



جامعة البيان



## Academic Program Description Bologna path

Al-Bayan University

# Technical College of Engineering

2024-2023

Department of power mechanics  
Engineering techniques

2024/3/28

<b>University</b>	Al-Bayan University
<b>Faculty/Institute</b>	Technical College of Engineering
<b>Scientific Department</b>	Department power Mechanics Engineering techniques
<b>Academic/Professional Program Name</b>	Bachelor of Science in power Mechanics engineering techniques
<b>Final Certificate Name</b>	Bachelor in power mechanics Engineering techniques
<b>Academic System</b>	Bologna path
<b>Description Preparation Date</b>	01-03-2024
<b>File Completion Date</b>	28-03-2024

#### Head of Department

**Signe**

**Name  
Date**

Dr.Sami Khadim Hassan

28-3-2024

#### Scientific Associate

**Signe**

**Name**

Dr. Nouf Thabit  
Mahmood

**Date**

28-3-2024

This File has been checked by Quality Assurance and University Performance  
Director of Quality Assurance and University Performance Department

#### Head of Quality Assurance Section

**Signe**

**Name  
Date**

Dr. Maryam Qutaiba Abdalrazak

28-3-2024

## 1. Program Vision

The core vision of the department is to equip students to become proficient applied engineers in the field of Mechanical Power Engineering Techniques (PMET). Additionally, it aims to provide an academic environment and community services that keep pace with the rapid advancements in the field of mechanics, offering the latest academic programs to match the scientific departments equivalent to the PMET Department in reputable Arab and international universities.

## 2. Program Mission

The mission of the PMET Department lies in providing an educational, technological, and research-oriented environment for students through modern educational programs and curricula that highlight the importance of this specialization. It also aims to deliver scientific and practical curricula, as well as advanced applied research, to simulate the needs of the job market. The department strives to engage with industrial institutions, contribute to enhancing service realities on both international and regional levels, and foster collaboration with industrial enterprises.

## 3. Program Objectives

- Graduating an engineering staff equipped with both scientific and practical skills in diagnosing and repairing faults in systems.
- Preparing competent engineers capable of keeping pace with the rapid developments in the field of mechanics and imparting the necessary skills to develop and update medical devices.
- Designing, installing, operating, and maintaining various thermal and electromechanical systems.
- Contributing to and supervising the continuity, maintenance, and calibration of various refrigeration and air conditioning systems.
- Designing, developing, and exploring alternatives for some components related to systems.
- Scheduling and programming periodic maintenance tasks.

## 4. The Program Accreditation

N/A

## 5. Other External Influences

N/A

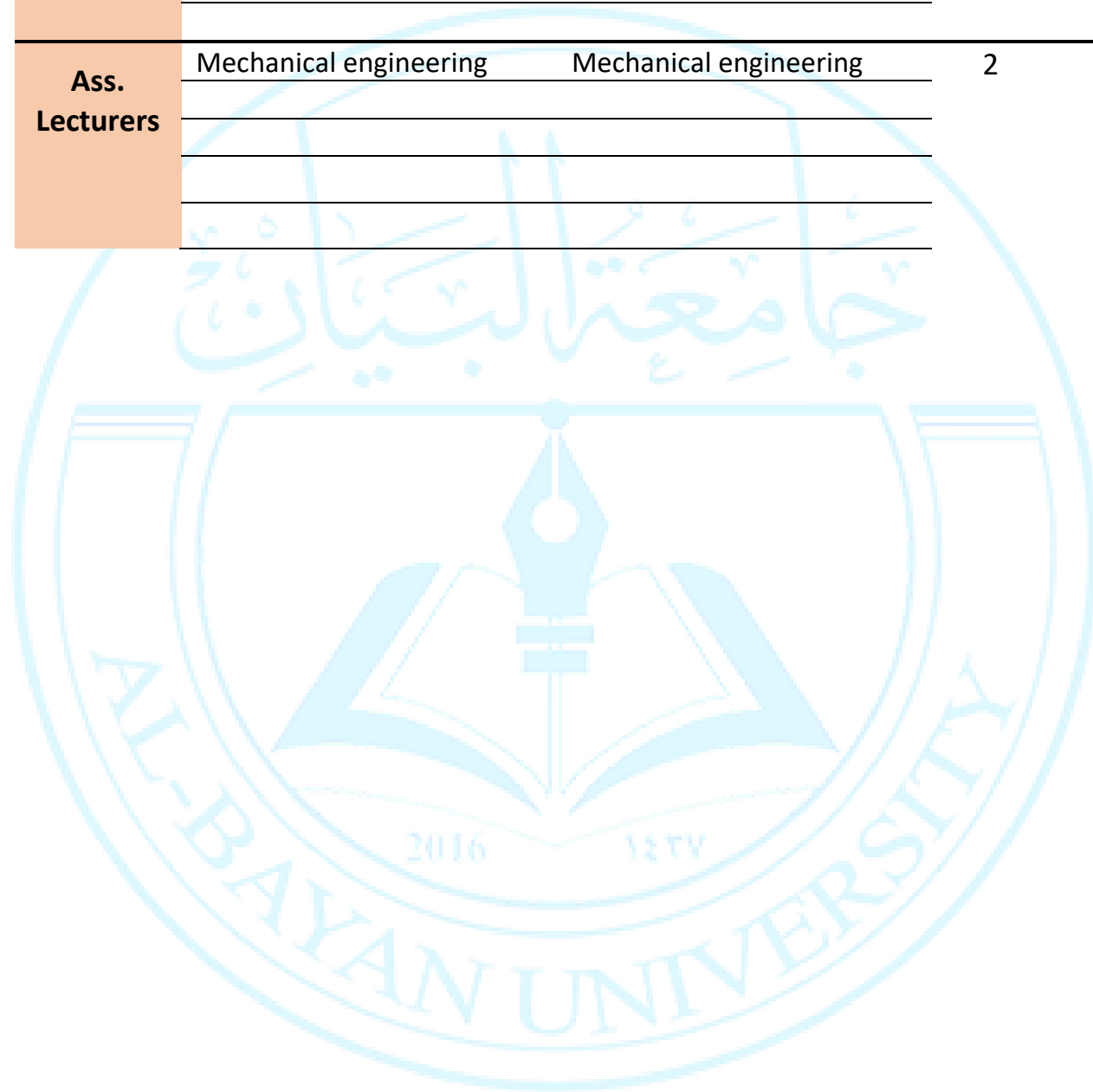
## 6. Program Description

Year / Level	Course Code	Course Name	Credit Hours	
			Theoretical	Practical
1 <sup>st</sup>		Bologna path		
2 <sup>nd</sup>		Bologna path		

## 7. Faculty Members

Titles	Specialization		Numbers	
	General	Special	Staff	Lec
Prof	Mechanical engineering	Mechanical engineering	1	
Ass. Prof	Mechanical engineering	Mechanical engineering	1	

<b>Lecturers</b>	Mechanical engineering	Mechanical engineering	3
	Electronics engineering	Electronics engineering	
	Nuclear engineering	Nuclear engineering	
<b>Ass. Lecturers</b>	Mechanical engineering	Mechanical engineering	2



# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	<b>Computer Principles</b>		Module Delivery
Module Type	Basic		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	NTU 101		
ECTS Credits	8		
SWL (hr/sem)	150		
Module Level	1	Semester of Deliver	
Administering Department	PM	College	
Module Leader		e-mail	
Module Leader's Acad. Title	Ass.Lecturer	Module Leader's Qualification	M.S.C.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/2/2024	Version Number	1.0

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

## Module Aims, Learning Outcomes and Indicative Contents

### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p><b>Module Objectives</b> أهداف المادة الدراسية</p>	<ol style="list-style-type: none"><li>1. To learn about computer and its characteristics and features, Comparing different types of computers.</li><li>2. To learn about the computer's Hardware, Identify the factors that affect the computer's performance, Learn about the numerical systems and data representation.</li><li>3. Learn about the computer's Hardware(2), CPU, Memory</li><li>4. Learn about operating system software</li><li>5. Learn about the utility software programming languages, application software.</li><li>6. Learn the Microsoft office2020(Word, Excel, Powerpoint)</li></ol>
<p><b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"><li>1. Demonstrates knowledge of the Introduction to computer, computer component (hardware, software)</li><li>2. Demonstrates knowledge of the Operating system (windows),</li><li>3. Able to install windows (formatting)</li><li>4. Able to use the following items: Start menu, desktop, taskbar, mouse applications, My computer, My documents, drivers, folders, files, cut, copy, paste, shortcut, right click menu, Setting menu, control panel</li><li>5. Able to use Microsoft word 2020, Microsoft excel 2020, Microsoft power point 2020</li><li>6. Able to use Internet , Internet explorer, starting, menus of internet explorer, E-Mail: Yahoo, Hotmail, google, yahoo, search information</li></ol>
<p><b>Indicative Contents</b> المحتويات الإرشادية</p>	<p>After studying this chapter, the student is expected to master the following knowledge and skills:</p> <ol style="list-style-type: none"><li>1. To know what is the computer, distinguish different computer properties, list the computers features and capabilities, compare between the different types of computers [11 hrs]</li><li>2. Classifies the computer's hardware components to internal and external [11 hrs]</li><li>3. To knows the CPU, types of memory modules, learn about input and output units, Learn about storage media, learn the components of the motherboard [11 hrs]</li><li>4. Distinguish between different types of software, differentiate between types of system software, distinguish between types of operating</li></ol>

	<p>systems, count the basic functions of the operating system.[12 hrs]</p> <p>5. Learn about different types of utility software, learn about the most important utility software and its functions, distinguish between different types of programming languages, differentiate between the types of different programming languages Compilers, classifies different programming languages, classifies application software, learn about the most important application software [12 hrs]</p> <p>6. Learn to use the Microsoft office2020 [15hrs]</p> <ul style="list-style-type: none"> <li>• Word [5 hrs]</li> <li>• Excel [5 hrs]</li> <li>• Powerpoint [5 hrs]</li> </ul> <p>Revision and quiz [8hrs]</p>
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### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<b>Strategies</b>	<p>The major approach used to offer this module will be to promote student engagement in the exercises while also enhancing and broadening their critical thinking abilities. This will be accomplished through lectures, interactive tutorials, and the consideration of various sorts of easy experiments incorporating some engaging sampling exercises for the students.</p>
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### Student Workload (SWL)

#### الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	63	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	7
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	<b>150</b>		

### Module Evaluation

#### تقييم المادة الدراسية

	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
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Formative assessment	Quizzes	3	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	20% (20)	Continuous	All
	Report				
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

<b>Delivery Plan (Weekly Syllabus)</b> المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Demonstrates knowledge of the Introduction to computer, computer component (hardware, software)
Week 2	<ul style="list-style-type: none"> <li>• Demonstrates knowledge of the Operating system (windows),</li> <li>• Able to install windows (formatting)</li> </ul>
Week 3 &4	Able to use the following items: Start menu, desktop, taskbar, mouse applications, My computer, My documents, drivers, folders, files, cut, copy, paste, shortcut, right click menu, Setting menu, control panel
Week 5&6	Able to use Microsoft word 2020
Week 7&8 & 9	Able to use Microsoft excel 2020
Week 10&11	Able to use Microsoft power point 2020
Week 12	Able to use Internet , Internet explorer, starting, menus of internet explorer
Week 13	Able to create and use E-Mail: Yahoo, Hotmail
Week 14	<ul style="list-style-type: none"> <li>• Able to utilize Search engines</li> <li>• Able to use google, yahoo, search information</li> </ul>
Week 15	<b>Preparatory week before the final Exam</b>

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	<b>Material Covered</b>
<b>Week 5&amp;6</b>	Able to use Microsoft word 2020
<b>Week 7&amp; 8&amp; 9</b>	Able to use Microsoft excel 2020
<b>Week 10&amp;11</b>	Able to use Microsoft power point 2020

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
<b>Required Texts</b>	Introduction to Computer Skills For first year students, Bisha University  Computer Science Principles: The Foundational Concepts of Computer Science - For AP® Computer Science Principles 2020th Edition , <a href="#">Mr. Kevin P Hare</a> (Author), <a href="#">Pindar Van Arman</a> (Foreword)	Yes
<b>Recommended Texts</b>	<a href="#">MICROSOFT ACCESS, EXCEL &amp; POWER BI FOR BEGINNERS &amp; POWER USERS, Tech Demystified</a> (Author)	No
<b>Websites</b>	<a href="https://www.just.edu.jo/~mqais/CIS99/PDF/Ch.01_Introduction_%20to_computers.pdf">https://www.just.edu.jo/~mqais/CIS99/PDF/Ch.01_Introduction_%20to_computers.pdf</a>	

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
<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.

## MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
Module Title	Electrical technology		Module Delivery
Module Type	Basic		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Tutorial <input checked="" type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	TEMO 101		
ECTS Credits	4		
SWL (hr/sem)	150		
Module Level	1	Semester of Deliver	
Administering Department	PM and AM	College	
Module Leader	Safwan Assaf Hamoodi	e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	1/6/2023	Version Number	1.0

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

## Module Aims, Learning Outcomes and Indicative Contents

<b>Module Objectives</b>	<p>Preparing the student to study the different calculations in alternating current and direct current circuits, and to get acquainted with the various theories to study these calculations.</p> <p>Understanding electrical principles and concepts: The module aims to provide students with a clear understanding of electrical principles and concepts, including voltage, current, resistance, and power. Students will learn how these concepts are applied in electrical circuits and systems.</p> <p>Developing practical skills in electrical measurements and testing: The module aims to equip students with practical skills in using electrical instruments and equipment for measurements and testing. Students will learn how to perform accurate measurements, interpret the results, and troubleshoot electrical systems.</p> <p>Applying knowledge to electrical machines and power systems: The module aims to enable students to apply their knowledge of electrical technology to the operation and maintenance of electrical machines, such as motors and generators. Students will also gain an understanding of power systems and their components, including power generation, transmission, and distribution.</p>
<b>Module Learning Outcomes</b>	<ol style="list-style-type: none"> <li>1. Understanding electrical circuit theory: Students will gain knowledge of fundamental electrical circuit theory, including concepts such as voltage, current, resistance, and power. They will be able to apply this understanding to analyze and solve basic electrical circuits.</li> <li>2. Proficiency in electrical measurements and testing: Students will develop skills in using electrical instruments and equipment to measure and test electrical parameters. They will learn how to interpret measurement results and troubleshoot electrical systems to identify faults.</li> <li>3. Application of electrical machines and power systems: Students will learn about electrical machines, such as motors and generators, and their operating principles. They will understand the characteristics and applications of these machines. Additionally, they will gain a basic understanding of power systems, including power generation, transmission, and distribution.</li> <li>4.</li> </ol>
<b>Indicative Contents</b>	<p><u>Part A -</u></p> <ol style="list-style-type: none"> <li>1. Basic Electrical Principles, Electrical Measurements and Instruments [20 hrs]</li> <li>2. Electrical Machines, Power Systems, Electrical Safety, Direct current circuit [20 hrs]</li> <li>3. Revision and quiz [1.5 hrs]</li> </ol> <p><u>Part B –</u></p>

	Alternating current circuit, Circuit Theory, Analogue Electronics Control Systems [20 hrs] 4. , Renewable Energy, Troubleshooting and Maintenance [10 hrs] Revision and quiz [1.5 hrs]
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<b>Learning and Teaching Strategies</b>	
<b>Strategies</b>	<ol style="list-style-type: none"> <li>Active Engagement: Actively engage with the subject matter by participating in class discussions</li> <li>Practice Problem Solving: Electrical Technology involves problem-solving skills.</li> <li>Hands-on Experience: Gain practical experience by participating in laboratory sessions and hands-on projects.</li> <li>Collaborative Learning: Engage in group discussions and study sessions with classmates.</li> <li>Utilize Resources: Take advantage of resources such as textbooks, online tutorials, video lectures, and educational websites to supplement your learning.</li> <li>Time Management: Create a study schedule and allocate dedicated time for studying Electrical Technology.</li> <li>Review and Recap: Regularly review previously covered topics to reinforce your understanding and retain information.</li> </ol>

<b>Student Workload (SWL)</b>			
<b>Structured SWL (h/sem)</b> خلال الفصل للطالب الحمل الدراسي المنتظم	<b>78</b>	<b>Structured SWL (h/w)</b> للطالب أسبوعيا الحمل الدراسي المنتظم	<b>5</b>
<b>Unstructured SWL (h/sem)</b> خلال الفصل الحمل الدراسي غير المنتظم للطالب	<b>72</b>	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	<b>5</b>
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	<b>150</b>		

<b>Module Evaluation</b>					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<b>Formative assessment</b>	<b>Quizzes</b>	<b>4</b>	<b>10% (10)</b>	5 and 10	LO #1, #2 and #10, #11
	<b>Assignments</b>	<b>6</b>	<b>10% (10)</b>	2 and 12	LO #3, #4 and #6, #7
	<b>Projects / Lab.</b>	<b>1</b>	<b>10% (10)</b>	Continuous	All
	<b>Report</b>	<b>1</b>	<b>10% (10)</b>	13	LO #5, #8 and #10
<b>Summative assessment</b>	<b>Midterm Exam</b>	<b>2hr.</b>	<b>10% (10)</b>	7	LO #1 - #7
	<b>Final Exam</b>	<b>2hr.</b>	<b>50% (50)</b>	16	All
<b>Total assessment</b>			<b>100% (100 Marks)</b>		

### Delivery Plan (Weekly Syllabus)

	<b>Material Covered</b>
<b>Week 1</b>	Symbols and abbreviations, electric circuit and its elements
<b>Week 2</b>	The direct-current network (Kerchief's law & their use in network analysis)
<b>Week 3</b>	Conversion of delta-connected resistance into an equivalent Wye connection & vice versa
<b>Week 4</b>	Power sources connected in parallel, node voltage method
<b>Week 5</b>	Loop current method.
<b>Week 6</b>	Super position method.
<b>Week 7</b>	Thevenin's theorem and Norton's theorem.
<b>Week 8</b>	Maximum power transfer.
<b>Week 9</b>	Reciprocity theorem
<b>Week 10</b>	Sinusoidal excitation, average, effective values and their steady-state analysis
<b>Week 11</b>	Generation of alternating current, sinusoidal current
<b>Week 12</b>	The mean values of current and voltage
<b>Week 13</b>	Complex Frequency, s-Plane, Poles and Zeros, Response Function, Bode Plots
<b>Week 14</b>	Frequency Response of Series/Parallel Resonances, High-Q Circuits
<b>Week 15</b>	Mutual Inductance, Linear and Ideal Transformers, Circuits with Mutual Inductance
<b>Week 16</b>	Final Examination

### Delivery Plan (Weekly Lab. Syllabus)

	<b>Material Covered</b>
<b>Week 1</b>	Lab 1: Introduction to Agilent VEE and PSPICE
<b>Week 2</b>	Lab 2: Kirchhoff's Laws
<b>Week 3</b>	Lab 3: series circuit
<b>Week 4</b>	Lab 4: Parallel circuit
<b>Week 5</b>	Lab 5: Thévenin's Theorem.
<b>Week 6</b>	Lab 6: Norton's Theorem.
<b>Week 7</b>	Lab 7: Y-connection delta-connection
<b>Week 8</b>	Lab 8: Second-Order Transient Responses
<b>Week 9</b>	Lab 9: Frequency Response of RC Circuits
<b>Week 11</b>	Lab 10: Frequency Response of RLC Circuits
<b>Week 12</b>	Lab 11: Filters
<b>Week 13</b>	Lab 12: AC circuit
<b>Week 14</b>	Lab 13: sine wave form
<b>Week 15</b>	Lab 14: Review

Learning and Teaching Resources		
	Text	Available in the Library?
Required Texts	<ol style="list-style-type: none"> <li>"Electric Machinery and Power System Fundamentals" by Stephen J. Chapman</li> <li>"Electricity and Electronics for HVAC" by Rex Miller and Mark R. Miller</li> <li>"Principles of Electric Machines and Power Electronics" by P.C. Sen</li> <li>"Electrical Power Systems: Design and Analysis" by Mohamed E. El-Hawary</li> </ol>	
Recommended Texts	<ol style="list-style-type: none"> <li>"Electrical Wiring Residential" by Ray C. Mullin and Phil Simmons</li> <li>"Industrial Electrical Troubleshooting" by Lynn Lundquist</li> <li>"Electrical Safety Handbook" by John Cadick, Mary Capelli - Schellpfeffer, and Dennis Neitzel</li> <li>"Digital Control Systems" by Benjamin C. Kuo</li> <li>"Electromechanical Energy Conversion" by David J. Braun</li> </ol>	
Websites	<ul style="list-style-type: none"> <li>(<a href="http://www.allaboutcircuits.com">www.allaboutcircuits.com</a>)</li> <li>(<a href="http://www.electrical4u.com">www.electrical4u.com</a>)</li> <li>(<a href="http://www.khanacademy.org">www.khanacademy.org</a>)</li> </ul>	

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

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## Module 1

Code	Course/Module Title	ECTS	Semester
	<b>Electrical technology</b>	<b>6</b>	<b>1</b>
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/sem)
<b>2</b>	<b>3</b>	<b>78</b>	<b>72</b>
Description			
<p>Electrical technology encompasses the study of electrical systems, circuits, devices, and their applications. It focuses on understanding the principles and theories behind electricity, electrical power generation, transmission, and distribution. This field involves the design, installation, maintenance, and troubleshooting of electrical systems in various industries, such as power generation, manufacturing, telecommunications, and transportation. Electrical technology professionals work with electrical equipment, control systems, and renewable energy technologies. They are skilled in analyzing electrical circuits, performing measurements, and ensuring safety and compliance with electrical codes and standards. A strong foundation in electrical technology enables individuals to contribute to the development and advancement of electrical systems, energy efficiency, and the integration of new technologies in the field.</p>			



# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	<b>Engineering Mechanics/ Dynamics</b>		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	PM 101		
ECTS Credits	8		
SWL (hr/sem)	200		
Module Level	1	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader		e-mail	E-mail
Module Leader's Acad. Title	Assist. Professor	Module Leader's Qualification	Ph.D.
Module Tutor		e-mail	E-mail
Peer Reviewer Name		e-mail	E-mail
Scientific Committee Approval Date	June /08/2023	Version Number	1.0

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

### Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p><b>Module Objectives</b> أهداف المادة الدراسية</p>	<p>Module Objectives for Engineering Mechanics/Dynamics:</p> <ol style="list-style-type: none"><li>1. Understand the fundamental concepts and principles of dynamics, including motion, forces, and acceleration.</li><li>2. Apply kinematic equations to analyze the motion of particles and rigid bodies in various scenarios.</li><li>3. Determine the relationship between forces, mass, and acceleration using Newton's laws of motion.</li><li>4. Apply the principles of work and energy to analyze and solve dynamic problems.</li><li>5. Analyze and calculate linear and angular momentum, and apply the principle of impulse and momentum to dynamic systems.</li><li>6. Understand and apply the principles of vibrations and oscillations in mechanical systems.</li><li>7. Apply principles of balancing rotating masses and vibrations to ensure smooth operation of machinery.</li><li>8. Analyze multi-degree of freedom systems and determine their natural frequencies and mode shapes.</li><li>9. Apply dynamic principles to real-world engineering problems and systems.</li><li>10. Develop critical thinking and problem-solving skills in the context of engineering dynamics.</li><li>11. Communicate effectively, both orally and in writing, to present and explain the analysis, results, and solutions of dynamic problems.</li></ol> <p>By achieving these module objectives, students will gain a comprehensive understanding of the principles and applications of engineering dynamics. They will be able to analyze and solve problems related to motion, forces, and vibrations in mechanical systems, and apply their knowledge to real-world engineering scenarios. They will also develop skills in critical thinking, problem-solving, and effective communication, which are valuable in the field of engineering.</p>
<p><b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية</p>	<p>Module Learning Outcomes for Engineering Mechanics/Dynamics:</p> <ol style="list-style-type: none"><li>1. Demonstrate a thorough understanding of the fundamental concepts and principles of dynamics, including motion, forces, and acceleration.</li><li>2. Apply kinematic equations to analyze the motion of particles and rigid bodies in different scenarios and determine their velocities and accelerations.</li><li>3. Analyze and calculate the forces and moments acting on particles and rigid bodies in dynamic situations, considering the principles of equilibrium.</li><li>4. Apply Newton's laws of motion to determine the relationship between forces, mass, and acceleration, and solve dynamic problems using these principles.</li><li>5. Utilize the principles of work and energy to analyze and solve dynamic problems, calculating mechanical work, kinetic energy, and potential energy.</li><li>6. Apply the principles of impulse and momentum to analyze the motion and collision of particles and rigid bodies, and solve related problems.</li><li>7. Understand the principles of vibrations and oscillations in mechanical systems, and analyze their behavior, natural frequencies, and damping effects.</li><li>8. Analyze three-dimensional motion of rigid bodies, applying Euler's equations of motion to determine their rotational and translational behavior.</li></ol>

	<ol style="list-style-type: none"> <li>9. Understand gyroscopic motion and its applications in stability and control systems, including precession and gyroscope stabilization.</li> <li>10. Apply the principles of balancing rotating masses to minimize vibrations and ensure smooth operation of rotating machinery.</li> <li>11. Analyze multi-degree of freedom systems, determine their natural frequencies and mode shapes, and understand their response to dynamic loading.</li> <li>12. Apply the principles and techniques learned in dynamics to solve real-world engineering problems, such as analyzing the motion and forces in mechanical systems.</li> <li>13. Demonstrate critical thinking and problem-solving skills by effectively applying dynamic principles to analyze and solve complex engineering problems.</li> <li>14. Communicate effectively, both orally and in writing, to present and explain the analysis, results, and solutions of dynamics problems.</li> </ol> <p>By achieving these module learning outcomes, students will have a solid foundation in engineering dynamics, enabling them to analyze and solve problems related to motion, forces, vibrations, and stability in mechanical systems. They will develop critical thinking skills, problem-solving abilities, and effective communication skills, which are essential for success in the field of engineering dynamics.</p>
<p><b>Indicative Contents</b> المحتويات الإرشادية</p>	<p style="text-align: center;"><b>Indicative Contents for Engineering Mechanics/Dynamics:</b></p> <ol style="list-style-type: none"> <li>1. Kinematics of Particles <ul style="list-style-type: none"> <li>• Position, velocity, and acceleration</li> <li>• Rectilinear and curvilinear motion</li> <li>• Projectile motion</li> <li>• Tangential and normal components of acceleration</li> </ul> </li> <li>2. Kinetics of Particles <ul style="list-style-type: none"> <li>• Newton's laws of motion</li> <li>• Force, mass, and acceleration</li> <li>• Application of Newton's laws to particles</li> <li>• Frictional forces</li> <li>• Applications of particle kinetics</li> </ul> </li> <li>3. Kinematics of Rigid Bodies <ul style="list-style-type: none"> <li>• Rotation and angular displacement</li> <li>• Angular velocity and acceleration</li> <li>• Fixed axis rotation</li> <li>• General plane motion</li> </ul> </li> <li>4. Kinetics of Rigid Bodies <ul style="list-style-type: none"> <li>• Moment of inertia</li> <li>• Parallel-axis theorem</li> <li>• Angular momentum and torque</li> <li>• Equations of motion for rigid bodies</li> <li>• Applications of rigid body kinetics</li> </ul> </li> <li>5. Work and Energy <ul style="list-style-type: none"> <li>• Work done by a force</li> <li>• Kinetic energy and potential energy</li> <li>• Principle of work and energy</li> </ul> </li> </ol>

	<ul style="list-style-type: none"> <li>• Power and efficiency</li> <li>• Conservative and non-conservative forces</li> </ul> <p>6. Impulse and Momentum</p> <ul style="list-style-type: none"> <li>• Linear momentum and impulse</li> <li>• Conservation of linear momentum</li> <li>• Impulse-momentum principle</li> <li>• Impact and collision</li> <li>• Applications of momentum</li> </ul> <p>7. Vibrations and Oscillations</p> <ul style="list-style-type: none"> <li>• Free and forced vibrations</li> <li>• Single degree of freedom systems</li> <li>• Damping and damping ratios</li> <li>• Natural frequency and resonance</li> <li>• Vibration isolation and control</li> </ul> <p>Note: The indicative contents provided above give an overview of the topics typically covered in an Engineering Mechanics/Dynamics course. The actual contents may vary depending on the specific curriculum and academic institution.</p>
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### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<b>Strategies</b>	Type something like: 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 classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.
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### Student Workload (SWL)

#### الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	109	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	7
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	<b>200</b>		

### 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
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

### Delivery Plan (Weekly Syllabus)

#### المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Engineering Mechanics/Dynamics <ul style="list-style-type: none"> <li>Overview of Engineering Mechanics/Dynamics</li> <li>Fundamental concepts and principles</li> <li>Unit conversions</li> </ul>
Week 2	Kinematics of Particles <ul style="list-style-type: none"> <li>Position, velocity, and acceleration</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>Rectilinear motion</li> <li>.</li> </ul>
Week 4	<ul style="list-style-type: none"> <li>Curvilinear motion</li> <li>.</li> </ul>
Week 5	<ul style="list-style-type: none"> <li>Tangential and normal components of acceleration</li> </ul>
Week 6	Projectile motion
Week 7	Kinetics of Particles <ul style="list-style-type: none"> <li>Newton's laws of motion</li> <li>Force, mass, and acceleration</li> <li>.</li> </ul>
Week 8	<ul style="list-style-type: none"> <li>Application of Newton's laws to particles</li> <li>.</li> </ul>
Week 9	<ul style="list-style-type: none"> <li>Frictional forces</li> <li>Applications of particle kinetics</li> <li>.</li> </ul>
Week 10	Kinetics of Rigid Bodies <ul style="list-style-type: none"> <li>Moment of inertia</li> </ul>
Week 11	Work and Energy <ul style="list-style-type: none"> <li>Work done by a force</li> </ul>
Week 12	<ul style="list-style-type: none"> <li>Kinetic energy and potential energy</li> <li>Principle of work and energy</li> </ul>
Week 13	Impulse and Momentum <ul style="list-style-type: none"> <li>Linear momentum and impulse</li> <li>Conservation of linear momentum</li> <li>Impulse-momentum principle</li> </ul>

	<ul style="list-style-type: none"> <li>• Impact and collision</li> <li>• Applications of momentum</li> </ul>
<b>Week 14</b>	Vibrations <ul style="list-style-type: none"> <li>• Free and forced vibrations</li> <li>• Single degree of freedom systems</li> <li>•</li> </ul>
<b>Week 15</b>	<ul style="list-style-type: none"> <li>• Damping and damping ratios</li> <li>• Natural frequency and resonance</li> <li>• Vibration isolation and control</li> </ul>

### Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	ENGINEERING MECHANICS, STATICS AND DYNAMICS TWELFTH EDITION R. C. HIBBELER	yes
<b>Recommended Texts</b>	Theory and Problems of Engineering Mechanics Statics and Dynamics/ Fifth Edition, Shaum's Outline	No
<b>Websites</b>		

### Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
<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.

# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	<b>Mathematics Principles</b>		Module Delivery
Module Type	Basic		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	<b>TEMO 102</b>		
ECTS Credits	8		
SWL (hr/sem)	200		
Module Level	Undergraduate	Semester of Delivery	
Administering Department	AM	College	
Module Leader		e-mail	
Module Leader's Acad. Title	Assistant Lecturer	Module Leader's Qualification	M. Sc.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/10/2023	Version Number	1.0

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

## Module Aims, Learning Outcomes and Indicative Contents

### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<b>Module Objectives</b> أهداف المادة الدراسية	To let students be able to identify the advanced basic fundamentals in mathematics (differentiation and integration and their different applications) to develop their mentally capability by exercises solution. Also can be able to correlate the information data in order to solve the scientific problem and how to make use of it in other scientific subjects.
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	1. Students are able to relate the significance of comprehending algebra's structure to a higher-level subject. 2. Within the parameters of the theory of modules, students have the ability to generate consciousness, particularly symbolic thinking. 3. Students are capable of using their understanding and analyzing models of mathematics, science, and technology, as well as other fields that are relevant to those disciplines. 4. Students are able to convey the outcomes of the growth of oral and writing comprehension as well as construct a framework for knowledge that supports mathematics, science, and technology.
<b>Indicative Contents</b> المحتويات الإرشادية	Subject-specific Knowledge: <ul style="list-style-type: none"> <li>• knowledge of key ideas related to mathematics in the university</li> <li>• knowledge of the National Curriculum for mathematics and the way in which it facilitates the development of mathematical understanding</li> <li>• an understanding of the way in which theory informs practice and vice versa</li> </ul> Subject-specific Skills: <ul style="list-style-type: none"> <li>• an informed and critical awareness of research in mathematics education which can enhance the effectiveness of the university mathematics teacher</li> <li>• observe, record accurately and relate educational practice to theory in university and classrooms</li> <li>• critically analyses literature on a variety of contemporary education issues relating to advance mathematics</li> </ul> Key Skills: <ul style="list-style-type: none"> <li>• communicate ideas, principles and theories effectively in written form</li> <li>• manage time and work to deadlines</li> <li>• construct and sustain a reasoned argument</li> <li>• evaluate and make use of information from a variety of advance sources</li> </ul>

## Learning and Teaching Strategies

### استراتيجيات التعلم والتعليم

<b>Strategies</b>	To accommodate varied talents, skills, learning rates, and learning styles, teaching and learning strategies might involve a variety of whole class, group,
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and individual activities. This enables every student to engage and to some extent succeed.

### Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطلاب خلال الفصل	78	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطلاب أسبوعيا	78/15 = 5
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطلاب خلال الفصل	122	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطلاب أسبوعيا	122/15= 8
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطلاب خلال الفصل	<b>200</b>		

### Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<b>Formative assessment</b>	<b>Quizzes</b>	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	<b>Assignments</b>	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	<b>Projects / Lab.</b>		10% (10)	Continuous	All
	<b>Report</b>		10% (10)	13	LO #5, #8 and #10
<b>Summative assessment</b>	<b>Midterm Exam</b>	2hr	10% (10)	7	LO #1 - #7
	<b>Final Exam</b>	3hr	50% (50)	16	All
<b>Total assessment</b>			100% (100 Marks)		

### Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Material Covered	
<b>Week 1</b>	To let students be able to identify the advanced basic fundamentals in mathematics (differentiation and integration and their different applications) to develop their mentally capability by exercises solution. Also can be able to correlate the information data in order to solve the scientific problem and how to make use of it in other scientific subjects.

<b>Week 2</b>	Trigonometric functions, trigonometric relations, graphic drawing, applications
<b>Week 3</b>	Limits of algebraic and trigonometric functions, limit near, applications
<b>Week 4</b>	Theory of derivatives, derivative of algebraic and trigonometric and empirical functions
<b>Week 5</b>	Chain rules, applications
<b>Week 6</b>	Inverse functions and inverse of trigonometric functions, applications
<b>Week 7</b>	Derivatives of logarithmic and exponential functions, hyperbolic and its derivatives, relation and drawing, applications
<b>Week 8</b>	Integration theory, indefinite and definite integration, trigonometric and its inverse
<b>Week 9</b>	Integration of logarithmic and exponential functions, integration of hyperbolic functions, other integrations
<b>Week 10</b>	Methods of integrations, integration by parts
<b>Week 11</b>	Integration by partial fractions
<b>Week 12</b>	Area under a curve, area between two curves
<b>Week 13</b>	Volumes by revolutions, length of a curve
<b>Week 14</b>	Simple differential equations
<b>Week 15</b>	Approximate area by trapezoidal and Simpson rule, numerical integration, applications
<b>Week 16</b>	<b>Preparatory week before the final Exam</b>

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
<b>Week 1</b>	
<b>Week 2</b>	
<b>Week 3</b>	
<b>Week 4</b>	
<b>Week 5</b>	
<b>Week 6</b>	
<b>Week 7</b>	

## Learning and Teaching Resources

### مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	" Calculus " , Ford , S.R. and Ford , J.R. , (1963) McGraw-Hill	Yes
<b>Recommended Texts</b>	"Principles of Mathenatics", Katherine A. Loop., (2015)	No
<b>Websites</b>	<a href="https://web.math.ucsb.edu/~agboola/teaching/2021/winter/122A/rudin.pdf">https://web.math.ucsb.edu/~agboola/teaching/2021/winter/122A/rudin.pdf</a>	

## Grading Scheme

### مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
<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.

### Module 1

Code	Course/Module Title	ECTS	Semester
TEMO 102	Academic English	8	One
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/sem)
3	1	78	122

#### Description

Mathematics offers a potent and common language. When presenting mathematical ideas, arguments, and conclusions both orally and in writing, students are expected to employ acceptable mathematical terminology and a variety of representational techniques.

Students should be able to:

1. employ proper mathematical language (notation, symbols, and terminology) in both spoken and written explanations in order to achieve the goals of mathematics.
2. Present information using the proper mathematical representations.
3. choose between various mathematical representational styles.
4. Express thorough, clear, and simple mathematical arguments.

5. utilizes a logical structure to arrange information.

## MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	<b>Mechanics Engineering / Statics 2</b>		Module Delivery
Module Type	<b>Core</b>		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	<b>AM 101</b>		
ECTS Credits	<b>7</b>		
SWL (hr/sem)	<b>175</b>		
Module Level	<b>1</b>	Semester of Delivery	
Administering Department	<b>AM</b>	College	
Module Leader		e-mail	
Module Leader's Acad. Title	<b>Assist. Professor</b>	Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	<b>23/9/2024</b>	Version Number	<b>1.0</b>

### Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	<b>None</b>	Semester	
Co-requisites module	<b>None</b>	Semester	

### Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<b>Module Learning Outcomes</b>  مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> <li><b>1.</b> Apply fundamental concepts of engineering mechanics/statics to analyze and solve problems related to the equilibrium of rigid bodies.</li> <li><b>2.</b> Demonstrate a deep understanding of vector mathematics and its application in statics, including vector addition, subtraction, dot product, and cross product.</li> <li><b>3.</b> Apply the principles of static equilibrium to solve problems involving forces and moments acting on rigid bodies in two and three dimensions.</li> <li><b>4.</b> Analyze and calculate the internal forces, such as axial forces, shear forces, and bending moments, in statically determinate structures using methods such as the method of sections and the method of joints.</li> <li><b>5.</b> Utilize free-body diagrams to model and analyze the forces acting on a structure or a rigid body, and determine the resultant forces and moments at specific points.</li> <li><b>6.</b> Analyze and calculate the centroid and moment of inertia of various two-dimensional shapes, including rectangles, triangles, and circles, and apply these concepts to determine the stability and strength of structures.</li> <li><b>7.</b> Apply the concepts of friction and its effects on the equilibrium of bodies in statics, including calculating static and kinetic friction forces and determining the angle of</li> </ol>
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	<p>friction.</p> <ol style="list-style-type: none"> <li>8. Analyze and calculate the forces in trusses and frames, including the method of joints and the method of sections, and determine the stability and structural integrity of these systems.</li> <li>9. Apply the principles of equilibrium to solve real-world engineering problems, such as determining the stability of structures, calculating the forces on supports and connections, and analyzing the behavior of mechanical systems.</li> <li>10. Communicate effectively, both orally and in writing, to present and explain the analysis, results, and solutions of engineering mechanics/statics problems.</li> </ol> <p>By achieving these module learning outcomes, students will develop a strong foundation in engineering mechanics/statics and be equipped with the necessary knowledge and skills to analyze and solve a wide range of engineering problems involving static equilibrium and structural stability.</p>
<p style="text-align: center;"><b>Indicative Contents</b> المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <ol style="list-style-type: none"> <li>1. <b>Equilibrium of Rigid Bodies</b> <ul style="list-style-type: none"> <li>• Free body diagrams and force analysis</li> <li>• Equations of equilibrium in two and three dimensions</li> <li>• Solving equilibrium problems using scalar and vector approaches</li> <li>• Applications to simple systems and structures</li> </ul> </li> <li>2. <b>Truss Structures</b> <ul style="list-style-type: none"> <li>• Introduction to truss analysis</li> <li>• Method of joints and method of sections</li> <li>• Determination of member forces and support reactions</li> </ul> </li> <li>3. <b>Friction</b> <ul style="list-style-type: none"> <li>• Laws of friction and frictional forces</li> <li>• Types of friction and their characteristics</li> <li>• Calculation of frictional forces and moments</li> <li>• Applications to inclined planes, wedges, and screws</li> </ul> </li> <li>4. <b>Center of Gravity and Centroids</b> <ul style="list-style-type: none"> <li>• Definitions and properties of center of gravity and centroids</li> <li>• Determination of center of gravity and centroids of simple shapes</li> <li>• Composite bodies and distributed loads</li> </ul> </li> <li>5. <b>Moments of Inertia</b> <ul style="list-style-type: none"> <li>• Moment of inertia and its physical significance</li> <li>• Calculating moments of inertia for simple shapes</li> <li>• Parallel-axis and perpendicular-axis theorems</li> <li>• Application of moments of inertia in engineering analysis</li> </ul> </li> </ol>

### Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

<b>Strategies</b>	Type something like: 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 classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.
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<b>Student Workload (SWL)</b> الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	<b>63</b>	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	<b>4</b>
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	<b>112</b>	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	<b>7</b>
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	<b>175</b>		

<b>Module Evaluation</b> تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<b>Formative assessment</b>	<b>Quizzes</b>	<b>4</b>	<b>15% (15)</b>	<b>5,7,9 and 13</b>	<b>LO #2 , #3 , #5 and #8</b>
	<b>Assignments</b>	<b>5</b>	<b>15% (15)</b>	<b>2,6,8,10 and 14</b>	<b>LO #1 ,#4 ,#6 ,#7 and #9</b>
	<b>Projects / Lab.</b>				
	<b>Report</b>	<b>1</b>	<b>10% (10)</b>	<b>13</b>	<b>LO #5, #8 and #10</b>
<b>Summative assessment</b>	<b>Midterm Exam</b>	<b>2hr</b>	<b>10% (10)</b>	<b>7</b>	<b>LO #1 - #5</b>
	<b>Final Exam</b>	<b>3hr</b>	<b>50% (50)</b>	<b>16</b>	<b>All</b>
<b>Total assessment</b>			<b>100% (100 Marks)</b>		

<b>Delivery Plan (Weekly Syllabus)</b> المنهاج الاسبوعي النظري	
<b>Course 2 Material Covered</b>	

Week 1-3	<b>Equilibrium of a Rigid Body</b>
Week 4-5	<b>Distributed loads.</b>
Week 6-8	<b>Friction</b>
Week 9-10	<b>Trusses</b>
Week 11-12	<b>Centroid</b>
Week 13	<b>Centroid of area, First moment of area.</b>
Week 14-15	<b>Area moment of inertia, Second moment of area.</b>

<b>Learning and Teaching Resources</b> مصادر التعلم والتدريس		
	<b>Text</b>	<b>Available in the Library?</b>
<b>Required Texts</b>	<b>Engineering Mechanics/ Statics, Fourteen Edition, R.C. Hibbeler</b>	<b>yes</b>
<b>Recommended Texts</b>	<b>1- Engineering Mechanics , Ferdinand L. Singer 2- Engineering Mechanics, Meriam 3- Engineering Mechanics/ Statics, Arthur P. Boresi &amp; Richard J. Schmidt</b>	<b>No</b>
<b>Websites</b>		



**Grading Scheme**

مخطط الدرجات

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

Code	Course/Module Title	ECTS	Semester
<b>AM 101</b>	<b>Mechanics Engineering / Static 2</b>	<b>7</b>	<b>1</b>
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/sem)
<b>2</b>	<b>2</b>	<b>63</b>	<b>112</b>

#### Description

**Statics, is a fundamental branch of Engineering Mechanics that deals with the analysis and prediction of the behavior of objects at rest or in equilibrium. It provides the foundation for understanding the principles of forces, moments, and their effects on structures and systems. This branch of engineering mechanics is primarily concerned with the study of particles and rigid bodies under the action of forces and moments. One of the main objectives of Engineering Mechanics/Statics is to enable engineers to calculate and predict the behavior of structures and systems under different loading conditions. This includes understanding the concepts of force vectors, moments, and couples, as well as the methods for resolving and combining these forces to determine their resultant effects.**

**Through theoretical study, problem-solving, and practical applications, students of Engineering Mechanics/Statics develop critical skills in analyzing and solving engineering problems. They learn to apply mathematical principles, physics, and engineering concepts to determine the forces and moments in structures and systems, and to ensure their stability and safety.**

## MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	<b>Mechanics Engineering / Statics1</b>	Module Delivery	
Module Type	<b>Core</b>	<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar	
Module Code	<b>AM 100</b>		
ECTS Credits	<b>7</b>		
SWL (hr/sem)	<b>175</b>		
Module Level	<b>1</b>	Semester of Delivery	<b>1</b>
Administering Department	<b>AM</b>	College	
Module Leader		e-mail	
Module Leader's Acad. Title	<b>Assist. Professor</b>	Module Leader's Qualification	<b>MASTER</b>
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	<b>23 /09/2023</b>	Version Number	<b>1.0</b>

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
<b>Module Learning Outcomes</b>  مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> <li>1. Apply fundamental concepts of engineering mechanics/statics to analyze and solve problems related to the equilibrium of rigid bodies.</li> <li>2. Demonstrate a deep understanding of vector mathematics and its application in statics, including vector addition, subtraction, dot product, and cross product.</li> <li>3. Apply the principles of static equilibrium to solve problems involving forces and moments acting on rigid bodies in two and three dimensions.</li> <li>4. Analyze and calculate the internal forces, such as axial forces, shear forces, and bending moments, in statically determinate structures using methods such as the method of sections and the method of joints.</li> <li>5. Utilize free-body diagrams to model and analyze the forces acting on a structure or a rigid body, and determine the resultant forces and moments at specific points.</li> <li>6. Analyze and calculate the centroid and moment of inertia of various two-dimensional shapes, including rectangles, triangles, and circles, and apply these concepts to determine the stability and strength of structures.</li> <li>7. Apply the concepts of friction and its effects on the equilibrium of bodies in statics, including calculating static and kinetic friction forces and determining the angle of friction.</li> </ol>

	<p>8. Analyze and calculate the forces in trusses and frames, including the method of joints and the method of sections, and determine the stability and structural integrity of these systems.</p> <p>9. Apply the principles of equilibrium to solve real-world engineering problems, such as determining the stability of structures, calculating the forces on supports and connections, and analyzing the behavior of mechanical systems.</p> <p>10. Communicate effectively, both orally and in writing, to present and explain the analysis, results, and solutions of engineering mechanics/statics problems.</p> <p>By achieving these module learning outcomes, students will develop a strong foundation in engineering mechanics/statics and be equipped with the necessary knowledge and skills to analyze and solve a wide range of engineering problems involving static equilibrium and structural stability.</p>
<p style="text-align: center;"><b>Indicative Contents</b> المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <ol style="list-style-type: none"> <li>1. <b>Introduction to Statics</b> <ul style="list-style-type: none"> <li>• Definition and scope of statics</li> <li>• Fundamental concepts and principles</li> <li>• Importance of statics in engineering</li> </ul> </li> <li>2. <b>Vectors and Vector Analysis</b> <ul style="list-style-type: none"> <li>• Vector representation and operations</li> <li>• Vector components and coordinate systems</li> <li>• Vector addition, subtraction, and scalar multiplication</li> </ul> </li> <li>3. <b>Forces and Moments</b> <ul style="list-style-type: none"> <li>• Forces and their characteristics</li> <li>• Resultant and equilibrium of forces</li> <li>• Moment of a force and its properties</li> <li>• Couples and their effects</li> </ul> </li> <li>4. <b>Equilibrium of Rigid Bodies</b> <ul style="list-style-type: none"> <li>• Free body diagrams and force analysis</li> <li>• Equations of equilibrium in two and three dimensions</li> <li>• Solving equilibrium problems using scalar and vector approaches</li> <li>• Applications to simple systems and structures</li> </ul> </li> <li>5. <b>Truss Structures</b> <ul style="list-style-type: none"> <li>• Introduction to truss analysis</li> <li>• Method of joints and method of sections</li> <li>• Determination of member forces and support reactions</li> </ul> </li> <li>6. <b>Friction</b> <ul style="list-style-type: none"> <li>• Laws of friction and frictional forces</li> <li>• Types of friction and their characteristics</li> <li>• Calculation of frictional forces and moments</li> <li>• Applications to inclined planes, wedges, and screws</li> </ul> </li> <li>7. <b>Center of Gravity and Centroids</b> <ul style="list-style-type: none"> <li>• Definitions and properties of center of gravity and centroids</li> <li>• Determination of center of gravity and centroids of simple shapes</li> <li>• Composite bodies and distributed loads</li> </ul> </li> <li>8. <b>Moments of Inertia</b> <ul style="list-style-type: none"> <li>• Moment of inertia and its physical significance</li> <li>• Calculating moments of inertia for simple shapes</li> </ul> </li> </ol>

	<ul style="list-style-type: none"> <li>Parallel-axis and perpendicular-axis theorems</li> <li>Application of moments of inertia in engineering analysis</li> </ul>
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### Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

<b>Strategies</b>	Type something like: 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 classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.
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### Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	<b>63</b>	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	<b>4</b>
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	<b>112</b>	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	<b>7</b>
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	<b>175</b>		

### Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<b>Formative assessment</b>	<b>Quizzes</b>	<b>4</b>	<b>15% (15)</b>	<b>5,7,9 and 13</b>	<b>LO #2 , #3 , #5 and #8</b>
	<b>Assignments</b>	<b>5</b>	<b>15% (15)</b>	<b>2,6,8,10 and 14</b>	<b>LO #1 ,#4 ,#6 ,#7 and #9</b>
	<b>Projects / Lab.</b>				
	<b>Report</b>	<b>1</b>	<b>10% (10)</b>	<b>13</b>	<b>LO #5, #8 and #10</b>
<b>Summative assessment</b>	<b>Midterm Exam</b>	<b>2hr</b>	<b>10% (10)</b>	<b>7</b>	<b>LO #1 - #5</b>
	<b>Final Exam</b>	<b>3hr</b>	<b>50% (50)</b>	<b>16</b>	<b>All</b>
<b>Total assessment</b>			<b>100% (100 Marks)</b>		

### Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Course 1 Material Covered	
<b>Week 1</b>	<b>Introduction, Fundamental Concepts</b>
<b>Week 2</b>	<b>Units Conversion</b>
<b>Week 3</b>	<b>Scalar and Vector Quantities</b>
<b>Week 4-6</b>	<b>Resultant force: Resolution &amp; Composition of Forces. Triangle &amp; parallelogram law</b>
<b>Week 7-8</b>	<b>Addition of a System of Coplanar Forces: Scalar Notation, Cartesian Vector Notation</b>
<b>Week 9-11</b>	<b>Equilibrium of a Particle</b>
<b>Week 12-14</b>	<b>Moment of a Force, Varignon Theorem.</b>

Week 15	<b>Moment of a Couple</b>
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Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	<b>Engineering Mechanics/ Statics, Fourteen Edition, R.C. Hibbeler</b>	yes
Recommended Texts	<b>1- Engineering Mechanics , Ferdinand L. Singer 2- Engineering Mechanics, Meriam 3- Engineering Mechanics/ Statics, Arthur P. Boresi &amp; Richard J. Schmidt</b>	No
Websites		

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
<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.

<b>Code</b>	<b>Course/Module Title</b>	<b>ECTS</b>	<b>Semester</b>
<b>AM 100</b>	<b>Mechanics Engineering / Static 1</b>	<b>7</b>	<b>1</b>
<b>Class (hr/w)</b>	<b>Lect/Lab./Prac./Tutor</b>	<b>SSWL (hr/sem)</b>	<b>USWL (hr/sem)</b>
<b>2</b>	<b>2</b>	<b>63</b>	<b>112</b>
<b>Description</b>			
<p><b>Statics, is a fundamental branch of Engineering Mechanics that deals with the analysis and prediction of the behavior of objects at rest or in equilibrium. It provides the foundation for understanding the principles of forces, moments, and their effects on structures and systems. This branch of engineering mechanics is primarily concerned with the study of particles and rigid bodies under the action of forces and moments. One of the main objectives of Engineering Mechanics/Statics is to enable engineers to calculate and predict the behavior of structures and systems under different loading conditions. This includes understanding the concepts of force vectors, moments, and couples, as well as the methods for resolving and combining these forces to determine their resultant effects.</b></p> <p><b>Through theoretical study, problem-solving, and practical applications, students of Engineering Mechanics/Statics develop critical skills in analyzing and solving engineering problems. They learn to apply mathematical principles, physics, and engineering concepts to determine the forces and moments in structures and systems, and to ensure their stability and safety.</b></p>			

## MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	<b>Thermodynamics principles</b>	Module Delivery	
Module Type	<b>Core</b>	<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar	
Module Code	<b>AM 102</b>		
ECTS Credits	<b>6</b>		
SWL (hr/sem)	<b>150</b>		
Module Level	<b>1</b>		
Administering Department	<b>AM</b>	College	
Module Leader		e-mail	
Module Leader's Acad. Title	<b>lecturer</b>	Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	<b>23/9/2024</b>	Version Number	<b>1.0</b>

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
<b>Module Objectives</b> أهداف المادة الدراسية	<ol style="list-style-type: none"> <li>1. To develop problem solving skills and understanding of thermodynamics theory through the application of techniques.</li> <li>2. To understand thermodynamics and energy law.</li> <li>3. This course deals with the basic concept of heat, work and energy.</li> <li>4. This is the basic subject for all cases of systems used in thermodynamics.</li> <li>5. To understand the laws of energy conversion between thermodynamics systems.</li> <li>6. Introducing students to thermodynamics by studying thermal systems in terms of energy interactions with its immediate surroundings.</li> </ol>
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	<p>Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks.</p> <ol style="list-style-type: none"> <li>1. Recognize how temperature gauges work in laboratory equipment.</li> <li>2. List the different thermodynamics terms.</li> <li>3. Summarize what is meant by thermodynamics.</li> <li>4. Discuss the reaction and participation of atoms in chemical reactions.</li> <li>5. Describe thermal energy, work and energy.</li> <li>6. Define Boyle's law.</li> <li>7. Identify open and closed systems and their applications.</li> </ol>



	<p>8. Discuss the heat transfer processes between thermal systems.</p> <p>9. Discuss the different characteristics of the measuring devices used in the laboratory.</p> <p>10. Explanation of Joule's law.</p> <p>11. Identify the mathematical relationships in solving problems.</p>
<p><b>Indicative Contents</b></p> <p>المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p><b>Part A</b></p> <ul style="list-style-type: none"> <li>• Introduction - Textbooks - Units. Important definitions - force - pressure - system. Pressure and its types [15 hrs]</li> <li>• Vapor - Forms of matter when changing its phase - Drawing the phase change of matter on the pressure-volume chart. [15 hrs]</li> <li>• Specific heat at constant pressure - specific heat at constant volume. Closed system procedures - constant volume - constant pressure. [10 hrs]</li> <li>• Energy Equation for Systems: Open and Closed - Applications [15 hrs]</li> <li>• Revision problem classes [6 hrs]</li> </ul> <p><b>Part B</b></p> <ul style="list-style-type: none"> <li>• Fundamentals</li> <li>• Temperature: Units - Conversions - Measuring Methods - Zero Law. Definition of energy - forms of energy: potential, kinetic, thermal - work - capacity - flow work - pressure diagram. internal energy - enthalpy [15 hrs]</li> <li>• Steam procedures and their projection on the pressure-volume chart [7 hrs]</li> <li>• Identify the types of pressure gauges used in refrigeration - types of air velocity gauges and their uses. [15 hrs]</li> </ul>

<b>Student Workload (SWL)</b> الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	<b>78</b>	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	<b>5</b>
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	<b>72</b>	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	<b>5</b>
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	<b>150</b>		

<b>Learning and Teaching Strategies</b> استراتيجيات التعلم والتعليم	
<b>Strategies</b>	The major approach used to offer this module will be to promote student engagement in the exercises while also enhancing and broadening their critical thinking abilities. This will be accomplished through lectures, interactive tutorials, and the consideration of various sorts of easy experiments incorporating some engaging sampling exercises for the students.

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	6	10% (10)	3,5,7,9,11 and 15	LO #2, #3,#5,#7,#9 and #11
	Assignments	4	10% (10)	2,6,8 and 12	LO #1, #4, #6and #10
	Projects / Lab.	4	20% (20)	Continuous	All
	Report				
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #5
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introductions, references, units , General notations , about pressure, force, work etc.
Week 2	Temperature, unit of temperature and conversion, temperature measurements. Zeroth law of Thermodynamics. Energy, types of energy, positional, kinetic, internal and flow energy energies. Heat and work, power, enthalpy.
Week 3	First law of thermodynamics
Week 4	Steady flow energy equation for open system, non-flow energy equation for closed system, Ideal gas and equation of state
Week 5	Ideal gas, Boyle's law and Charles law and equation of state
Week 6	Specific heat at constant pressure and constant volume, closed system Processes using ideal gas. Isometric and isobaric processes.
Week 7	Isothermal and adiabatic processes
Week 8	Polytropic processes
Week 9	open system processes
Week 10	Vapor, phase of substance, Phase change curve on P-V diagram.
Week 11	Dryness fraction, liquid and vapor lines, wet vapor
Week 12	Steam tables and Examples on steam tables
Week 13	Superheated vapor, tables of superheated tables.
Week 14	Processes using two phase system, processes on P-V diagram, Irreversible processes Closed system
Week 15	Second law of thermodynamics, heat engine, heat pump
Week 16	Preparatory week before the final Exam

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Material Covered	
Week 1	Lab 1: Identify the types of pressure gauges used in refrigeration and their uses.
Week 2	Lab 2: Identify the types of air velocity gauges and their uses.
Week 3	Lab 3: Identify the types of temperature measurements used in refrigeration and their uses.
Week 4	Lab 4: Types of heat pumps with a study of the efficiency of the heat pump.
Week 5	Lab 5: compression cycle performance
Week 6	Lab 6: The real refrigeration cycle
Week 7	Lab 7: Filters

### Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Thermal engineering (eighth edition) R. K. RAJPUT	No
Recommended Texts	Fundamentals of heat and mass transfer ( M. Thirumaleshwar)	No
Recommended Texts	Heat and mass transfer (SI UNITS) (Er. R. K. RAJPUT) ( S. CHAND)	No
Websites		

### 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.

<b>Code</b>	<b>Course/Module Title</b>	<b>ECTS</b>	<b>Semester</b>
<b>AM 102</b>	<b>Thermodynamics principles</b>	<b>6</b>	<b>2</b>
<b>Class (hr/w)</b>	<b>Lect/Lab./Prac./Tutor</b>	<b>(SSWL (hr/sem</b>	<b>(USWL (hr/sem</b>
<b>2</b>	<b>3</b>	<b>78</b>	<b>72</b>
<b>Description</b>			
<p>In this thermodynamics module, students will explore the foundational concepts that form the basis of this field of study. They will examine energy interactions in thermal systems and measure relevant properties. Key concepts covered include force, energy, work, thermal equilibrium, and temperature. The workshop aims to develop a clear understanding of thermodynamics and its application in engineering. Students will also learn about the practical implications of thermodynamics, such as the laws of heat transfer and their applications in engine cycles. Additionally, they will explore the functioning of refrigerators and heat pumps based on the reversed Carnot cycle, which requires external work to transfer heat from a lower temperature body to a higher temperature body.</p>			

# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Workshop		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	TEMO 102		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1	Semester of Deliver	
Administering Department	PM	College	TEMO
Module Leader			e-mail
Module Leader's Acad. Title	Assist. Lecturer	Module Leader's Qualification	M.Sc.
Module Tutor			e-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/10/2023 01/2/2024	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Maintenance of Refrigeration & Air Conditioning Systems	Semester	six
Co-requisites module	None	Semester	

## Module Aims, Learning Outcomes and Indicative Contents

### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

#### Module Objectives

أهداف المادة الدراسية

1. Teach students the basic principles of the compression refrigeration cycle.
2. Identify the tools used in the field of refrigeration and air-conditioning in general.
3. Training students on the operations carried out on pipes used in the field of refrigeration and air-conditioning.
4. Teaching students the basic operations of refrigeration and air-conditioning equipment.
5. Introducing students to the main parts that make up refrigeration and air-conditioning equipment of all kinds.
6. Teaching students about the electrical and mechanical parts of household refrigeration and air-conditioning devices.
7. Learn about the types of furnaces for melting metals, and how to pour molten metal into sand molds.
8. Identify the types of filings and their shapes.
9. Learn about all types of lathes and how to use them.
10. Learn how to deal with sheet metal.
11. Learn about the most important methods of welding and the machines and tools needed for that.
12. Learn about the most important tools and machines for dealing with wood, in addition to identifying the most popular and common types of wood.

#### 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. The student learned the processes of cutting, flaring and expanding pipes.
2. The student learned the processes of welding pipes of all kinds.
3. The student learned about the processes that take place on refrigeration and air-conditioning equipment, such as checking for leaks, vacuum and charging.
4. Students' ability to know the refrigerant fluids used in refrigeration and air-conditioning devices.
5. The student learned to connect electrical circuits for refrigeration and air-conditioning equipment.
6. The student's ability to distinguish the pressures used in the field of refrigeration and air conditioning from leakage checks, discharge and charging of all devices.
7. The student's ability to melt metals, how to pour the molten metal into sand molds, how to deal with the mold and fix it with sand, and how to get it out of the sand.
8. The student's ability to work with each type of file and how to choose it according to the type of material being worked on.
9. The ability of the student to scrape and perforate the parts to be formed by each of the turning machines, milling machines, scrapers, as well as all kinds

	<p>of gutters.</p> <p>10. The student's ability to deal with metal sheets in terms of cutting, hammering, perforating, bending and humping, and the most important tools needed for that and how to work with them.</p> <p>11. The student's ability to perform welding operations in all ways and for various types of metals.</p> <p>12. The student's ability to deal with wood in addition to identifying the most popular and common types of wood.</p>
<p><b>Indicative Contents</b> المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p>Compression cycles and their applications by using visual devices. [15 hrs]</p> <p>Types of environmentally friendly and harmful gases and the ozone layer and how to deal with them. [15 hrs]</p> <p>Awareness and important instructions for occupational safety. [10 hrs]</p> <p>Noise and source. [15 hrs]</p> <p>Awareness of the dangers of industrial machines and caution against them. [10 hrs]</p>

### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<p><b>Strategies</b></p>	<p>Type something like: 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 classes, interactive tutorials, and by considering types of simple experiments involving some sampling activities that are interesting to the students.</p>
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### Student Workload (SWL)

#### الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<p><b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل</p>	93	<p><b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا</p>	6
<p><b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل</p>	57	<p><b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا</p>	4
<p><b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل</p>	<b>150</b>		



## Module Evaluation

### تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	2,5,8 and 12	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	0	0		
	Report	6	20% (20)	2,4,6,8,10 and 12	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

## Delivery Plan (Weekly Syllabus)

### المنهاج الاسبوعي النظري والعملي

	Material Covered
Week 1	Introduction - Difference the basic principles of the compression refrigeration cycle.
Week 2	Learn about the types of furnaces for melting metals, and how to pour molten metal into sand molds.
Week 3	Identify the tools used in the field of refrigeration and air-conditioning in general.
Week 4	Identify the types of filings and their shapes
Week 5	Training students on the operations carried out on pipes used in the field of refrigeration and air-conditioning.
Week 6	Learn about all types of lathes and how to use them.
Week 7	Mid-term Exam
Week 8	Learn how to deal with sheet metal.
Week 9	Introducing students to the main parts that make up refrigeration and air-conditioning equipment of all kinds.
Week 10	Learn about the most important methods of welding and the machines and tools needed for that.
Week 11	Teaching students the basic operations of refrigeration and air-conditioning equipment.
Week 12	Learn about the most important tools and machines for dealing with wood, in addition to identifying the most popular and common types of wood.

<b>Week 13</b>	Teaching students about the electrical and mechanical parts of household refrigeration and air-conditioning devices.
<b>Week 14</b>	Carrying out operations to find and repair leakages and charge gas for air-conditioning devices.
<b>Week 15</b>	Conducting a practical exercise chosen by the course Lecturer as a test before the final exam
<b>Week 16</b>	<b>Preparatory week before the final Exam</b>

### Delivery Plan (Weekly Lab. Syllabus)

#### المنهاج الاسبوعي للمختبر

	Material Covered
<b>Week 1</b>	
<b>Week 2</b>	

### Learning and Teaching Resources

#### مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	Modern Refrigeration and Air-conditioning.	Yes
<b>Recommended Texts</b>	Hand Book Of Air Condition and Refrigeration.	Yes
<b>Websites</b>		

### Grading Scheme

#### مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
<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.

## MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	<b>English Language</b>	Module Delivery	
Module Type	<b>Support</b>	<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar	
Module Code	<b>NTU 102</b>		
ECTS Credits	<b>2</b>		
SWL (hr/sem)	<b>50</b>		
Module Level	<b>1</b>		
Administering Department	<b>AM</b>	College	
Module Leader		e-mail	
Module Leader's Acad. Title	<b>Assist. Lecturer</b>	Module Leader's Qualification	<b>M. Linguistics and English Language Teaching</b>
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	<b>23/9/2023</b>	Version Number	<b>1.0</b>

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
<b>Module Objectives</b>  أهداف المادة الدراسية	<ol style="list-style-type: none"> <li><b>1.</b> To develop problem solving skills mainly speaking, reading, writing and listening skills and to understand the English language as a foreign language through the application of many techniques.</li> <li><b>2.</b> To understand the general principles of the English language.</li> <li><b>3.</b> This course deals with the basic concepts of learning the main rules of English grammar and English vocabularies.</li> <li><b>4.</b> This is the basic subject for writing and speaking English well.</li> <li><b>5.</b> To understand how to build a correct English sentence.</li> </ol>

<p style="text-align: center;"><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> <li>1. To recognize how to use the main and auxiliary verbs in addition to the possessive pronouns.</li> <li>2. To list the various words associated with questions and many subject pronouns.</li> <li>3. To talk about social expressions and personal information mainly about jobs by using affirmative, negative and interrogative sentences.</li> <li>4. To discuss how to use adjectives and their positions in the sentence.</li> <li>5. To construct the simple present sentence by using I/ we/ you and they and to define the articles.</li> <li>6. To describe the present simple tense with using he/ she and to discuss adverbs of frequency.</li> <li>7. To identify the basic question words and demonstrative pronouns and their applications.</li> <li>8. To discuss the use of there is/ are and many prepositions.</li> <li>9. To discuss the structure of simple past sentences and various irregular verbs.</li> <li>10. To explain the negative and interrogative structure of the simple past tense sentence in addition to the adverbs of the past tense.</li> <li>11. To identify the use of many adverbs and the use of can/ can't in the sentence and to explain requests and offers.</li> <li>12. To elaborate the use of like and would you like and the use of some and any in many expressions.</li> <li>13. To discuss the use of the present continuous and the difference between present simple and present continuous sentences.</li> <li>14. To explain the structures that are used to refer to future plants.</li> </ol>
<p style="text-align: center;"><b>Indicative Contents</b></p> <p>المحتويات الإرشادية</p>	<ol style="list-style-type: none"> <li>1. An introduction to the importance of English language learning and the role it plays in social communication.</li> <li>2. An application of various tenses like present and past tenses.</li> <li>3. Demonstrating many main concepts including (offers, requests, future plants, personal expressions and tenses).</li> <li>4. Using many skills to learn English like listening, reading, writing and speaking skills, moreover; presenting different examples to elaborate any concept or structure.</li> </ol>

<b>Learning and Teaching Strategies</b> استراتيجيات التعلم والتعليم	
<p style="text-align: center;"><b>Strategies</b></p>	<p>The main strategy that will be adopted in this module is associated with the communicative approach which will be applied to develop students' skills to learn English and to enable students to use English in communication, therefore, using authentic materials in the class is so necessary. This approach is important to encourage students' participation in the class and to highlight their motivation in learning English, while at the same time refining and expanding their interactions and skills to achieve at least more success.</p>

<b>Student Workload (SWL)</b> الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	<b>32</b>	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	<b>(32/15)=2</b>
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	<b>18</b>	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	<b>(18/15)=1</b>
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	<b>50</b>		

<b>Module Evaluation</b> تقييم المادة الدراسية					
		<b>Time/Number</b>	<b>Weight (Marks)</b>	<b>Week Due</b>	<b>Relevant Learning Outcome</b>
<b>Formative assessment</b>	<b>Quizzes</b>	<b>2</b>	<b>15% (15)</b>	<b>5 and 1</b>	<b>LO #1, #3 and #6, #13</b>
	<b>Assignments</b>	<b>2</b>	<b>15% (15)</b>	<b>2 and 12</b>	<b>LO #2, #4 and 7#, #12</b>
	<b>Projects / Lab.</b>				
	<b>Report</b>	<b>1</b>	<b>10% (10)</b>	<b>13</b>	<b>LO #5, #8 and #9 #10</b>
<b>Summative assessment</b>	<b>Midterm Exam</b>	<b>1hr</b>	<b>10% (10)</b>	<b>7</b>	<b>LO #1 - #7</b>
	<b>Final Exam</b>	<b>2hr</b>	<b>50% (50)</b>	<b>16</b>	<b>All</b>
<b>Total assessment</b>			<b>100% (100 Marks)</b>		

<b>Delivery Plan (Weekly Syllabus)</b> المنهاج الاسبوعي النظري	
	<b>Material Covered</b>
<b>Week 1</b>	<b>Unit one: Hello</b> Am/are/is. my/your This is with practice in work
<b>Week 2</b>	<b>Unit two: Your world</b> He/she/they, his/her Questions
<b>Week 3</b>	<b>Unit three: All about you</b> Personal information/ social expressions
<b>Week 4</b>	<b>Unit four: Family and friends</b> Possessive adjectives/ possessive 's Have/has , adjective + noun
<b>Week 5</b>	<b>Unit five: The way I live</b>

	Present simple I/we/you/they An/a , adjective + noun
<b>Week 6</b>	Unit six: Every day Present simple he/she Negatives and questions, adverbs of frequency
<b>Week 7</b>	Unit seven: My favorites Question words, pronouns, this/that
<b>Week 8</b>	Unit eight: Where I live There is/ are, prepositions
<b>Week 9</b>	Unit nine: Times past Was/ were born, past simple and irregular verbs
<b>Week 10</b>	Unit ten: We had a great time Past simple, regular and irregular Questions, negatives, ago
<b>Week 11</b>	Unit eleven: I can do that! Can/can't, adverbs, requests
<b>Week 12</b>	Unit twelve: Please and thank you I'd like, some and any Like and would like
<b>Week 13</b>	Unit thirteen: Here and now Present continuous Present simple and present continuous
<b>Week 14</b>	Unit fourteen: It's time to go! Future plans, writing email and information letter
<b>Week 15</b>	<b>Revision</b>
<b>Week 16</b>	<b>Preparatory week before the final Exam</b>

<b>Learning and Teaching Resources</b> مصادر التعلم والتدريس		
	<b>Text</b>	<b>Available in the Library?</b>
<b>Required Texts</b>	<b>John and liz Soar. (New Headway Beginner) 4th edition. Oxford: Oxford University Press.</b>	<b>Yes</b>
<b>Recommended Texts</b>		<b>No</b>
<b>Websites</b>		

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

Code	Course/Module Title	ECTS	Semester
<b>NTU 102</b>	<b>English Language</b>	<b>2</b>	<b>2</b>
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/sem)
<b>2</b>	<b>0</b>	<b>32</b>	<b>18</b>
Description			
<p><b>This module will be used to develop problem solving skills mainly speaking, reading, writing and listening skills and to understand English language as a foreign language through the application of many techniques. It is also important to understand the general principles of English language. This course deals with the basic concepts of learning the main rules of English grammar and English vocabularies. It is mainly the basic subject for writing and speaking English well. The module is to understand how to build a correct English sentence. It contains various grammatical rules and different vocabularies with using typical examples to explain the structure and the meaning of any word or expression. The module is valid and reliable to deal with many recognizable situations and how to use English in different contexts associating with life experiences.</b></p>			





# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Engineering drawing		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	TEMO 103		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1	Semester of Deliver	
Administering Department	PM	College	
Module Leader		e-mail	
Module Leader's Acad. Title	Ass. Lecturer	Module Leader's Qualification	M.Sc.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/2/2024	Version Number	1.0

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

## Module Aims, Learning Outcomes and Indicative Contents

### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<b>Module Objectives</b> أهداف المادة الدراسية	<ol style="list-style-type: none"><li>1. Introduction the students to the program of Autocade software.</li><li>2. Introduction the students to engineering drawings.</li><li>3. Teaching students to draw geometrically according to accurate measurements.</li><li>4. To understand basic principle for the descriptive geometry.</li><li>5. to train students: to read the engineering drawings through the application of computer and techniques.</li><li>6. To understand standard specifications, draw the simple and complex assembly drawings.</li></ol>
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"><li>1. Enables the students to use AutoCAD for 2-D representations.</li><li>2. Enables the students to Introduction the students to engineering drawings.</li><li>3. Enables the students to learn the techniques and standard practices of technical graphics.</li><li>4. To develop the student's abilities of engineering imagination.</li><li>5. To develop the student's engineering sense by dealing with dimensions and measurements.</li><li>6. To teach the student to identify the characteristics of geometric shapes and the various ways to draw them.</li><li>7. To teach the student diversity in the way of thinking and finding solutions for drawing each form.</li></ol>
<b>Indicative Contents</b> المحتويات الإرشادية	<p>Indicative content includes the following.</p> <p><u>Part A -</u> Introduction to (CAD), components of computer aided drawing (CAD), Exercises. [8 hrs.] Introducing the most important geometric shapes and their components, and how to draw each shape using the program [4hrs.] Introducing the most important commands that contribute to making modifications to the geometric shapes drawn using the program [8 hrs.] Demonstrate the method of drawing advanced geometric shapes using the program. [4 hrs.] Training students to draw advanced geometric shapes using the program [8 hrs.] Revision and quiz [8hrs]</p> <p><u>Part B -</u> Training students at this stage to draw triangular projections of geometric shapes for any geometric shape in general. [8 hrs.] Complex geometrical shape. [12 hrs.]</p>

	<p>Training the students at this stage to draw the triangular projections of the geometric shapes of the mechanical engineering shapes in particular. [15 hrs.]</p> <p>Training the students at this stage to draw the Perspective . [15 hrs.]</p> <p>Revision and quiz [8hrs]</p>
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### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<b>Strategies</b>	<p>The major approach used to offer this module will be to promote student engagement in the exercises while also enhancing and broadening their critical thinking abilities. This will be accomplished through lectures, interactive tutorials, and the consideration of various sorts of easy experiments incorporating some engaging sampling exercises for the students.</p>
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### Student Workload (SWL)

#### الحمل الدراسي للطلاب محسوب ل ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطلاب خلال الفصل	<b>63</b>	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطلاب أسبوعيا	4.2
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطلاب خلال الفصل	<b>87</b>	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطلاب أسبوعيا	5.8
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطلاب خلال الفصل	<b>150</b>		

### Module Evaluation

#### تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<b>Formative assessment</b>	<b>Quizzes</b>	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	<b>Assignments</b>	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	<b>Projects / Lab.</b>	1	10% (10)	Continuous	All
	<b>Report</b>				
<b>Summative assessment</b>	<b>Midterm Exam</b>	2hr	10% (10)	7	LO #1 - #7
	<b>Final Exam</b>	3hr	50% (50)	16	All
<b>Total assessment</b>			100% (100 Marks)		

## Delivery Plan (Weekly Syllabus)

### المنهاج الاسبوعي النظري

	Material Covered
<b>Week 1</b>	Demonstrates knowledge about: <ul style="list-style-type: none"> <li>• Introduction to engineering drawing.</li> <li>• Introduction about Auto CAD 2D software in engineering drawing.</li> <li>• Limits, grid, object snap, view menu (zoom, pan).</li> </ul>
<b>Week 2&amp;3</b>	Correctly draw menu (line, poly line, polygon, rectangle, arc, circle, point, text).
<b>Week 4&amp;5</b>	Correctly modify menu (erase, copy, mirror, offset, move, rotate, trim, extend, explode).
<b>Week 6&amp;7&amp;8</b>	Complex geometrical shape.
<b>Week 9</b>	Midsemester exam
<b>Week 10&amp;11&amp;12</b>	Perspective
<b>Week 13</b>	Correctly implement and identify orthographic projection. Correctly implement and execute first and third angle projection method
<b>Week 14</b>	Correctly draw the projection with the first angle projection method Correctly draw the projection with the third angle projection method Demonstrates knowledge and implementation about drawing the three projections with the first and third angle projection method
<b>Week 15</b>	Semester exam

## Delivery Plan (Weekly Lab. Syllabus)

### المنهاج الاسبوعي للمختبر

	Material Covered
<b>Week 1</b>	
<b>Week 2</b>	
<b>Week 3</b>	
<b>Week 4</b>	
<b>Week 5</b>	
<b>Week 6</b>	
<b>Week 7</b>	

## Learning and Teaching Resources

### مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	Fundamentals and principles of engineering drawing Fundamentals of AutoCAD2010	Yes

<b>Recommended Texts</b>	Fundamentals of AutoCAD 2020	Yes
<b>Websites</b>		

<b>Grading Scheme</b> مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
<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.

## HUMAN RIGHTS and DEMOCRACY PROGRAMME COURSE DESCRIPTION

Code	Name of the Course Unit	Semester	In-Class Hours (T+P)	Credit	ECTS Credit
NTU 100-S1	HUMAN RIGHTS and DEMOCRACY	1	2	2	4
<b>GENERAL INFORMATION</b>					
Language of Instruction :		ARABIC			
Level of the Course Unit :		BACHELOR'S DEGREE			
Type of the Course :		Compulsory			
Mode of Delivery of the Course		Face to Face			
Coordinator of the Course Unit					
Instructor(s) of the Course Unit					
<b>OBJECTIVES AND CONTENTS</b>					
Objectives of the Course Unit:		تعريف الطالب بحقوق الانسان والديمقراطية ومضامينها وتصنيف الحريات العامة .			
Contents of the Course Unit:					
<b>KEY LEARNING OUTCOMES OF THE COURSE UNIT (On successful completion of this course unit, students/learners will or will be able to)</b>					
Week	Topics(Subjects)				
1	حقوق الانسان ، تعريفها ، اهدافها				
2	حقوق الانسان في الشرائع السماوية مع التركيز على حقوق الانسان في الاسلام				
3	حقوق الانسان في التاريخ المعاصر والحديث : الاعتراف الدولي بحقوق الانسان منذ الحرب العالمية الأولى وعصبة				
4	الاعتراف الاقليمي بحقوق الانسان : الاتفاقية الاوربية لحقوق الانسان 1950 ، الاتفاقية الامريكية لحقوق الانسان				
5	حقوق الانسان الحديثة : الحقائق في التنمية ، الحق في البيئة النظيفة ، الحق في التضامن ، الحق في الدين حقوق				
6	حقوق الانسان في الدساتير العراقية بين النظرية والواقع				
7	حقوق الانسان الاقتصادية والاجتماعية والثقافية و حقوق الانسان المدنية والسياسية				
8	حقوق الانسان الحديثة : الحقائق في التنمية ، الحق في البيئة النظيفة ، الحق في التضامن ، الحق في الدين				
9	ضمانات احترام وحماية حقوق الانسان على الصعيد الوطني ، الضمانات في الدستور والقوانين				
10	ضمانات واحترام وحماية حقوق الانسان على الصعيد الدولي :				
11	مصطلح الديمقراطية ، نشأته ، دلالاته، تاريخ الديمقراطية.				

**KEY LEARNING OUTCOMES OF THE COURSE UNIT (On successful completion of this course unit, students/learners will or will be able to)**

12	الإسلام والديمقراطية ومساوئ الحكم الاستبدادي .
13	الانتقادات الموجهة للديمقراطية، ومحاسن النظام الديمقراطي.
14	الأنظمة الديمقراطية في العالم/الديمقراطية في العالم الثالث/ المشاكل التي تواجه البلدان العربية في التحول الديمقراطي

**WORKLOAD & ECTS CREDITS OF THE COURSE UNIT  
NTU100 HUMAN RIGHTS and DEMOCRACY**

**Workload for Learning & Teaching Activities**

Type of the Learning Activities	Learning Activities (# of week)	Duration (hours, h)	Workload (h)
Lecture & In-Class Activities	15	2	30
Preliminary & Further Study	NA	NA	NA
Land Surveying	NA	NA	NA
Group Work	4	1	4
Laboratory	NA	NA	NA
Reading	NA	NA	NA
Assignment (Homework)	3	1	3
Project Work	NA	NA	NA
Seminar	4	1	4
Internship	NA	NA	NA
Technical Visit	NA	NA	NA
Web Based Learning	NA	NA	NA
Implementation/Application/Practice	NA	NA	NA
Practice at a workplace	NA	NA	NA
Occupational Activity	NA	NA	NA
Social Activity	NA	NA	NA
Thesis Work	NA	NA	NA
Field Study	NA	NA	NA
Report Writing	6	1	6
Final Exam	1	3	3
Preparation for the Final Exam	1	16	16

**WORKLOAD & ECTS CREDITS OF THE COURSE UNIT**  
**NTU100 HUMAN RIGHTS and DEMOCRACY**

**Workload for Learning & Teaching Activities**

<b>Type of the Learning Activities</b>	<b>Learning Activities (# of week)</b>	<b>Duration (hours, h)</b>	<b>Workload (h)</b>
Mid-Term Exam	1	2	2
Preparation for the Mid-Term Exam	1	16	16
Short Exam	8	0.5	4
Preparation for the Short Exam	8	1.5	12
<b>TOTAL</b>	<b>52</b>	<b>45</b>	<b>100</b>
<b>Total Workload of the Course Unit</b>			<b>100</b>
<b>Workload (h) / 25</b>			<b>100÷25</b>
<b>ECTS Credits allocated for the Course Unit</b>			<b>4</b>