/sem)	60 H/Sem		
Module Level	2	Semester of Delivery	2
Administering Department	Artificial Intelligence Eng.		College
			College of Engineering
Module Leader	Omar Chasib Kaduhm		e-mail
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Module Leader's Acad. Title	Asst. Lec.		Module Leader's Qualification
			Msc
Module Tutor	Omar Chasib Kaduhm		e-mail
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Peer Reviewer Name			e-mail
Scientific Committee Approval Date			Version Number
			1.

Relation with other Modules			
Prerequisite module	None	Semester	٤
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	By the end of this module, students will be able to: 1. Understand occupational safety principles and apply proper safety procedures within electronics workshops and fabrication environments. 2. Identify and use essential workshop tools, measuring instruments, and electronic testing equipment effectively. 3. Recognize fundamental electronic components and explain their characteristics, operation, and practical applications. 4. Design and fabricate simple electronic circuits, including PCB production and basic soldering techniques. 5. Apply modern fabrication technologies such as 3D printing and Arduino-based systems in building simple engineering projects.



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 [Signature]

Module Learning Outcomes	Knowledge	A3	A3.1: Identify the suitable electronic workshop tools and instruments such as soldering tools, hand tools, avometers, oscilloscopes, 3D printers, and Arduino boards. A3.2: Explain the correct methodology for using these tools and performing measurements and basic electronic workshop procedures. A3.3: Apply fundamental practical skills such as measuring voltage, current, and resistance, PCB design, 3D printing, and Arduino programming. A3.4: Analyze and evaluate the results obtained from measurements, PCB fabrication, Arduino applications, and 3D printing processes.	
	Skills	B1	B1.1 Use workshop tools and soldering equipment safely and effectively. B1.2 Measure electrical quantities accurately using appropriate testing instruments.	
		B2	B2.2 Develop and test basic Arduino programs for digital and analog input/output applications. B3.1 Create simple 3D models and produce them using 3D printing technology.	
	Ethics	C2	C1.1 Demonstrate professional responsibility and adherence to safety regulations in laboratory and workshop environments. C1.2 Work effectively within a team while respecting diversity and maintaining ethical engineering practices.	
Learning and Teaching Strategies				
Strategies	• Discussions • Tutorial and graphics • Brain storming • Project • Report & discussion assessment			
Student Workload (SWL)				
Structured SWL (h/sem)		Structured SWL (h/w)	4	
Unstructured SWL (h/sem)		Unstructured SWL (h/w)	4	
Total SWL (h/sem)	60			

Delivery Plan (Weekly Lab. Syllabus)		
المنهاج الاسبوعي العملي		
	Material Covered	LOs
Week 1	Occupational Safety and General Workshop Hazards	A3,B1,B2
Week 2	Personal Protective Equipment (PPE) and Fire Prevention Procedures	A3,B1,B2
Week 3	Electronic Workshop Tools and Instruments (Soldering Tools, Hand Tools, Drilling Tools)	A3,B1,B2
Week 4	The Avometer (Analog and Digital) – Measurement of Voltage, Current, and Resistance	A3,B1,B2
Week 5	Basic Electronic Components I: Resistors (Types, Color Code, Measurement)	A3,B1,B2
Week 6	Introduction to 3D Printing Technology and Its Applications in Engineering	A3,B1,B2
Week 7	3D Printer Components, Materials (PLA, ABS), and Printing Process	A3,B1,B2
Week 8	Exam	
Week 9	Designing Simple Parts for 3D Printing Using CAD Software	A3,B1,B2
Week 10	Printed Circuit Board (PCB) Design Using Proteus Software	A3,B1,B2
Week 11	PCB Fabrication Process (Etching, Drilling, Soldering)	A3,B1,B2
Week 12	Introduction to Oscilloscope and Signal Measurement	A3,B1,B2
Week 13	Introduction to Arduino Platform and Simple Practical Applications	A3,B1,B2
Week 14	Arduino Programming Basics and Digital/Analog I/O Applications	A3,B1,B2
Week 15	Interfacing Sensors and Actuators with Arduino	A3,B1,B2

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Presentation	1	10% (10)	13	LO #5, #8 and #10
	Midterm Exam	2hr	10% (10)	7	LO #1 - #7

Summative assessment	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites	https://eng.alayen.edu.iq//colleges/	

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.				