

# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

<b>Module Information</b> معلومات المادة الدراسية			
<b>Module Title</b>	<b>Engineering Workshops</b>		<b>Module Delivery</b>
<b>Module Type</b>	<b>S</b>		<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
<b>Module Code</b>	<b>UOMU0202013</b>		
<b>ECTS Credits</b>	<b>6</b>		
<b>SWL (hr/sem)</b>	<b>150</b>		
<b>Module Level</b>		<b>1</b>	<b>Semester of Delivery</b>
<b>Administering Department</b>		<b>CET</b>	<b>College</b>
<b>Module Leader</b>	Semaa Mohammad Jwad		<b>e-mail</b>
<b>Module Leader's Acad. Title</b>		<b>Module Leader's Qualification</b>	
<b>Module Tutor</b>			<b>e-mail</b>
<b>Peer Reviewer Name</b>		<b>e-mail</b>	
<b>Scientific Committee Approval Date</b>		<b>1/10/2025</b>	<b>Version Number</b>
			<b>1.0</b>

<b>Relation with other Modules</b> العلاقة مع المواد الدراسية الأخرى			
<b>Prerequisite module</b>	None		<b>Semester</b>
<b>Co-requisites module</b>	None		<b>Semester</b>

## Module Aims, Learning Outcomes and Indicative Contents

### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<b>Module Aims</b> أهداف المادة الدراسية	<p>The objective of studying Electrical, Electronic, and Mechanical workshops is to enable students to acquire the necessary skills and knowledge to deal with electrical, electronic, and mechanical systems and devices. This subject aims to teach students how to diagnose faults, repair systems, and perform maintenance on these systems and devices.</p> <p>By studying Electrical, Electronic, and Mechanical workshops, students can understand the principles of electricity, electronics, and mechanics, as well as how to read engineering diagrams and use various tools and equipment to work on them. They also learn how to diagnose faults, repair them, and properly maintain different devices in a safe manner.</p> <p>In general, studying this subject aims to prepare students to become skilled technicians in the field of electrical, electronic, and mechanical engineering. They can work in areas such as industrial maintenance and repair, electrical and electronic installations, automation and robotics, medical devices, and other modern technologies</p>
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	<p>The learning outcomes of studying Electrical, Electronic, and Mechanical workshops include:</p> <ol style="list-style-type: none"> <li>1. Acquisition of diagnostic and repair skills: Students learn how to analyze problems, identify faults in electrical, electronic, and mechanical systems, and implement appropriate repair procedures.</li> <li>2. Understanding of electrical, electronic, and mechanical principles: Students gain knowledge of engineering and technical fundamentals related to electricity, electronics, and mechanics, including reading engineering diagrams and practical understanding of circuits, electronic devices, and mechanical components.</li> <li>3. Development of practical work skills: Students have the opportunity to learn hands-on and practice using various tools and equipment used in electrical, electronic, and mechanical workshops.</li> <li>4. Ability to perform preventive maintenance: Students learn how to maintain systems and devices and carry out preventive maintenance to ensure proper and sustainable performance.</li> <li>5. Enhancement of teamwork and communication skills: Studying Electrical, Electronic, and Mechanical workshops promotes collaboration among students and the ability to work as a team in problem-solving and executing practical projects.</li> <li>6. Knowledge and Understanding: 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 workshops.</li> </ol>

	<p>7. Describe the different tools, machines, and materials used in electrical and mechanical workshops.</p> <p>8. 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.</p> <p>9. 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>10. 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.</p> <p>11. 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>12. 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>13. 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</p> <p>14. Overall, studying this subject prepares students to enter the job market in various technical and engineering fields, such as industrial maintenance, electrical and electronic installations, automation and robotics, medical devices, and other modern technologies.</p>
<p><b>Indicative Contents</b></p> <p>المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p><b>Part A – Electronic workshop</b></p> <p>In this part, we will learn how to check the elements in the electrical circuits, what is the way each element works, how to check it, and find out what is damaged and replace it. <b>[14 hrs.]</b></p> <p>We will also talk about conductors and semiconductors <b>[10 hrs.]</b></p> <p><b>Part B – Electrical workshop</b></p> <ol style="list-style-type: none"> <li>1. Principles of Industrial Safety in Electrical Workshops <b>[4 hrs.]</b></li> <li>2. Tools Used in Electrical Workshops <b>[5 hrs.]</b></li> <li>3. Power Sources and Characteristics <b>[5 hrs.]</b></li> <li>4. Multimeter and Wire Size Measurement <b>[5 hrs.]</b></li> </ol> <p><b>Part C – Mechanical workshop</b></p> <ol style="list-style-type: none"> <li>1. Different Types of Welding Irons and Spot Welding <b>[4 hrs.]</b></li> <li>2. Electric Transformers <b>[5 hrs.]</b></li> <li>3. Electric Circuits and Transformer Operation <b>[5 hrs.]</b></li> <li>4. Types of Electric Motors <b>[5 hrs.]</b></li> </ol>

<b>Learning and Teaching Strategies</b> <b>استراتيجيات التعلم والتعليم</b>	
<b>Strategies</b>	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through labs, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

<b>Student Workload (SWL)</b> <b>الحمل الدراسي للطالب موزع على 15 أسبوع</b>			
<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	64	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	4.26
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.73
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	150		

<b>Module Evaluation</b> <b>تقييم المادة الدراسية</b>					
		<b>Time/Number</b>	<b>Weight (Marks)</b>	<b>Week Due</b>	<b>Relevant Learning Outcome</b>
<b>Formative assessment</b>	<b>Quizzes</b>	2	10% (10)	5, 11	LO #1-4, LO #8-11
	<b>Assignments</b>	1	5% (10)	12	LO # 1-14
	<b>Projects / Lab.</b>	2	20% (10)	Continuous	ALL
	<b>Report</b>	1	5% (10)	13	ALL
<b>Summative assessment</b>	<b>Midterm Exam</b>	4 hr	10% (10)	8	LO # 1-7
	<b>Final Exam</b>	4hr	50% (50)	16	All
<b>Total assessment</b>		100% (100 Marks)			

<h2 style="text-align: center;">Delivery Plan (Weekly Syllabus)</h2> <h3 style="text-align: center;">المنهاج الاسبوعي للمختبر</h3> <h3 style="text-align: center;">Electronic, Electrical , Mechanical Workshops</h3>	
	<b>Material Covered</b>
<b>Week 1,2</b>	<ul style="list-style-type: none"> <li>❖ Use different measuring devices in the workshop</li> <li>❖ 1- Principles of Industrial Safety in Electrical Workshops.</li> <li>2- Different Types of Welding Irons (with different capacities) and Spot Welding</li> </ul>
<b>Week 3,4</b>	<ul style="list-style-type: none"> <li>❖ How to use irons, types of soldering used, and how to use absorbent soldering irons</li> <li>❖ 1- Electric Circuits and Transformer Operation.</li> <li>2- Electrical Installations and Types of Wiring (Surface and Concealed)</li> </ul>
<b>Week 5,6,7</b>	<ul style="list-style-type: none"> <li>❖ Electronic components (resistor , inductors , capacitors)</li> <li>❖ 1- ONE LAMP CONTROLLED BY ONE SWITCH</li> <li>2- Parallel Wiring of Two Lamps with a Switch and Socket</li> </ul>
<b>Week 8</b>	<ul style="list-style-type: none"> <li>❖ Midterm Exam</li> </ul>
<b>Week 9 ,10</b>	<p style="text-align: center;">Electronic components(resistor , inductors , capacitors)</p> <p style="text-align: center;">Drawing a Staircase Lamp (Two-Way Switch) Circuit</p>
<b>Week 11,12</b>	<ul style="list-style-type: none"> <li>❖ Electronic components (Battery , jumper, fuse, push button, switch, rotary switch)</li> <li>❖ 1-Introduction to Workshop Safety</li> <li>2- Turning Process and Instrumentation Measures</li> </ul>
<b>Week 13,14</b>	<ul style="list-style-type: none"> <li>❖ Electronic components (Diode , Transistor, Transformer)</li> <li>❖ 1- Cutting Tools</li> <li>2-Practical Exercise - Horizontal Turning</li> </ul>
<b>Week 15</b>	<ul style="list-style-type: none"> <li>❖ using bread board and Vero board, Building a Circuit on Breadboard, Building a Circuit on Vero board</li> <li>❖ 1- Turning Different Shapes</li> <li>2- Introduction to Filing Process ( practical Exercise)</li> </ul>
<b>Week 16</b>	<b>Final Exam</b>

<b>Learning and Teaching Resources</b> <b>مصادر التعلم والتدریس</b>		
	<b>Text</b>	<b>Available in the Library?</b>
<b>Required Texts</b>	1-Encyclopedia of Electronic Components Volume 1 (Charles Platt). 2- J. Smith and E. Johnson, "Electrical Engineering Workshop:Theory and Practice	Yes / online
<b>Recommended Texts</b>		No
<b>Websites</b>		

<b>Grading Scheme</b> <b>مخطط الدرجات</b>				
<b>Group</b>	<b>Grade</b>	<b>التقدير</b>	<b>Marks (%)</b>	<b>Definition</b>
<b>Success Group (50 - 100)</b>	<b>A - Excellent</b>	امتياز	90 - 100	Outstanding Performance
	<b>B - Very Good</b>	جيد جدا	80 - 89	Above average with some errors
	<b>C - Good</b>	جيد	70 - 79	Sound work with notable errors
	<b>D - Satisfactory</b>	متوسط	60 - 69	Fair but with major shortcomings
	<b>E - Sufficient</b>	مقبول	50 - 59	Work meets minimum criteria
<b>Fail Group (0 - 49)</b>	<b>FX – Fail</b>	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	<b>F – Fail</b>	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.