

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al-Anbiyaa College of Advanced Technologies Department of Electrical Engineering Techniques	
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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	Engineering Workshops	Module Delivery	
Module Type	Support	<input type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar	
Module Code	EETC101		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1		
Administering Department	Electrical Engineering Techniques	College	Advanced Technologies
Module Leader	Ali Mohammed Hussein Mohsen	e-mail	ali.mohsen@uowa.edu.iq
Module Leader's Acad. Title	Assistant. Prof. Dr.	Module Leader's Qualification	Ph.D.
Module Tutor	non	e-mail	<u>non</u>
Peer Reviewer Name	Dr. Ali Muslim	e-mail	ali.muslim@uowa.edu.iq
Scientific Committee Approval Date	21/1/2026	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	NA	Semester	
Co-requisites module	NA	Semester	
Module Aims, Learning Outcomes and Indicative Contents			
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
Module Aims أهداف المادة الدراسية	<p>The module aims of the Electrical and Mechanical Workshop module are as follows:</p> <ol style="list-style-type: none"> 1. To provide students with a comprehensive understanding of the principles and practices involved in electrical and mechanical workshops. 2. To familiarize students with the safety measures and precautions required in electrical and mechanical workshop environments. 3. To develop students' practical skills in using tools and equipment commonly used in electrical and mechanical workshops. 4. To introduce students to various electrical and mechanical processes, such as turning, filing, drilling, welding, and assembly. 5. To enhance students' knowledge of different types of machines, instruments, and materials used in electrical and mechanical workshops. 6. To provide hands-on experience and practical training in performing tasks related to electrical and mechanical workshop operations. 7. To develop students' problem-solving skills and critical thinking abilities through practical applications and troubleshooting scenarios. 8. To foster teamwork and effective communication skills by engaging students in group projects and collaborative workshop activities. 9. To instill an understanding of professional ethics and responsibility in the context of electrical and mechanical workshop practices. 10. To prepare students for future academic and professional pursuits in the fields of electrical engineering, mechanical engineering, and related disciplines. 		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>The module learning outcomes for the Electrical and Mechanical Workshop module are as follows:</p> <ol style="list-style-type: none"> 1. Knowledge and Understanding: <ol style="list-style-type: none"> a. Demonstrate a comprehensive understanding of the principles and concepts related to electrical and mechanical workshop operations. b. Identify and explain the safety measures and regulations applicable to electrical and mechanical 		

	<p>workshops. c. Describe the different tools, machines, and materials used in electrical and mechanical workshops.</p> <p>2. Practical Skills: a. Apply safe working practices and use appropriate personal protective equipment (PPE) in electrical and mechanical workshop environments. b. Demonstrate proficiency in using various tools and equipment for turning, filing, drilling, welding, and assembly. c. Perform practical tasks related to electrical and mechanical workshop operations accurately and efficiently. d. Apply problem-solving techniques to troubleshoot and rectify common issues encountered in electrical and mechanical workshop activities.</p> <p>3. Critical Thinking and Analysis: a. Analyze and evaluate different turning processes, instrumentation measures, and cutting tools used in the workshop. b. Assess the quality of filing processes and choose appropriate rasps and tools for different filing tasks. c. Evaluate the drilling processes and select suitable drilling tools based on specific requirements. d. Analyze welding processes, including oxy-acetylene and arc welding, and determine safety precautions and best practices.</p> <p>4. Communication and Collaboration: a. Effectively communicate and collaborate with peers in group projects and workshop activities. b. Present findings, results, and recommendations related to electrical and mechanical workshop tasks in a clear and concise manner.</p> <p>5. Professional and Ethical Responsibility: a. Demonstrate ethical behavior and responsibility in adhering to safety regulations, environmental considerations, and industry standards in electrical and mechanical workshop practices. b. Recognize the importance of continuous learning and professional development in the field of electrical and mechanical.</p>
<p>Indicative Contents المحتويات الإرشادية</p>	<p>1. Principles of Industrial Safety in Electrical Workshops[6 hrs.]</p> <ul style="list-style-type: none"> • Electrical shock protection and safety measures. • Workshop safety rules and regulations. • Personal protective equipment (PPE) and its usage. • Emergency procedures and first aid. <p>2. Tools Used in Electrical Workshops[6 hrs.]</p> <ul style="list-style-type: none"> • Introduction to common tools used in electrical workshops. • Proper handling and usage techniques for tools. • Safety precautions while using tools. • Maintenance and care of tools. <p>3. Power Sources and Characteristics[6 hrs.]</p> <ul style="list-style-type: none"> • Different types of power sources used in electrical systems. • AC and DC power, voltage, current, and frequency.

- Power generation and distribution systems.
 - Power quality and factors affecting it.
4. Multimeter and Wire Size Measurement[6 hrs.]
- Introduction to multimeters and their functions.
 - Measurement of wire sizes using a multimeter.
 - Determining wire gauge and current-carrying capacity.
 - Practical exercises on measuring wire sizes.
5. Different Types of Welding Irons and Spot Welding[6 hrs.]
- Overview of welding irons with different capacities.
 - Techniques for using different types of welding irons.
 - Spot welding process and applications.
 - Safety considerations during welding operations.
6. Electric Transformers[6 hrs.]
- Introduction to electric transformers and their principles.
 - Types of transformers (e.g., step-up, step-down, isolation).
 - Magnetic circuits and transformer cores.
 - Transformer operation and efficiency.
7. Electric Circuits and Transformer Operation[6 hrs.]
- Opening transformers and gathering information from old transformers.
 - Primary and secondary windings in transformers.
 - Measurement of wire diameters in transformer windings.
 - Basic electric circuit analysis and troubleshooting.
8. Types of Electric Motors[6 hrs.]
- Single-phase and three-phase electric motors.
 - Shaded pole motors and their applications.
 - Motor operation, speed control, and efficiency.
 - Motor protection devices and thermal overload relays
9. Electrical Installations and Wiring Techniques[6 hrs.]
- Types of electrical installations (surface and concealed).
 - Wiring methods and techniques for different installations.
 - Siemens wiring system and components
 - Drawing and interpreting electrical wiring diagrams.
10. Lighting Circuits and Control[6 hrs.]
- Designing lighting circuits with control circuits.
 - Wiring lamps in parallel and series configurations.
 - Practical exercises on wiring lighting circuits.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies

The learning and teaching strategies for the Electrical and Mechanical Workshop module may include:

1. Lectures: The module may include lectures delivered by the instructor to introduce and explain the theoretical concepts, principles, and procedures related to electrical and mechanical workshop practices. Lectures can provide an overview of the topics, highlight key points, and provide examples and case studies.
2. Practical Demonstrations: Hands-on practical demonstrations can be conducted by the instructor to show students the proper usage of tools and equipment, safety precautions, and step-by-step procedures for various workshop tasks. This allows students to observe and understand the practical aspects of the subject.
3. Laboratory Sessions: Laboratory sessions provide students with the opportunity to apply their theoretical knowledge and practice their skills in a controlled workshop environment. Students can work on assigned tasks, conduct experiments, perform measurements, and troubleshoot electrical and mechanical systems under the guidance of the instructor.
4. Group Discussions: Group discussions can be facilitated to encourage active participation and collaboration among students. Students can discuss and analyze case studies, share their experiences, and exchange ideas and perspectives on workshop-related topics. This promotes critical thinking, problem-solving, and peer learning.
5. Workshops and Work-Based Learning: Organizing workshops and incorporating work-based learning experiences can enhance the practical skills of students. This may involve site visits to real-world electrical and mechanical workshops, where students can observe professional practices, interact with industry experts, and gain hands-on experience in a professional setting.
6. Assignments and Projects: Assignments and projects can be assigned to students to further deepen their understanding of the subject matter. This may include tasks such as designing electrical installations, troubleshooting circuits, creating wiring diagrams, or conducting research on specific workshop-related topics. These assignments promote independent learning, research skills, and practical application of knowledge.
7. Assessments: Various forms of assessments can be used to evaluate students' understanding and progress. These may include written exams, practical assessments, laboratory reports, project presentations, and quizzes. Assessments provide feedback to students and allow them to demonstrate their knowledge, skills, and problem-solving abilities.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/ Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10 % (10)	6, 14	LO # 1, 2, 8, 9
	Assignments	2	10 % (10)	2, 12	LO # 3, 4, 6, 7
	Projects	1	10 % (10)	Continuous	LO # All
	Report	1	10 % (10)	14	LO # 1 - 14
Summative assessment	Midterm Exam	2 hr.	10 % (10)	7	LO # 1 - 7
	Final Exam	3 hr.	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

Material Covered	
Electrical Engineering Workshop	
Week 1	Principles of Industrial Safety in Electrical Workshops. <ul style="list-style-type: none"> • Electrical shock protection and safety measures. • Familiarization with tools used in electrical workshops. • Power sources and their characteristics. • Training on the use of a multimeter for measuring wire sizes.
Week 2	Different Types of Welding Irons (with different capacities) and Spot Welding <ul style="list-style-type: none"> • Proper usage techniques for different types of welding irons, including spot welding. • Introduction to electric transformers and their types. • Magnetic circuits in transformers.
Week 3	Electric Circuits and Transformer Operation. <ul style="list-style-type: none"> • Opening transformers and gathering information from the old transformer for primary and secondary windings.

	<ul style="list-style-type: none"> • Measurement of wire diameters for the transformer. • Types of electric motors (single-phase and three-phase), example of shaded pole motor (small water pump motor).
Week 4	<p>Electrical Installations and Types of Wiring (Surface and Concealed)</p> <ul style="list-style-type: none"> • Types of electrical installations (surface and concealed). • Concealed wiring within pipes. • Siemens wiring installation. • Drawing a lighting installation circuit with control circuit. • Practical exercise on wiring installation.
Week 5	<p>Parallel Wiring of Two Lamps with a Switch and Socket</p> <ul style="list-style-type: none"> • Drawing a circuit diagram for two lamps wired in parallel with a switch and socket. • Practical application of the circuit. • Drawing the internal connection for a fluorescent lamp circuit. • Replacing one lamp with a fluorescent lamp.
Week 6	<p>Drawing a Staircase Lamp (Two-Way Switch) Circuit</p> <ul style="list-style-type: none"> • Drawing a circuit diagram for a staircase lamp with two-way switches. • Practical application of the circuit.
Week 7	<p>Introduction to Electrical Relays, Types, Uses, Thermal Overload Relays, Time Delay Relays</p> <ul style="list-style-type: none"> • Understanding electrical relays and their types. • Applications and uses of relays. • Thermal overload relays and time delay relays.
Week 8	<p>Operation of Single-Face Motor with an Air Pick-Up and Push Button</p> <ul style="list-style-type: none"> • Operating a single-face motor using an air pick-up and push button. • Operating the motor and changing its direction of rotation using relays and a time delay.
Mechanical Engineering Workshop	
Week 9	<p>Introduction to Workshop Safety</p> <ul style="list-style-type: none"> • Discuss the importance of safety in workshop environments. • Cover safety rules, personal protective equipment (PPE), emergency procedures, and hazardous material handling.
Week 10	<p>Turning Process and Instrumentation Measures</p> <ul style="list-style-type: none"> • Explain the basics of the turning process, including lathe machine components and operations. • Discuss instrumentation measures used in turning, such as calipers, micrometers, and dial indicators.
Week 11	<p>Cutting Tools in Turning</p> <ul style="list-style-type: none"> • Introduce different types of cutting tools used in turning, including lathe tools, inserts, and tool holders. • Explain tool geometry, selection criteria, and tool life considerations.
Week 12	<p>Practical Exercise - Horizontal Turning</p> <ul style="list-style-type: none"> • Demonstrate horizontal turning on a lathe machine. • Guide students in practicing turning operations, such as facing, turning, and grooving, using appropriate cutting tools.
Week 13	<p>Turning Different Shapes</p> <ul style="list-style-type: none"> • Teach students how to turn different shapes, such as tapers, chamfers, and threads, on the lathe machine. • Cover techniques for creating internal and external threads and other complex shapes.

Week 14	Introduction to Filing Process <ul style="list-style-type: none"> Introduce the filing process and its applications in workshop activities. Explain different types of files and their uses, including hand files, needle files, and rasp files.
Week 15	Practical Exercise - Filing Process <ul style="list-style-type: none"> Guide students in practicing filing techniques on various materials. Demonstrate the correct filing motions, angles, and finishing methods for different surfaces and edges.
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	J. Smith and E. Johnson, "Electrical Engineering Workshop: Theory and Practice," .	Yes
Recommended Texts	D. Wilson and S. Thompson, "Mechanical Engineering Workshop: Principles and Applications".	No

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.

استاذ المادة

Assist. Prof. Dr. Ali M Mohsen

التاريخ: 2026 / 1 / 21

رئيس القسم/ وكالة

Assist. Prof. Dr. Ali Basem

التاريخ : 2026/1/21