

## First and Second Semester

### Module 1

Module Information			
Module Title	Workshops		<b>Module Delivery</b> <input type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input checked="" type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Type	Support		
Module Code	WORSH11		
ECTS Credit/year	4		
SWL/year	100		
Module level	1	Semester of Delivery	1, 2
Module Leader	Training and Workshops Center	College	
Module Leader Academic Title	Prof.	e-mail	twc@uotechnology.edu.iq
Module Tutor		Module Leader's Qualification	Ph.D.
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	1/6/2023	e-mail	
		Version Number	1

Relation with other Modules			
Prerequisite Module	-	Semester	-
Co-requisite Module	-	Semester	-

Module Aims, Learning Outcomes and Inductive Contents	
<b>Module Aims</b>	1-Preparing applied engineers in the field of engineering sciences who are distinguished by a high level of knowledge and technological creativity, in line with the strict standards adopted globally in quality assurance and academic accreditation of the corresponding engineering programs, while adhering to the ethics of the engineering profession. 2. Enable the student to know and understand work systems, risks, and the factors surrounding them. 3. Enable the student to know and understand theoretical principles in handicrafts and measurements.
<b>Module Learning Outcomes</b>	1- To familiarize the student with the vocabulary of occupational safety and its importance in the field of work. 2- Acquisition of the student's manual operation skills, for example (Filings and

	<p>Tinsmith workshops), and mechanical operation skills, for example (Turning).</p> <p>3- Acquisition of the student’s mechanical forming skills, for example (Casting and Blacksmithing).</p> <p>4- The student acquires basic engineering skills such as Welding, Carpentry, and Electrical installations that serve him in the professional field.</p> <p>5- Enabling the student to operate the various machines and devices in mechanical operations and formation.</p> <p>6- Cooperative learning by working collectively.</p>
<p><b>Inductive Contents</b></p>	<ol style="list-style-type: none"> <li>1. Introducing the student to the basics of the art of turning and milling, types of cold working machines, the skill of dealing with them, choosing metals, operational tools, and methods of measurement and standardization</li> <li>2. Introducing the student to the basics of the art of casting, hot forming, metal selection, method of working on casting furnaces and tools, and manufacturing casting molds</li> <li>3. Familiarize students with the basics of cars and the systems they use, as well as maintenance, disassembly, and assembly processes.</li> <li>4. Introducing students to the basics of household and industrial electrical appliances, the skill of using tools, and designing electrical circuits and control panels</li> <li>5. Introducing the student to the basics of the art of plumbing, leveling surfaces, the skill of using tools, manufacturing and installing geometric shapes, and methods of measurement and standardization</li> <li>6. Introducing the student to the basics of the art of blacksmithing, cold and hot forming of metals, the method of hardening them, and the skills of dealing with hand tools, forming machines, and heating furnaces</li> <li>7. Introducing the student to the basics of the art of filing and manual operation of metals with the help of manual, electrical, and mechanical tools, the skills of dealing with them, and the methods of measurement and standardization</li> <li>8. Introducing the student to the basics of the art of welding, the installation and assembly of metals, the types of welding machines, the skills of dealing with them, the types of welding, and the methods of measurement and standardization</li> <li>9. Introducing the student to the basics of the art of carpentry and woodworking with the help of manual, electrical, and mechanical tools, the skills of dealing with them, and methods of measurement and standardization</li> </ol>

<p><b>Learning and Teaching Strategies</b></p>	
<p><b>Strategies</b></p>	

Student Workload (SWL)			
Structured SWL (h/sem)	46.5	Structured SWL (h/w)	3.00
Unstructured SWL (h/sem)	3.5	Unstructured SWL (h/w)	0.23
Total SWL (h/sem)	50		
Structured SWL (h/year)	93	Structured SWL (h/w)	3.00
Unstructured SWL (h/year)	7	Unstructured SWL (h/w)	0.23
Total SWL (h/year)	100		

Module Evaluation					
		Time/No.	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative Assessment	Quizzes				
	Assignments				All
	Projects / Practice	Every 3 weeks	60%	Continuous	
	Report				
Summative Assessment	Midterm Exam				
	Exam	Every 3 weeks	40%	Continuous	All
Total assessment			100%		

Delivery Plan (Weekly Syllabus)	
	Materials Covered
Week 1	Welding workshop. -Occupational safety and its importance in welding workshops. -Introduction to the basics of welding. -Electric arc exercise. -An exercise for welding straight lines in a circular motion (helical).
Week 2	Welding workshop - An exercise for welding straight lines with a crescent movement and other welding methods -Construction welding exercise.
Week 3	Welding workshop. -Welding two pieces together. -Written exam in practical exercises. -
Week 4	Casting workshop -Occupational safety and its importance in plumbing workshops.

	<ul style="list-style-type: none"> <li>-Introduction to the basics of metal casting.</li> <li>-Simple wooden disc exercise.</li> <li>Half workout.</li> </ul>
Week 5	<ul style="list-style-type: none"> <li>Casting workshop</li> <li>Wheel exercise.</li> <li>Pushing arm exercise.</li> </ul>
Week 6	<ul style="list-style-type: none"> <li>Casting workshop.</li> <li>-Complete pulley exercise.</li> <li>-Circular pole exercise.</li> <li>-Written exam in practical exercises.</li> </ul>
Week 7	<ul style="list-style-type: none"> <li>Blacksmith Workshop</li> <li>-Occupational safety and its importance in blacksmithing workshops.</li> <li>-Introduction to the Basics of Blacksmithing.</li> <li>- Barbell adjustment exercise.</li> <li>-Eight-star exercise.</li> <li>- Exercise forming the number eight in English.</li> <li>-Six formation exercises in English.</li> </ul>
Week 8	<ul style="list-style-type: none"> <li>Blacksmith Workshop</li> <li>-An exercise forming the number five in English.</li> <li>- Exercise forming the number nine in English.</li> <li>-An exercise in forming an iron model in the form of a circle .</li> </ul>
Week 9	<ul style="list-style-type: none"> <li>Blacksmith Workshop</li> <li>- S-shape exercise.</li> <li>- Air hammer hot barbell exercise.</li> <li>- Exercise to form a circle on an electric bending machine.</li> <li>- Exercising cold and hot ornament formation.</li> <li>- A written exam in practical exercises .</li> </ul>
Week 10	<ul style="list-style-type: none"> <li>Automotive Workshop</li> <li>-Occupational safety and its importance in car maintenance workshops.</li> <li>-An introduction to cars and their basic parts.</li> <li>-Parts of the engine, how it works, types of engines, and methods of classification.</li> </ul>
Week 11	<ul style="list-style-type: none"> <li>Automotive Workshop</li> <li>- Open the engine and identify the parts</li> <li>-Lubrication system</li> <li>-Cooling system.</li> </ul>
Week 12	<ul style="list-style-type: none"> <li>Automotive Workshop</li> <li>-The fuel system.</li> <li>-The old and new ignition circuits.</li> <li>-Written exam in practical exercises.</li> </ul>
Week 13	<ul style="list-style-type: none"> <li>Turning Workshop</li> <li>-Introduction to lathe machines and identifying their parts</li> <li>-Measuring tools and the use of an oven measuring instrument</li> </ul>

	-Circular column lathing exercise on different diameters.
Week 14	Turning Workshop -Exercise using the pen (semicircular R) brackets. An exercise in making different angles using a pen (square + angle pen 55).
Week 15	Turning Workshop - Making shaft with different diameter exercises using (left and right pen) - Workout (Tube Connection). -Written exam in practical exercises.
Week 16	Fitting workshop Occupational safety and its importance in filing workshops -An introduction to the basics of filing -Pen holder exercise “preparation and preparation”
Week 17	Fitting workshop Pencil holder exercises finishing and assembling.
Week 18	Fitting workshop -The catcher exercise. - Clamping exercise. Written exam in practical exercises.
Week 19	Carpentry workshop -Occupational safety and its importance in carpentry workshops. - An introduction to carpentry, its types, types of wood, tools used, and preparation Preparing the tools used Face modification exercise using the reindeer
Week 20	Carpentry workshop Garden fence work and how to connect its parts, the eight-star exercise
Week 21	Carpentry workshop - Wood smoothing exercise using smoothing paper - Wood dyeing exercise in three stages Final smoothing and varnishing exercise Written exam in practical exercises
Week 22	The tinsmith workshop Occupational safety and its importance in plumbing workshops An introduction to plumbing, its tools, and plumbing stages Planning and marking exercise on metal plates
Week 23	The tinsmith workshop Geometric shapes Types of individuals and methods of individuals Geometric shape individuals exercise on a metal board
Week 24	The tinsmith workshop Cone members exercise

	<ul style="list-style-type: none"> <li>- Exercise of cylinders with an oblique cut</li> <li>Roll forming operations</li> <li>Connection without the use of an intermediary</li> <li>Written exam in practical exercises</li> </ul>
Week 25	<p>Electric Workshop</p> <p>Occupational Safety and its importance in electrical workshops</p> <p>An introduction to the basics of electrical installations</p> <ul style="list-style-type: none"> <li>- Linking a simple circuit consisting of a lamp to the control of a single-way switch.</li> </ul> <p>Connect two lamps in series with one-way switch control.</p> <p>Connecting two lamps in parallel with the control of a single road switch.</p> <p>Connect two lights with one-way dual switch control.</p>
Week 26	<p>electric Workshop</p> <p>Connect a fluorescent lamp circuit to a one-way switch control</p> <p>Connecting an electric supply socket circuit to the control of a separate or combined one-way switch</p> <p>Written exam in practical exercises</p>
Week 27	<p>electric Workshop</p> <p>Occupational Safety and its importance in blacksmithing workshops</p> <p>Introduction to the basics of Blacksmithing</p> <ul style="list-style-type: none"> <li>- Barbell adjustment exercise</li> </ul> <p>Eight-star exercise</p> <ul style="list-style-type: none"> <li>- Exercise forming the number eight in English</li> </ul> <p>Exercise forming the number six in English</p>
Week 28	<p>supplementary training curriculum</p> <p>Welding workshop</p> <p>Plumbing workshop</p> <p>Blacksmith's workshop</p>
Week 29	<p>supplementary training curriculum</p> <ul style="list-style-type: none"> <li>- Automotive workshop</li> <li>- Turning workshop</li> </ul> <p>Fitting workshop</p>
Week 30	<p>supplementary training curriculum</p> <p>Carpentry workshop</p> <p>The plumbing workshop</p> <p>electric Workshop</p>

Learning and Teaching Resources		
	Text	Available in the library
Required Texts	Workshop technology and measurements, Ahmed Salem Al-Sabbagh,	yes

Recommended Texts		
Websites		



Ministry of Higher Education and  
Scientific Research - Iraq  
University of Technology  
College of Science  
Department of Biotechnology



## MODULE DESCRIPTOR FORM

### نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	HUMAN RIGHTS		Module Delivery
Module Type	SUPPLEMENT		✓ Theory Lecture Lab Tutorial Practical Seminar
Module Code	HURI115		
ECTS Credits	2.00		
SWL (hr/sem)	50		
Module Level	1	Semester of Delivery	
Administering Department	Lase004	College	ApSc008
Module Leader	Nagham A. Hussein	e-mail	150006@uotechnology.edu.iq
Module Leader's Acad. Title	Asst. Professor	Module Leader's Qualification	master
Module Tutor	None	e-mail	None
Peer Reviewer Name	-	e-mail	-
Review Committee Approval	-	Version Number	1



<b>Relation With Other Modules</b> العلاقة مع المواد الدراسية الأخرى			
<b>Prerequisite module</b>	None	<b>Semester</b>	
<b>Co-requisites module</b>	None	<b>Semester</b>	
<b>Module Aims, Learning Outcomes and Indicative Contents</b> أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
<b>Module Aims</b> أهداف المادة الدراسية	<p>1. Developing and flourishing the human personality in its emotional, intellectual and social dimensions, and rooting in its sense of dignity, freedom, equality, social justice and democratic practice.</p> <p>2. Enhancing people's awareness - women and men - of their rights in a way that helps enable them to transform the principles of human rights into a social, economic, cultural and political reality, and raise their ability to defend, maintain and advance them at all levels.</p> <p>3. Strengthening the bonds of friendship and solidarity among peoples, enhancing respect for the rights of others, preserving cultural pluralism and diversity, flourishing national cultures for all groups and peoples, enriching the culture of dialogue and mutual tolerance, rejecting violence and terrorism, promoting non-violence and combating intolerance, and providing all people with strong immunity against hate speech.</p> <p>4. Promoting a culture of peace based on justice and respect for human rights, foremost of which is the right to self-determination, the right to resist occupation, and the democratization of international relations and the institutions of the international community, so as to reflect the common interests of humanity.</p>		
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	<p>1- Students benefit from knowing the types of rights and their field of application.</p> <p>2- Clarifying the historical stages of human rights and the extent of their development.</p> <p>3- Knowing the correct concept of freedoms and democracy.</p> <p>4 - Providing the student with the moral values that require adherence to them and clarifying the most important rights and duties entrusted to the individual.</p> <p>5- Knowing the rights and duties of the Iraqi individual</p> <p>6 - Introduction to the history of human rights and stages of development.</p> <p>7 - Spreading culture and feeding students from the Islamic side.</p> <p>8 - How to preserve society and the country by strengthening the country's</p>		

	<p>love for them.</p> <p>9 - Learn about the most important rights granted to them in accordance with international norms and laws.</p> <p>10 - Enhancing citizenship among students.</p>
<p><b>Indicative Contents</b> المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p>Teaching human rights requires learning to be based on participatory practice in an atmosphere of mutual respect so that everyone is aware of their shared responsibility to make human rights a reality.</p> <p>On the other hand, “human rights education” was defined in a practical and detailed manner for the purpose of the contract, as: “training, publishing and media efforts aimed at creating a global culture in the field of human rights by sharing knowledge and skills and shaping behavior in order to:</p> <ol style="list-style-type: none"> <li>1. Promote respect for human rights and fundamental freedoms.</li> <li>2. The full development of the human personality and its sense of dignity.</li> <li>3. To promote understanding, tolerance, gender equality, and friendship among all nations, indigenous peoples, and racial, national, ethnic, religious, and linguistic groups.</li> <li>4. Enabling all individuals to participate effectively in a free society.</li> <li>5. Advance the activities of the United Nations in order to maintain peace.</li> </ol>
<p><b>Learning and Teaching Strategies</b> استراتيجيات التعلم والتعليم</p>	
<p><b>Strategies</b></p>	<ul style="list-style-type: none"> <li>-Relying on concrete and realistic evidence and examples of human rights and the concept of democracy that reflects the nature of society and the environment that fosters the individual.</li> <li>-Teaching students the mechanism of scientific thinking, analysis and deduction.</li> <li>-Motivate students to find realistic problems and solve them in a scientific way.</li> <li>- Brainstorming, which gave the students an opportunity to present and discuss their ideas.</li> <li>-Lectures.</li> <li>-Intellectual questions and discussions.</li> </ul>

<b>Student Workload (SWL)</b> الحمل الدراسي للطالب			
<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	33	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعياً	2
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعياً	1.13
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	50		

<b>Module Evaluation</b> تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<b>Formative assessment</b>	<b>Quizzes</b>	2	15% (15)	5, 10	LO #1, 2, 10 and 11
	<b>Assignments</b>	2	15% (15)	2, 12	LO # 3, 4, 6 and 7
	<b>Projects / Lab.</b>	-	-	-	
	<b>Report</b>	1	10% (10)	13	LO # 5, 8 and 10
<b>Summative assessment</b>	<b>Midterm Exam</b>	2 hr	10% (10)	7	LO # 1-7
	<b>Final Exam</b>	2hr	50% (50)	16	All
<b>Total assessment</b>			100% (100 Marks)		

<b>Delivery Plan (Weekly Syllabus)</b> المنهاج الاسبوعي النظري	
	<b>Material Covered</b>
<b>Week 1</b>	The concept of human rights (definition of human rights - their characteristics).
<b>Week 2</b>	Human rights in ancient civilizations, human rights in the Christian and Jewish religions, and human rights in Islam.
<b>Week 3</b>	Human rights sources - international sources - the Universal Declaration of Human Rights - the two international covenants on human rights
<b>Week 4</b>	National Sources - Declaration of the Rights of Man and the French Citizen - French Constitutions and Declarations - Constitution of the Republic of Iraq for the year 2005
<b>Week 5</b>	Human rights guarantees - Human rights guarantees at the internal level - Constitutional guarantees - Judicial guarantees
<b>Week 6</b>	Human rights in Islam - Adoption of the principle of dual responsibility in Islamic society - The religious character of Islamic law - Human trafficking
<b>Week 7</b>	<b>Mid-term Exam</b>
<b>Week 8</b>	The concept of democracy (development - definition - dimensions)
<b>Week 9</b>	Forms of democracy (direct democracy - its applications - an assessment of its system)

<b>Week 10</b>	Semi-direct democracy (concept - manifestations - appreciation)
<b>Week 11</b>	Representative democracy (concept - pillars - forms)
<b>Week 12</b>	The Representative Council - the single-parliamentary system and the two-chamber system - the internal organization of the Representative Council
<b>Week 13</b>	The mechanism of the representative system (parliamentary) - the concept of election and its legal adaptation - the electorate (its concept - the formation of the electorate)
<b>Week 14</b>	Organizing the election process - Election systems
<b>Week 15</b>	<b>Preparatory Week</b>
<b>Week 16</b>	<b>Final Exam</b>

<b>Delivery Plan (Weekly Lab. Syllabus)</b> المنهاج الاسبوعي للمختبر	
	<b>Material Covered</b>
<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>	-

<b>Learning and Teaching Resources</b> مصادر التعلم والتدريس		
	<b>Text</b>	<b>Available in the Library?</b>
<b>Required Texts</b>	Human rights, children and democracy, Dr. Maher Saleh Allawi Al-Jubouri, Dr. Raad Naji Al-Jeddah, Dr. Riyadh Aziz Hadi, d. Cackle Abdel-Ankoud, d. Ali Abdul Razzaq Muhammad, d. Hassan Muhammad Shafiq, Dar Ibn Al-Atheer for Printing and Publishing, 2009.	Yes
<b>Recommended Texts</b>	Hadi, Riyadh Azaz. (2005). Human rights (development - contents - protection) (Baghdad). Al-Dulaimi, Hafez Alwan. (2009). Contemporary reading of the issue of human rights.	No
<b>Websites</b>	"Methods, education and culture of human rights", published on the International Information Network (Internet) on the website <a href="http://ghrorg-learning.blogspot.com">http://ghrorg-learning.blogspot.com</a>	

**APPENDIX:**

<b>GRADING SCHEME</b> مخطط الدرجات				
<b>Group</b>	<b>Grade</b>	<b>التقدير</b>	<b>Marks (%)</b>	<b>Definition</b>
<b>Success Group</b> <b>(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</b> <b>(0 – 49)</b>	<b>FX – Fail</b>	مقبول بقرار	(45-49)	More work required but credit awarded
	<b>F – Fail</b>	راسب	(0-44)	Considerable amount of work required

**Note:**

NB 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.



Ministry of Higher Education and  
Scientific Research - Iraq  
University of Baghdad  
College of Engineering  
Department of Electrical Engineering



## MODULE DESCRIPTOR FORM

### نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	MATHEMATICS		Module Delivery
Module Type	BASIC		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial  <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	MATH111		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	1	Semester of Delivery	
Administering Department	Lase004	College	ApSc008
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor	None	e-mail	None
Peer Reviewer Name	Dr. Jehad R. Kider	e-mail	Jehad.r.kider@uobaghdad.edu.iq

<b>Review Committee Approval</b>	01/06/2023	<b>Version Number</b>	1.0
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## Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

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

## Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p><b>Module Aims</b></p> <p>أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> <li>1. Familiarizes the student with the concept of a function, its domain, trigonometric functions, the purpose of a function, and its derivatives.</li> <li>2. covers functions, their domains, purposes, various methods of solving them, trigonometric functions, their domains, methods of differentiation, and complex numbers and their properties To develop problem solving skills and understanding of circuit theory through the application of techniques</li> <li>3. To develop the student with the applications of integration in solving various mathematical problems</li> <li>4. The ability to be creative, innovative and develop individual skills and talents</li> <li>5. Enable the student to use books and references related to the course.</li> <li>6. Enable the student to use the Internet to view more information related to the course</li> </ol>
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<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>A - Cognitive Objectives</p> <ol style="list-style-type: none"> <li>1. Familiarize the student with the concept of functions</li> <li>2. Enable the student to study continuous functions</li> <li>3. Enable the student to study trigonometric functions</li> <li>4. Familiarize the student with differentiation methods</li> <li>5. Develop performance skills in using examples from practical life, such as finding the area and length of a specific curves</li> <li>6. To develop the student with the applications of integration in solving various mathematical problems</li> </ol> <p>B - Skills Objectives specific to the course</p>
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	<ol style="list-style-type: none"> <li>1. Teach the student the basic vocabulary of mathematics.</li> <li>2. Enable the student to use functions and derive them in various important topics where functions are applicable.</li> <li>3. Educate the student about the applications of functions.</li> <li>4. Enable the student to use the internet to access more information related to the course.</li> </ol> <p>Enable the student to use books and references related to the course.</p>
<p><b>Indicative Contents</b> المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p>Part A- Differential Calculus</p> <p>1- Revision and Basic Concepts :</p> <p>Coordinates and graphs in the plane slope, Equations for lines, Functions and their graphs shifts, the definition of limits, properties of limit, definition of derivative, laws of derivative, implicit derivative, higher order derivative, the L-hopitals rule. (5 hrs)</p> <p>2- Trigonometric Functions:</p> <p>A brief review of trigonometric relations, limit of trigonometric functions, derivative of trigonometric functions. (6 hrs)</p> <p>3- Transcendental Functions:</p> <p>Domain, range and graphs of natural logarithm functions, properties of natural logarithm functions, limit and derivative of natural logarithm functions, domain, range and graphs of exponential functions, properties of exponential functions, limit and derivative of exponential functions, domain, range and graphs of inverse trigonometric functions, limit and derivative of inverse trigonometric functions. (10 hrs)</p> <p>4- Hyperbolic Functions:</p> <p>Domain, range and graphs of hyperbolic functions, Properties, Limit and derivative. (6 hrs)</p> <p>Part B - Integration Calculus</p> <p>1- The Integration Definition of indefinite and finite integration, laws of integration, Integration of trigonometric functions. (4 hrs)</p> <p>2- Integration of Transcendental Functions</p>



	<p>Integration of Natural logarithm functions, Integration of exponential functions, Integration of inverse trigonometric functions. (4 hrs)</p> <p>3- Method of Integration Integration by parts, partial fraction method, Trigonometric substitutions integrals involving <math>a^2 + u^2, \sqrt{a^2 + u^2}, a^2 - u^2, \sqrt{a^2 - u^2}, u^2 - a^2, \sqrt{u^2 - a^2}</math> Method for integration with any rational function of <math>\sin(x)</math> and <math>\cos(x)</math>, Method for integration with one root or different roots, Improper integrals. (8 hrs)</p> <p>4- Integration of Hyperbolic functions, Laws of integration. (4 hrs) 5- Application of Definite Integrals Area of functions, Length of functions, Volumes, Surface area. (6 hrs)</p> <p>6- Polar Coordinate Review equations and exercises, Graphs of polar equations, Laws of symmetry, Particular curves, Area in the plane. (4 hrs)</p> <p>7- Complex Numbers: Definition of complex number, Algebraic operations, Definition of complex number by <math>\sin(x)</math> and <math>\cos(x)</math> (polar form), Algebraic operations Definition of complex number by exponential function (Euler form), Algebraic operations, De Moivre's theorem, Solve equations of complex numbers. (6 hrs)</p>
<p><b>Learning and Teaching Strategies</b></p> <p>استراتيجيات التعلم والتعليم</p>	
<p><b>Strategies</b></p>	<p>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 type of simple experiments involving some sampling activities that are interesting to the students.</p>

## Student Workload (SWL)

الحمل الدراسي للطالب

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	102	<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	98	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.5
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	200		

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

## Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	<b>Material Covered</b>
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<b>Week 1</b>	Introduction - Coordinates and graphs in the plane slope, Equations for lines, Functions, and their graphs shifts. The definition of limits, properties of limit, definition of derivative, laws of derivative, implicit derivative
<b>Week 2</b>	Higher order derivative, the L-Hopitals rule, Derivative of trigonometric functions, Domain, range and graphs of natural logarithm functions, properties of natural logarithm functions
<b>Week 3</b>	Limit and derivative of natural logarithm functions, Domain, range and graphs of exponential functions, properties of exponential functions, Limit and derivative of exponential functions
<b>Week 4</b>	Domain, range and graphs of inverse trigonometric functions, Limit and derivative of inverse trigonometric functions, Domain, range and graphs of hyperbolic functions, Properties, Limit and derivative
<b>Week 5</b>	Introduction - Definition of Integration with Examples, The Integration Definition of indefinite and definite integration
<b>Week 6</b>	Integration of trigonometric functions, laws of Integration of trigonometric functions, laws of Integration of trigonometric functions
<b>Week 7</b>	Integration of Transcendental Functions, Integration of Natural logarithm functions, Integration of exponential functions
<b>Week 8</b>	Integration of inverse trigonometric functions
<b>Week 9</b>	Method of Integration Integration by parts, partial fraction method, Trigonometric substitutions integrals involving $a^2 + u^2, \sqrt{a^2 + u^2}, a^2 - u^2, \sqrt{a^2 - u^2}, u^2 - a^2, \sqrt{u^2 - a^2}$
<b>Week 10</b>	Method for integration with any rational function of $\sin(x)$ and $\cos(x)$ , Method for integration with one root or different roots
<b>Week 11</b>	Improper integrals , Application of Definite Integrals
<b>Week 12</b>	Area of functions, Length of functions
<b>Week 13</b>	Volumes, Surface area
<b>Week 14</b>	Algebraic operations Definition of complex number by exponential function (Euler form), Algebraic operations, De Moivre's theorem, Solve equations of complex numbers
<b>Week 15</b>	Definition of complex number, Algebraic operations, Definition of complex number by $\sin(x)$ and $\cos(x)$ (polar form)
<b>Week 16</b>	<b>Preparatory Week and Final Exam</b>

## Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1:
Week 2	Lab 2:
Week 3	Lab 3:
Week 4	Lab 4:
Week 5	Lab 5:
Week 6	Lab 6:
Week 7	Lab 7:

## Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Calculus and analytic geometry"; G.Thomas and R.Rinney	Yes
Recommended Texts	"Calculus and analytic geometry"; Edwards & Penny	Yes
Websites	<a href="https://www.coursera.org/courses?query=calculus">https://www.coursera.org/courses?query=calculus</a>	

APPENDIX:

**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	مقبول بقرار	(45-49)	More work required but credit awarded
	<b>F</b> – Fail	راسب	(0-44)	Considerable amount of work required

**Note:**

NB 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.



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Department of Applied Science  
Laser science and technology



## MODULE DESCRIPTOR FORM

### نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
<b>Module Title</b>	General Chemistry		<b>Module Delivery</b>
<b>Module Type</b>	BASIC	✓ Theory ✓ Lecture ✓ Lab ✓ Tutorial Practical Seminar	
<b>Module Code</b>	GECH114		
<b>ECTS Credits</b>	10		
<b>SWL (hr/sem)</b>	250		
<b>Module Level</b>	1	<b>Semester of Delivery</b>	1
<b>Administering Department</b>	Lase004	<b>College</b>	ApSc008
<b>Module Leader</b>	Dr. Firas Al-Oqaili	<b>e-mail</b>	100074@uotechnology.edu.iq
<b>Module Leader's Acad. Title</b>	Lecturer	<b>Module Leader's Qualification</b>	Ph.D.
<b>Module Tutor</b>	None	<b>e-mail</b>	None

<b>Peer Reviewer Name</b>	None	<b>e-mail</b>	None
<b>Review Committee Approval</b>	01/06/2023	<b>Version Number</b>	1

### Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

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

### Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<b>Module Aims</b> أهداف المادة الدراسية	<ol style="list-style-type: none"> <li>1. Introducing the student to the scientific principles of science theories.</li> <li>2. To develop problem solving skills and understanding of general chemistry through the application of techniques.</li> <li>3. This course deals with the basic concept of general chemistry.</li> <li>4. This is the basic subject for all chemistry phenomena subject. Teaching the student how to process to obtain results that are consistent with practical results.</li> <li>5. Introducing the student to how to build scientific theories in chemistry.</li> </ol>
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> <li>7. Introducing the student to the important laws and chemical equations.</li> <li>8. List the various terms associated with general chemistry.</li> <li>9. Teaching students how to use and apply theoretical laws in laboratory experiments.</li> <li>10. Discuss the reaction and involvement of elements...</li> <li>11. The possibility of applying these experiments and methods and benefiting from them industrially or commercially in order to reduce time and cost.</li> <li>12. Define groups of elements in periodical table</li> <li>13. Identify the principal concepts of elements (atoms, molecules, compounds...etc.), applications.</li> <li>14. Conducting special applications manually inside the laboratory.</li> <li>15. Giving additional skills to the students when using the tools and conducting measurements of reaction.</li> <li>16. Gaining experience in dealing with equipments and raising their awareness to avoid risks when misused.</li> </ol>

<p><b>Indicative Contents</b></p> <p>المحتويات الإرشادية</p>	<p>Introducing the student to the scientific principles of science theories. to develop problem-solving skills and understanding of general chemistry through the application of techniques. This course deals with the basic concept of general chemistry. This is the basic subject for all chemistry phenomena subject. teaching the student how to process to obtain results that are consistent with practical results. Introducing the student to how to build scientific theories in chemistry.</p>
<p><b>Learning and Teaching Strategies</b></p> <p>استراتيجيات التعلم والتعليم</p>	
<p><b>Strategies</b></p>	<ol style="list-style-type: none"> <li>1. Theoretical lectures</li> <li>2. Weekly theoretical exercises in the classroom.</li> <li>3. Stimulating scientific thinking among the student.</li> <li>4. The ability to understand practical applications of the laws of physics.</li> <li>5. Weekly exercises implemented in the classroom.</li> <li>6. Surprise exams are distributed throughout the school year.</li> <li>7. Scientific reports submitted by the student.</li> <li>8. Online exams</li> </ol>

<p><b>Student Workload (SWL)</b></p> <p>الحمل الدراسي للطالب</p>			
<p><b>Structured SWL (h/sem)</b></p> <p>الحمل الدراسي المنتظم للطالب خلال الفصل</p>	78	<p><b>Structured SWL (h/w)</b></p> <p>الحمل الدراسي المنتظم للطالب أسبوعيا</p>	5
<p><b>Unstructured SWL (h/sem)</b></p> <p>الحمل الدراسي غير المنتظم للطالب خلال الفصل</p>	172	<p><b>Unstructured SWL (h/w)</b></p> <p>الحمل الدراسي غير المنتظم للطالب أسبوعيا</p>	11.4
<p><b>Total SWL (h/sem)</b></p> <p>الحمل الدراسي الكلي للطالب خلال الفصل</p>	250		



## Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	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	Lab safety (Risks and Incidents)
Week 2	Lab safety (The requirements that must followed after finished from the lab. )
Week 3	Lab safety (The demands dealing with the storage of chemicals and tools in the lab.)
Week 4	General view of chemistry course (1)
Week 5	General view of chemistry course (2)

<b>Week 6</b>	<b>Structure of Chemical Compounds (1)</b>
<b>Week 7</b>	<b>Structure of Chemical Compounds (2)</b>
<b>Week 8</b>	<b>Mid Exam</b>
<b>Week 9</b>	<b>Solutions</b>
<b>Week 10</b>	<b>Acids, Bases and salts</b>
<b>Week 11</b>	<b>Chemical Nomenclature</b>
<b>Week 12</b>	<b>Fundamental Units of measurement</b>
<b>Week 13</b>	<b>Fundamental of Analytical Chemistry</b>
<b>Week 14</b>	<b>Periodical Table (1)</b>
<b>Week 15</b>	<b>Periodical Table (2)</b>
<b>Week 16</b>	<b>Final Exam</b>

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	<b>Material Covered</b>
<b>Week 1</b>	Lab 1: Preparation of Standard Solution
<b>Week 2</b>	Lab 2: Standardization of HCl and the Determination of Sodium Hydroxide Solution Normality
<b>Week 3</b>	Lab 3: Quantitative determination of carbonate and hydroxide in mixture
<b>Week 4</b>	Lab 4: Acidity of Vinegar
<b>Week 5</b>	Lab 5: Back Titration
<b>Week 6</b>	Lab 6: Oxidation - Reduction Reaction
<b>Week 7</b>	Lab 7: Exam

## Learning and Teaching Resources

### مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	اساسيات الكيمياء العامة ؟ أ.د.حسن احمد شحاتة (2005)	Yes
<b>Recommended Texts</b>		
<b>Websites</b>		

#### APPENDIX:

### GRADING SCHEME

#### مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
<b>Success Group (50 - 100)</b>	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
<b>Fail Group (0 - 49)</b>	FX – Fail	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note:

NB 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.



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## MODULE DESCRIPTOR FORM

### نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Mechanics and Sounds		Module Delivery	
Module Type	BASIC		✓ Theory ✓ Lecture ✓ Lab ✓ Tutorial Practical Seminar	
Module Code	MESO112			
ECTS Credits	10			
SWL (hr/sem)	250			
Module Level	1	Semester of Delivery	1	
Administering Department	Lase004	College	ApSc008	
Module Leader	Dr. Jehan A. Saimon		e-mail	Jehan a. saimon@uotechnology.edu.iq
Module Leader's Acad. Title	Professor		Module Leader's Qualification	Ph.D.
Module Tutor	None		e-mail	None
Peer Reviewer Name	None		e-mail	None

<b>Review Committee Approval</b>	01/06/2023	<b>Version Number</b>	1
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<b>Relation With Other Modules</b>			
العلاقة مع المواد الدراسية الأخرى			
<b>Prerequisite module</b>	None	<b>Semester</b>	
<b>Co-requisites module</b>	None	<b>Semester</b>	
<b>Module Aims, Learning Outcomes and Indicative Contents</b>			
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
<b>Module Aims</b> أهداف المادة الدراسية	<ul style="list-style-type: none"> <li>6. Introducing the student to the scientific principles of science theories.</li> <li>7. To develop problem solving skills and understanding of mechanic theory through the application of techniques.</li> <li>8. This course deals with the basic concept of mechanic.</li> <li>9. This is the basic subject for all physical phenomena subject.</li> <li>10. Teaching the student how to process theories to obtain results that are consistent with practical results.</li> <li>11. Introducing the student to how to build scientific theories.</li> </ul>		
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	<ul style="list-style-type: none"> <li>17. Introducing the student to the important laws of mechanics</li> <li>18. List the various terms associated with mechanics.</li> <li>19. Teaching students how to use and apply theoretical laws in laboratory experiments.</li> <li>20. Discuss the reaction and involvement of atoms in physics.</li> <li>21. The possibility of applying these experiments and methods and benefiting from them industrially or commercially in order to reduce time and cost.</li> <li>22. Define Newton's law.</li> <li>23. Identify the basic mechanic elements and their applications.</li> <li>24. Conducting special applications manually inside the laboratory.</li> <li>25. Giving additional skills to the students when using the devices and conducting measurements.</li> <li>26. Gaining experience in dealing with devices and raising their awareness to avoid risks when misused.</li> </ul>		
<b>Indicative Contents</b>	Indicative content includes the following.		

Introduction to vectors and the direction, the difference between scalars and vectors quantities, definition of unit vector and position vector, components of a vector and addition of vectors, the difference between scalar and vector product. [10 hrs]

Revision problem classes [8 hrs]

The types of motion and the equations to determine both the velocity and the acceleration of a body in each type: 1- rectilinear motion: velocity and acceleration, vector representation of velocity and acceleration in rectilinear motion. [8 hrs]

2- curvilinear motion: velocity and acceleration, 3- circular motion: angular velocity and angular acceleration. [6hrs]

Revision problem classes [8 hrs]

The laws of force and momentum: The law of inertia and linear momentum, The principle of conservation of momentum, redefinition of mass, Newton's first, second and third law, units of force. [8 hrs]

The frictional forces in solids and fluids, systems with variable mass, curvilinear motion, angular momentum, central forces. [8 hrs]

Revision problem classes [8 hrs]

Introduction to structure of Matter: the concept of particles, atoms, molecules, and the matter in bulk Interactions [4 hrs]

The definition of Work and Power, units of work and power, kinetic energy, work of a force constant in magnitude and direction, Potential Energy, the difference between the conservation of energy of a particle and the non conservative forces. [10 hrs]

Revision problem classes [8 hrs]

Simple Harmonic Motion (SHM), Force and Energy in SHM, Basic equation of SHM, The Simple Pendulum. Superposition of Two SHM: Same Direction, Same Frequency, Superposition of Two SHM: Same Direction, Different Frequency, Superposition of Two SHM: perpendicular Direction, coupled oscillators, An harmonic oscillation, Damped and Forced oscillations. [10 hrs]

Revision problem classes [7 hrs]

The concept of a Rigid Body: Angular momentum of a rigid body, Calculation of the Moment of Inertia, Equation of Motion for Rotation of a Rigid Body, Kinetic Energy of Rotation, Physical Pendulum. [8 hrs]

Revision problem classes [6 hrs]

Elastic: Stress (tension, compression, shearing), strain (extension, shearing, volume), modulus of elasticity (Yang modulus, shearing modulus, Bulk modulus of elasticity).

	<p>[4 hrs]</p> <p>Revision problem classes [2 hrs]</p> <p>Sound Waves: Speed of Sound Waves, Periodic Sound Waves, Intensity of Periodic Sound Waves. [4 hrs]</p>
<p><b>Learning and Teaching Strategies</b></p> <p>استراتيجيات التعلم والتعليم</p>	
<p><b>Strategies</b></p>	<p>9. Theoretical lectures</p> <p>10. Weekly theoretical exercises in the classroom.</p> <p>11. Stimulating scientific thinking among the student.</p> <p>12. The ability to understand practical applications of the laws of physics.</p> <p>13. Weekly exercises implemented in the classroom.</p> <p>14. Surprise exams are distributed throughout the school year.</p> <p>15. Scientific reports submitted by the student.</p> <p>16. Online exams</p>

<p><b>Student Workload (SWL)</b></p> <p>الحمل الدراسي للطالب</p>			
<p><b>Structured SWL (h/sem)</b></p> <p>الحمل الدراسي المنتظم للطالب خلال الفصل</p>	<p>123</p>	<p><b>Structured SWL (h/w)</b></p> <p>الحمل الدراسي المنتظم للطالب أسبوعيا</p>	<p>8</p>
<p><b>Unstructured SWL (h/sem)</b></p> <p>الحمل الدراسي غير المنتظم للطالب خلال الفصل</p>	<p>127</p>	<p><b>Unstructured SWL (h/w)</b></p> <p>الحمل الدراسي غير المنتظم للطالب أسبوعيا</p>	<p>8.4</p>
<p><b>Total SWL (h/sem)</b></p> <p>الحمل الدراسي الكلي للطالب خلال الفصل</p>	<p>250</p>		

<p><b>Module Evaluation</b></p>
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تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	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	<b>Vectors:</b> Concept of direction, scalars and vectors, unit vector, position vector, components of a vector, addition of vectors, scalar product, vector product.
Week 2	<b>Kinematics:</b> Rectilinear motion: velocity and acceleration, vector representation of velocity and acceleration in rectilinear motion,
Week 3	Curvilinear motion: velocity and acceleration, circular motion: angular velocity and angular acceleration.
Week 4	<b>Force and Momentum:</b> The law of inertia, linear momentum, principle of conservation of momentum, redefinition of mass, Newton's second and third law, units of force.
Week 5	Frictional forces, frictional forces in fluids, systems with variable mass, curvilinear motion, angular momentum, central forces.
Week 6	<b>Structure of Matter:</b> Particles, Atoms, Molecules, Matter in Bulk, Interactions
Week 7	<b>Mid-term Exam + Work and Energy:</b> Work, Power, units of work and power, kinetic energy, work of a force constant in magnitude and direction.

<b>Week 8</b>	Potential Energy, Conservation of energy of a particle, Non conservative forces.
<b>Week 9</b>	<b>Oscillatory Motion:</b> Kinematics of Simple Harmonic Motion (SHM), Force and Energy in SHM, Basic equation of SHM, The Simple Pendulum. Superposition of Two SHM: Same Direction, Same Frequency.
<b>Week 10</b>	Superposition of Two SHM: Same Direction, Different Frequency, Superposition of Two SHM: perpendicular Direction, coupled oscillators, An harmonic oscillation, Damped oscillations, Forced oscillations.
<b>Week 11</b>	<b>Dynamics of a Rigid Body:</b> Angular momentum of a rigid body, Calculation of the Moment of Inertia.
<b>Week 12</b>	Equation of Motion for Rotation of a Rigid Body, Kinetic Energy of Rotation, Physical Pendulum.
<b>Week 13</b>	<b>Elastic:</b> Stress (tension, compression, shearing), strain (extension, shearing, volume), modulus of elasticity (Yang modulus, shearing modulus, Bulk modulus of elasticity).
<b>Week 14</b>	<b>Sound Waves:</b> Speed of Sound Waves, Periodic Sound Waves, Intensity of Periodic Sound Waves.
<b>Week 15</b>	<b>Preparatory Week</b>
<b>Week 16</b>	<b>Final Exam</b>

### Delivery Plan (Weekly Lab. Syllabus)

#### المنهاج الاسبوعي للمختبر

	Material Covered
<b>Week 1</b>	Lab 1: Measuring the speed of sound in air by means of resonance tubes closed at one end
<b>Week 2</b>	Lab 2: Helical spring experiments
<b>Week 3</b>	Lab 3: Acceleration of a falling object using a simple pendulum
<b>Week 4</b>	Lab 4: The rod is suspended by two threads
<b>Week 5</b>	Lab 5: A body falling through a viscous medium
<b>Week 6</b>	Lab 6: Simple Pendulum

<b>Week 7</b>	Lab 7: Exam
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<b>Learning and Teaching Resources</b> مصادر التعلم والتدريس		
	<b>Text</b>	<b>Available in the Library?</b>
<b>Required Texts</b>	Fundamental University Physics (I Mechanics) by Alonso-Finn	Yes
<b>Recommended Texts</b>	University physics, sixth edition by Francis W. Sears. Mark W. Zemansky. Hugh D. Young	Yes
<b>Websites</b>	<a href="https://www.brainkart.com/article/Laws-of-Mechanics_6783/">https://www.brainkart.com/article/Laws-of-Mechanics_6783/</a>	

**APPENDIX:**

<b>GRADING SCHEME</b> مخطط الدرجات				
<b>Group</b>	<b>Grade</b>	<b>التقدير</b>	<b>Marks (%)</b>	<b>Definition</b>
<b>Success Group (50 - 100)</b>	<b>A - Excellent</b>	امتياز	90 - 100	Outstanding Performance
	<b>B - Very Good</b>	جيد جدا	80 - 89	Above average with some errors
	<b>C - Good</b>	جيد	70 - 79	Sound work with notable errors
	<b>D - Satisfactory</b>	متوسط	60 - 69	Fair but with major shortcomings
	<b>E - Sufficient</b>	مقبول	50 - 59	Work meets minimum criteria
<b>Fail Group (0 - 49)</b>	<b>FX – Fail</b>	مقبول بقرار	(45-49)	More work required but credit awarded
	<b>F – Fail</b>	راسب	(0-44)	Considerable amount of work required

**Note:**

NB 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	ENGLISH LANGUAGE		Module Delivery
Module Type	SUPPORT		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab. <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	ENLA124		
ECTS Credits	2.00		
SWL (hr/sem)	50		
Module Level	1	Semester of Delivery	
Administering Department	Lase004	College	ApSc008
Module Leader	Hassan Hamed Abd	e-mail	
Module Leader's Acad. Title	Lecture	Module Leader's Qualification	Master
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

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

Co-requisites module	None	Semester	
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### Module Aims, Learning Outcomes and Indicative Contents

#### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p><b>Module Objectives</b></p> <p>أهداف المادة الدراسية</p>	<p>1- English (1) is a first-class comprehensive course that provides the students the fundamental principles of English.</p> <p>2- Some of the principles are illustrated with a nature.</p> <p>3- It is focused on effective teaching and learning English</p> <p>4- It is specially adapted for the Middle East and North Africa.</p> <p>5- This course combines the best of English language teaching methodologies to help students use English accurately and fluently.</p>
<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>The objective of the course is for undergraduate students:</p> <ol style="list-style-type: none"> <li>1. It will develop an understanding and appreciation of English language.</li> <li>2. Students will acquire basic concepts of English, which are reading, writing, listening and speaking.</li> <li>3. Students will focused on efficient instructions in studying English.</li> <li>4. Students will be able to apply what they learn in their everyday life or in their study.</li> <li>5. Provide students the best methodologies for Learning English language.</li> <li>6. Help students to use English rightly and smoothly.</li> <li>7. Discuss the various properties of materials in English.</li> <li>8. Identify the basic elements and their applications in English.</li> </ol>
<p><b>Indicative Contents</b></p> <p>المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p>English (1) is a course for first-class students depending on theoretical</p>

	lectures. It is a comprehensive course that provides the students the fundamental principles of English. , some of the principles are illustrated with a nature. In addition, it is focused on effective teaching and learning. English course is specially adapted for the Middle East and North Africa. This course combines the best of English language teaching methodologies to help students use English accurately and fluently. It is provides Basic Concepts materials and its applications. (15 hr.)
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<b>Learning and Teaching Strategies</b> استراتيجيات التعلم والتعليم	
<b>Strategies</b>	The main strategy that will be adopted in delivering this module is to encourage students' participation in the English activities, 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 analysis involving some enjoyable activities for the students to solve problems that related in materials analysis.

<b>Student Workload (SWL)</b> الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	33	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	2
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.13
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	<b>50</b>		

## Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	15% (15)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	15% (15)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	<b>There is no lab.</b>			
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1.5 hr	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	<ul style="list-style-type: none"> <li>- Introduction: Definition of course, course outline, and self introduce.</li> <li>- Placement test.</li> <li>- Course discussion and class plans.</li> </ul>
Week 2	<ul style="list-style-type: none"> <li>- General grammars: Present simple tense, past simple tense, and Future.</li> <li>- Vocabulary and pronunciation.</li> <li>- Audio-listening.</li> <li>- Group conversation.</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>- Grammars reviews and prepositions: in, at, on, etc.</li> <li>- Reading and pronunciation.</li> <li>- Homework discussion.</li> </ul>



<b>Week 4</b>	<ul style="list-style-type: none"> <li>- Improve your spelling.</li> <li>- Vocabulary: Opposite verbs and positive and negative adjectives.</li> <li>- Class activities: Puzzle.</li> <li>- Homework discussion.</li> </ul>
<b>Week 5</b>	<ul style="list-style-type: none"> <li>- Intermediate grammars: Continuous tenses- present and past.</li> <li>- Practice your handwriting.</li> <li>- Writing a short speech.</li> <li>- Homework discussion.</li> </ul>
<b>Week 6</b>	<ul style="list-style-type: none"> <li>- Has and have: What is the difference?</li> <li>- Write and punctuate sentences.</li> <li>- Group work.</li> <li>- Homework discussion.</li> </ul>
<b>Week 7</b>	<ul style="list-style-type: none"> <li>- Negatives tense and modals- can and can't.</li> <li>- Improve your reading.</li> <li>- Solving exercises in class.</li> <li>- Homework discussion.</li> </ul>
<b>Week 8</b>	<ul style="list-style-type: none"> <li>- Speaking: Interviews.</li> <li>- What is dislike vs. like?</li> <li>- Writing a short speech.</li> </ul>
<b>Week 9</b>	Exam and course review
<b>Week 10</b>	<ul style="list-style-type: none"> <li>- Who, that, and where: What is the difference?</li> <li>- Vocabulary and Pronunciation.</li> <li>- Class activities: Write sentence, short talk "question and answer", and reading.</li> </ul>
<b>Week 11</b>	<ul style="list-style-type: none"> <li>- Adverb and preposition: during, in, ago, from, to, for, and since.</li> <li>- Audio-Listening.</li> <li>- Strategies and self- improvement.</li> <li>- Homework discussion.</li> </ul>

<b>Week 12</b>	<ul style="list-style-type: none"> <li>- Reading an article and complete a chart.</li> <li>- Crossword puzzle.</li> <li>- Writing a letter.</li> </ul>
<b>Week 13</b>	<ul style="list-style-type: none"> <li>- Speaking: Talk about things you need to have done.</li> <li>- Class activities: Match the verbs with nouns.</li> <li>- Improve your spelling.</li> <li>- Homework discussion.</li> </ul>
<b>Week 14</b>	<ul style="list-style-type: none"> <li>- Midterm Exam.</li> </ul>

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	<b>Material Covered</b>
	<b>There is no lab.</b>

### Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	<p>The course is:</p> <ol style="list-style-type: none"> <li>1. First course textbook: Headway academic Skills Reading, Writing and study skills. Student's book, Sarah Philpot and Lesley Curnick, Series Editors Liz and John Soars, Oxford, University Press. 2011</li> <li>2. First course textbook: Headway academic Skills listening, Speaking and study skills. Student's book, Sarah Philpot and Lesley Curnick, Series Editors Liz and John Soars, Oxford, University Press.</li> </ol>	No
<b>Recommended</b>	There is no reference book but students can use any English textbook to help themselves for quick learning.	No

<b>Texts</b>		
<b>Websites</b>	Any videos about learning English Language	

<b>Grading Scheme</b>				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
<b>Success Group</b> <b>(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</b> <b>(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
<p><b>Note:</b> 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.</p>				



Ministry of Higher Education and  
Scientific Research - Iraq  
University of Technology  
Department of applied science  
Laser Science and Technology



## MODULE DESCRIPTOR FORM

### نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	LASER PRINCIPLES		Module Delivery	
Module Type	CORE		✓ Theory ✓ Lecture ✓ Lab Tutorial Practical Seminar	
Module Code	LAPR121			
ECTS Credits	7			
SWL (hr/sem)	175			
Module Level	1	Semester of Delivery	2	
Administering Department	Lase004	College	ApSc008	
Module Leader	Dr. Iman H.Hadi		e-mail	Iman.h.hadi@uotechnology.edu.iq
Module Leader's Acad. Title	lecturer	Module Leader's Qualification	Ph.D.	
Module Tutor	None		e-mail	None
Peer Reviewer Name	None		e-mail	None

<b>Review Committee Approval</b>	01/06/2023	<b>Version Number</b>	1.0
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## Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

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

## Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p><b>Module Aims</b></p> <p>أهداف المادة الدراسية</p>	<p>12. To understand the fundamental principles of laser operation: The course aims to provide a comprehensive understanding of the basic principles and mechanisms behind laser operation, including the interaction of light with atoms or molecules and the processes that lead to stimulated emission.</p> <p>13. To explore the concepts of optical resonators, cavity modes, and the design principles behind laser cavities. Students may learn about different cavity configurations.</p> <p>14. The course aims to cover topics related to laser beam characteristics.</p> <p>15. Practical skills and experimental techniques.</p>
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<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>27. Demonstrate a comprehensive understanding of the fundamental principles of laser operation, including the concepts of stimulated emission, population inversion, and optical amplification.</p> <p>28. Explain the design principles of laser cavities, including optical resonators, cavity modes, and the factors influencing laser output characteristics.</p> <p>29. Analyze and characterize laser beams in terms of properties.</p> <p>30. Apply appropriate safety protocols and precautions when working with lasers, demonstrating a sound understanding of laser safety guidelines and the potential hazards associated with laser operation.</p> <p>31. Utilize practical skills related to laser technology, including alignment techniques, measurements of laser beam properties.</p>
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## Indicative Contents

المحتويات الإرشادية

The principles of lasers involve several key components and concepts. Here are some indicative contents related to laser principles:

**Stimulated Emission:** This is a fundamental principle where photons stimulate the emission of additional photons, creating a coherent beam of light.[14 hrs]

**Population Inversion:** In order for stimulated emission to occur, the laser medium needs to achieve a population inversion, where more atoms or molecules are in an excited state than in the ground state. [14 hrs]

**Optical Gain:** The gain medium within the laser amplifies the light signal through stimulated emission, resulting in the generation of a powerful laser beam.[14 hrs]

**Beam Characteristics:** Laser beams are typically characterized by their intensity, coherence, directionality, and divergence.[14 hrs]

Revision problem classes. [12 hrs]

**Pumping Mechanisms:** The laser medium requires an external energy source to achieve population inversion.[15 hrs]

**Resonator:** A laser resonator consists of two mirrors that form an optical cavity. The mirrors reflect the light back and forth, allowing the amplification of the laser beam. [15 hrs]

**Laser Modes:** Lasers can operate in different modes, such as continuous wave (CW) or pulsed operation, depending on the specific application requirements. [14 hrs]

## Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

<b>Strategies</b>	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type 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			
<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	63	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	4
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	112	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.4
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	175		

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

assessment	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

<b>Delivery Plan (Weekly Syllabus)</b> المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Historical review of laser.
Week 2	Laser principles.
Week 3	Reflection phenomenon.
Week 4	Refraction phenomenon.
Week 5	Huygens principles.
Week 6	ASSESSMENT EXAM.
Week 7	Laser cavities. Laser modes.
Week 8	Einstein's concept of stimulated emission.
Week 9	Calculating Einstein's coefficients.
Week 10	Components of laser.
Week 11	Modes of Laser Cavity.
Week 12	Laser Gain curve.
Week 13	Optical resonators.
Week 14	High power lasers.
Week 15	1 <sup>st</sup> term final exam.



## Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
<b>Week 1</b>	Lab 1: Divergence Of Laser Beam
<b>Week 2</b>	Lab 2: Power of Laser Beam2
<b>Week 3</b>	Lab 3: Spatial Coherence
<b>Week 4</b>	Lab 4: Temporal Coherence
<b>Week 5</b>	Lab 5: Determined Wave Length of Laser Beam By Diffraction Grating
<b>Week 6</b>	Lab 6: Determination The Diameter of Fine Wire By Laser
<b>Week 7</b>	Lab 7: Fraunhofer Diffraction
<b>Week 8</b>	Lab 8: Exam

## Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	Lecture notes	No
<b>Recommended Texts</b>	Laser Spectroscopy 1 Basic Principles (Demtröder, Wolfgang), Lasers (A E Siegman).	No
<b>Websites</b>		

APPENDIX:

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	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				
NB 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.				



Ministry of Higher Education and  
Scientific Research - Iraq  
University of Technology  
Department of Applied Science  
Laser Science and Technology



## MODULE DESCRIPTOR FORM

### نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	LIGHT		Module Delivery	
Module Type	CORE		✓ Theory ✓ Lecture ✓ Lab Tutorial Practical Seminar	
Module Code	LIGH125			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	1	Semester of Delivery	2	
Administering Department	Lase004	College	ApSc008	
Module Leader	Mayyadah H. Mohsin		e-mail	Mayyadah.h.mohsin@uotechnology.edu.iq
Module Leader's Acad. Title	Assistant Professor		Module Leader's Qualification	M.Sc.
Module Tutor	None		e-mail	None
Peer Reviewer Name			e-mail	

<b>Review Committee Approval</b>	01/06/2023	<b>Version Number</b>	1.0
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## Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

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

## Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<b>Module Aims</b> أهداف المادة الدراسية	<p>16. To develop problem solving skills and understanding of light theory through the application of techniques.</p> <p>17. To understand the Physics of Light.</p> <p>18. This course deals with the basic concept of the Electromagnetic Spectrum, Properties of Light.</p> <p>19. This is the basic subject for all Waves and Radiation.</p> <p>20. To understand Light: Reflection, Refraction, diffraction, and Color problems.</p> <p>21. To perform How to Draw Ray Diagrams and Analysis.</p> <p>22. To understand Why light works for visual communication</p> <p>23. To understand how to use Light in medicine</p>
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> <li>1. Describe the categories of electromagnetic energy within the electromagnetic spectrum, and be able to place these categories relative to each other in wavelength and energy.</li> <li>2. Describe the wavelengths of visible light and name a color for a given wavelength range.</li> <li>3. Describe the ways in which electromagnetic energy can behave when it interacts with an object.</li> <li>4. Define characteristics of light, including the speed of light, wavefront, and light ray.</li> <li>5. Define refractive index.</li> <li>6. Differentiate between the electric and magnetic components of light.</li> <li>7. Use the electric (E) vector of light to describe the behavior of plane-polarized light.</li> <li>8. Applications of visible light in medicine</li> </ol>
<b>Indicative Contents</b> المحتويات الإرشادية	<p>Indicative content includes the following</p> <p><u>Light Theory</u>, Light, rays, electromagnetic wave, and electromagnetic spectrum definition – Behavior of light at a boundary, Visible Light. [15 hrs]</p>

	<p>Behavior of Light, We can categorize substances according to how light interacts with that substance's molecules, Describe an experiment that shows how light travels in a straight line [15 hrs]</p> <p>Properties of Light, Wavelength, Frequency, Visible, Infrared, Ultraviolet light, Transmission, Absorption, refractive index, Speed of Light, Optical Density, Wave front, Ray, Electric field vector, Magnetic field vector[15 hrs]</p> <p>Revision problem classes [7 hrs]</p> <p>Diffraction, Scattering, Reflection, Refraction (Snell's Law), The Ray Model of Light, Total internal Reflection, Polarization of light waves, Color, a Color phenomenon in nature, and the Tyndall effect. [15 hrs]</p> <p>Reflection in a Flat Mirror, The Image in a Mirror, Magnification, Lenses, Converging Lens, Ray Diagrams in Converging Lenses. [10 hrs]</p> <p>Light in medicine: Light has some interesting properties, many of which are used in medicine, Applications of visible light in medicine, Applications of ultraviolet and infrared light in medicine, Lasers in medicine, and Applications of microscopes in medicine [10 hrs]</p>
<p><b>Learning and Teaching Strategies</b></p> <p>استراتيجيات التعلم والتعليم</p>	
<p><b>Strategies</b></p>	<p>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 simple experiments involving interesting sampling activities for the students.</p>

## Student Workload (SWL)

الحمل الدراسي للطالب

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	63	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	4
<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	5.8
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	150		

## Module Evaluation

تقييم المادة الدراسية

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

### Delivery Plan (Weekly Syllabus)

#### المنهاج الاسبوعي النظري

	<b>Material Covered</b>
<b>Week 1</b>	Introduction - Light Theory, Physics of Light rays, electromagnetic wave.
<b>Week 2</b>	The behavior of light at a boundary, Describe an experiment that shows how light travels in a straight line
<b>Week 3</b>	Properties of Light, Wavelength, Frequency, Visible, Infrared, Ultraviolet light, Transmission, Absorption.
<b>Week 4</b>	Refractive index, Speed of Light, Optical Density, Wavefront, Ray, Electric field vector, Magnetic field vector.
<b>Week 5</b>	Diffraction, Scattering, Reflection, and Refraction (Snell's Law).
<b>Week 6</b>	The Ray Model of Light, Total internal Reflection, Polarization of light waves.
<b>Week 7</b>	Mid-term Exam + Color, a Color phenomenon in nature, and the Tyndall effect.
<b>Week 8</b>	Reflection in a Flat Mirror, The Image in a Mirror, Magnification.
<b>Week 9</b>	Lenses, Converging Lens, Ray Diagrams in Converging Lenses.
<b>Week 10</b>	How to Draw Ray Diagrams and Analysis.
<b>Week 11</b>	Why light works for visual communication

<b>Week 12</b>	Light in medicine.
<b>Week 13</b>	Applications of visible light in medicine, Applications of ultraviolet and infrared light in medicine
<b>Week 14</b>	Lasers in Medicine, and Applications of Microscopes in Medicine
<b>Week 15</b>	<b>Preparatory Week</b>
<b>Week 16</b>	<b>Final Exam</b>

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	<b>Material Covered</b>
<b>Week 1</b>	Lab 1: Properties of Light
<b>Week 2</b>	Lab 2: Dispersion of light
<b>Week 3</b>	Lab 3: Speed of Light in Glass
<b>Week 4</b>	Lab 4: MEASUREMENT OF THE WAVELENGTH OF MONOCHROMATIC LIGHT
<b>Week 5</b>	Lab 5: Light Waves: Reflection and Refraction
<b>Week 6</b>	Lab 6: VERIFICATION OF SNELL'S LAW OF REFRACTION
<b>Week 7</b>	Lab 7: magnifiers Microscopes, and Telescopes



## Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	Light and Optics: Principles and Practices 1st Edition, Abdul Al-Azzawi, CRC Press; 1st edition (October 23, 2019)	Yes
<b>Recommended Texts</b>	Physics of Light and Optics, Justin Peatross Michael Ware Brigham Young University, 2015 Edition May 8, 2023 Revision	yes
<b>Websites</b>	OpenStax, University Physics Volume 3. Creative Commons Attribution License 4.0 license. <a href="https://openstax.org/books/university-physics-volume-3/pages/1-1-the-propagation-of-light">https://openstax.org/books/university-physics-volume-3/pages/1-1-the-propagation-of-light</a>	

### APPENDIX:

#### GRADING SCHEME

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group	A - Excellent	امتياز	90 - 100	Outstanding Performance

<b>(50 - 100)</b>	<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</b>	<b>FX – Fail</b>	مقبول بقرار	(45-49)	More work required but credit awarded
<b>(0 – 49)</b>	<b>F – Fail</b>	راسب	(0-44)	Considerable amount of work required

Note:

NB 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.



Ministry of Higher Education and  
Scientific Research - Iraq  
University of Technology  
Department of applied science  
Laser Science and Technology



## MODULE DESCRIPTOR FORM

### نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
<b>Module Title</b>	<b>ELECTRICITY AND MAGNETISM</b>		<b>Module Delivery</b>
<b>Module Type</b>	BASIC		✓ Theory ✓ Lecture ✓ Lab ✓ Tutorial Practical Seminar
<b>Module Code</b>	ELMA122		
<b>ECTS Credits</b>	9		
<b>SWL (hr/sem)</b>	225		
<b>Module Level</b>	1	<b>Semester of Delivery</b>	2
<b>Administering Department</b>	Lase004	<b>College</b>	ApSc008
<b>Module Leader</b>	Dr. Rana O. Mahdi	<b>e-mail</b>	Rana.O.Mahdi@uotechnology.edu.iq
<b>Module Leader's Acad. Title</b>	Professor	<b>Module Leader's Qualification</b>	Ph.D.
<b>Module Tutor</b>	None	<b>e-mail</b>	None

<b>Peer Reviewer Name</b>	None	<b>e-mail</b>	None
<b>Review Committee Approval</b>	01/06/2023	<b>Version Number</b>	1.0

### Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

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

### Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<b>Module Aims</b> أهداف المادة الدراسية	24. Introducing the student to the scientific principles of science theories. 25. To develop problem solving skills and understanding of electricity and magnetic theory through the application of techniques. 26. This course deals with the basic concept of electricity and magnetism. 27. This is the basic subject for all physical phenomena subject. 28. Teaching the student how to process theories to obtain results that are consistent with practical results. 29. Introducing the student to how to build scientific theories.
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	32. Introducing the student to the important laws of electricity and magnetic 33. List the various terms associated with electricity and magnetic. 34. Teaching students how to use and apply theoretical laws in laboratory experiments. 35. Discuss the reaction and involvement of atoms in physics. 36. The possibility of applying these experiments and methods and benefiting from them industrially or commercially in order to reduce time and cost. 37. Define Coulomb's law. 38. Identify the basic electricity and magnetic elements and their applications. 39. Conducting special applications manually inside the laboratory. 40. Giving additional skills to the students when using the devices and conducting measurements. 41. Gaining experience in dealing with devices and raising their awareness to avoid risks when misused.

<p><b>Indicative Contents</b> المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p>Introduction to type material and the charge, Coulomb's law, the electric field, electric field lines, motion of charged particles in a uniform electric field. [12 hrs]</p> <p>Revision problem classes [8 hrs]</p> <p>Potential difference and electric potential, potential differences in a uniform electric field, obtaining the value of the electric field from the electric potential, electric potential due to a charged conductor. [12 hrs]</p> <p>Revision problem classes [8 hrs]</p> <p>Electric flux, Gauss's law, application of Gauss's law to various charge distributions. [12 hrs]</p> <p>Revision problem classes [8 hrs]</p> <p>Magnetic field and forces, Magnetic Force Acting on a Current-Carrying Conductor, Torque on a Current Loop in a Uniform Magnetic Field, motion of a charged particle in a uniform magnetic field, The Hall Effect. [14 hrs]</p> <p>Revision problem classes [8 hrs]</p> <p>The Biot–Savart Law, The Magnetic Force between Two Parallel Conductors, Ampere's law, the magnetic field of a solenoid, magnetic flux, Gauss's law in magnetism. [12 hrs]</p> <p>Revision problem classes [8 hrs]</p>
<p style="text-align: center;"><b>Learning and Teaching Strategies</b> استراتيجيات التعلم والتعليم</p>	
<p><b>Strategies</b></p>	<p>17. Theoretical lectures 18. Weekly theoretical exercises in the classroom.</p>

	<p>19. Stimulating scientific thinking among the student.</p> <p>20. The ability to understand practical applications of the laws of physics.</p> <p>21. Weekly exercises implemented in the classroom.</p> <p>22. Surprise exams are distributed throughout the school year.</p> <p>23. Scientific reports submitted by the student.</p> <p>24. Online exams</p>
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<b>Student Workload (SWL)</b> الحمل الدراسي للطالب			
<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	123	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعياً	8
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	102	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعياً	6.8
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	225		

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

assessment	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

<b>Delivery Plan (Weekly Syllabus)</b> المنهاج الاسبوعي النظري	
	Material Covered
<b>Week 1</b>	<b>Electric fields:</b> Properties of electric charges, Coulomb's law
<b>Week 2</b>	The electric field, electric field lines
<b>Week 3</b>	Motion of charged particles in a uniform electric field.
<b>Week 4</b>	<b>Electric potential:</b> Potential difference and electric potential, potential differences in a uniform electric field
<b>Week 5</b>	Obtaining the value of the electric field from the electric potential, electric potential due to a charged conductor.
<b>Week 6</b>	<b>Gauss's law:</b> Electric flux, Gauss's law
<b>Week 7</b>	Mid-term Exam + Unit-Step Forcing, Forced Response, the RLC Circuit
<b>Week 8</b>	Application of Gauss's law to various charge distributions.
<b>Week 9</b>	<b>Magnetic fields:</b> Magnetic field and forces, Magnetic Force Acting on a Current-Carrying Conductor
<b>Week 10</b>	Torque on a Current Loop in a Uniform Magnetic Field,
<b>Week 11</b>	Motion of a charged particle in a uniform magnetic field, The Hall Effect.
<b>Week 12</b>	<b>Sources of the magnetic field:</b> The Biot–Savart Law, The Magnetic Force between Two Parallel Conductors,
<b>Week 13</b>	Ampere's law, the magnetic field of a solenoid
<b>Week 14</b>	Magnetic flux, Gauss's law in magnetism.
<b>Week 15</b>	<b>Preparatory Week</b>

<b>Week 16</b>	<b>Final Exam</b>
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<b>Delivery Plan (Weekly Lab. Syllabus)</b> المنهاج الاسبوعي للمختبر	
	<b>Material Covered</b>
<b>Week 1</b>	Lab 1: Reading the resistance value using the color guide and using the ohmmeter
<b>Week 2</b>	Lab 2: Realization of Ohm's Law
<b>Week 3</b>	Lab 3: Measure the resistance value by comparison method
<b>Week 4</b>	Lab 4: Self-induction of the coil
<b>Week 5</b>	Lab 5: Maximum capacity of the generator
<b>Week 6</b>	Lab 6: The use of a cathode ray wave oscilloscope to measure the frequency of alternating current
<b>Week 7</b>	Lab 7: Exam

<b>Learning and Teaching Resources</b> مصادر التعلم والتدريس		
	<b>Text</b>	<b>Available in the Library?</b>
<b>Required Texts</b>	Physics for Scientists and Engineers by Serway Jewett	Yes
<b>Recommended Texts</b>	Fundamental University Physics (II Electricity) by Alonso-Finn	Yes



<b>Websites</b>		

**APPENDIX:**

<b>GRADING SCHEME</b> مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
<b>Success Group (50 - 100)</b>	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
<b>Fail Group (0 - 49)</b>	FX – Fail	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
<b>Note:</b>				
<p>NB 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.</p>				



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## MODULE DESCRIPTOR FORM

### نموذج وصف المادة الدراسية

<b>Module Information</b> معلومات المادة الدراسية			
<b>Module Title</b>	<b>COMPUTER SCIENCE</b>	<b>Module Delivery</b>	
<b>Module Type</b>	<b>BASIC</b>	<b>Theory Lecture Lab Tutorial Practical Seminar</b>	
<b>Module Code</b>	<b>COSC123</b>		
<b>ECTS Credits</b>	<b>4</b>		
<b>SWL (hr/sem)</b>	<b>100</b>		
<b>Module Level</b>	<b>1</b>	<b>Semester of Delivery</b>	<b>2</b>
<b>Administering Department</b>	<b>Lase004</b>	<b>College</b>	<b>ApSc008</b>
<b>Module Leader</b>	<b>Dr. JabbarA.Eleiwiy</b>	<b>e-mail</b>	<b>Jabar.a.eleiwiy@uotechnology.edu.iq</b>
<b>Module Leader's Acad. Title</b>	<b>Lecturer</b>	<b>Module Leader's Qualification</b>	<b>Ph.D.</b>
<b>Module Tutor</b>	<b>None</b>	<b>e-mail</b>	<b>None</b>

<b>Peer Reviewer Name</b>		<b>e-mail</b>	
<b>Review Committee Approval</b>	01/06/2023	<b>Version Number</b>	1.0

### Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

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

### Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<b>Module Aims</b> أهداف المادة الدراسية	<ol style="list-style-type: none"> <li>1. The course aims to understand the concept of computer content.</li> <li>2. To develop the student skills in Microsoft Office application of techniques.</li> <li>3. To understand the definition of the computer, its basics, branches, and applications.</li> <li>4. This course deals with the basic concept of the Excel program.</li> <li>5. This is the basic subject for all mathematical functions of Excel subject.</li> <li>6. To understand extracting the range, average, maximum, and minimum of columns and rows.</li> <li>7. To perform mesh and Nodal analysis.</li> </ol>
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> <li>1. Recognize the concept of computers.</li> <li>2. The students recognize the introduction to the computer.</li> <li>3. The students recognize Windows versions and systems</li> <li>4 .The students recognize and study the basic components of the computer.</li> <li>5. Recognize the concept of computer use.</li> <li>6. The students recognize the hardware components.</li> <li>7. Recognize what are software components.</li> <li>8. Students recognize and study the Microsoft Hardware Software</li> <li>9. Learn what are Microsoft Excel, and its applications .</li> </ol>

	10. Learn how to apply the mathematic applications and text in Excel.
<b>Indicative Contents</b> المحتويات الإرشادية	Indicative content includes the following.  The Labs, and quizzes
<b>Learning and Teaching Strategies</b> 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 and interactive tutorials.

<b>Student Workload (SWL)</b> الحمل الدراسي للطالب			
<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	63	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	4
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	100		

<b>Module Evaluation</b>
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تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction - General definition of a computer
Week 2	Basics of the components of a computer
Week 3	The computer operating systems
Week 4	Review of Windows operating systems
Week 5	The desktop components, command list of the taskbar, List of shortcut commands for the taskbar, Adding, deleting and moving documents
Week 6	Microsoft word system The basic elements of Word, Word toolbars and Word page settings
Week 7	Mid-term Exam + Unit-Step Forcing, Forced Response, the RLC Circuit
Week 8	Microsoft Excel- Introduction

<b>Week 9</b>	Excel Fundamentals
<b>Week 10</b>	Understanding Workbooks
<b>Week 11</b>	Typing text or numbers into A worksheet
<b>Week 12</b>	Typing simple formulas in a worksheet
<b>Week 13</b>	Understanding formatting
<b>Week 14</b>	Inserting and deleting worksheets
<b>Week 15</b>	Selecting ranges
<b>Week 16</b>	<b>Final Exam</b>

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
<b>Week 1</b>	Lab1: Introduction - List of shortcut commands for the Taskbar
<b>Week 2</b>	Lab2: Adding, deleting, and moving documents
<b>Week 3</b>	Lab3: Microsoft word system
<b>Week 4</b>	Lab4: The basic elements of Word
<b>Week 5</b>	Lab5: Word toolbars
<b>Week 6</b>	Lab6: Word page settings
<b>Week 7</b>	Lab7: How to deal with the Word buttons

## Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	Windows , Microsoft word and Fundamentals of Excel	No
<b>Recommended Texts</b>	Fundamentals of Excel	No
<b>Websites</b>	chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.sgul.ac.uk/about/our-professional-services/information-services/library/documents/training-manuals/Excel-Fundamentals-Manual.pdf	

APPENDIX:

## GRADING SCHEME

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
<b>Success Group (50 - 100)</b>	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
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	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
<b>Fail Group (0 - 49)</b>	FX – Fail	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				

NB 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.





Ministry of Higher Education and  
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University of Technology  
Department of Applied Sciences  
**Branch of Applied Physics**



## MODULE DESCRIPTOR FORM

### نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	AUTOCAD		Module Delivery	
Module Type	CORE		Theory Lecture Lab Tutorial Practical Seminar	
Module Code	UoB12345			
ECTS Credits	8			
SWL (hr/sem)	200			
Module Level	1	Semester of Delivery	1	
Administering Department	Type Dept. Code	College	Type College Code	
Module Leader	L. Ali Ooda Abd		e-mail	20302@uotechnology.edu.iq
Module Leader's Acad. Title	Assist lecturer		Module Leader's Qualification	Msc
Module Tutor	None		e-mail	None
Peer Reviewer Name			e-mail	
Review Committee Approval	01/06/2023		Version Number	1.0

<b>Relation With Other Modules</b>			
العلاقة مع المواد الدراسية الأخرى			
<b>Prerequisite module</b>	None	<b>Semester</b>	
<b>Co-requisites module</b>	None	<b>Semester</b>	
<b>Module Aims, Learning Outcomes and Indicative Contents</b>			
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
<b>Module Aims</b> أهداف المادة الدراسية	<ol style="list-style-type: none"> <li>1. To develop engineering drawing skills by giving the basic principles of drawing.</li> <li>2. To understand the function of engineering drawing and its applications.</li> <li>3. This course deals with the basic concept of drawing.</li> <li>4. This is the basic subject for draw and modify tools.</li> <li>5. To understand how to draw geometric shapes.</li> <li>6. To understand how to simulate engineering and physics applications.</li> </ol>		
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> <li>42. Discuss the basic characteristics of engineering drawing with their applications in our daily life.</li> <li>43. Increase in the productivity of the designer.</li> <li>44. 3D Modeling.</li> <li>45. Improve the quality of the design.</li> <li>46. Creating documentation of the designing.</li> <li>47. Creating the database for manufacturing.</li> <li>48. Saving of design data and drawings.</li> <li>49. Drawing accuracy.</li> </ol>		
<b>Indicative Contents</b> المحتويات الإرشادية	<p>Indicative content includes the following.</p> <p><u>Part A</u></p> <ul style="list-style-type: none"> <li>• Creating Basic Drawings</li> <li>• Manipulating Objects</li> <li>• Implementing Drawing Organization and Inquiry Commands</li> <li>• Hatching Objects</li> </ul>		

	<ul style="list-style-type: none"> <li>• Creating Additional Drawing Objects and work on Projects</li> <li>• Plotting the Drawing Output</li> <li>• Altering Objects</li> <li>• Annotate a Drawing</li> <li>• Dimension Drawings</li> </ul> <p style="text-align: center;">[15 hrs].</p> <ul style="list-style-type: none"> <li>• Hatching Objects</li> <li>• Creating Additional Drawing Objects and work on Projects</li> <li>• Plotting the Drawing Output</li> </ul> <p style="text-align: center;">[15 hrs]</p> <ul style="list-style-type: none"> <li>• Learn how to draw on a computer [6 hrs]</li> </ul> <p><u>Part B</u></p> <p>The course includes features, commands, and techniques for creating, editing, and printing graphics. Practical exercises throughout the course explore how to create 2D and 3D production drawings.</p> <p style="text-align: center;">[15 hrs]</p>
<p><b>Learning and Teaching Strategies</b></p> <p>استراتيجيات التعلم والتعليم</p>	
<p><b>Strategies</b></p>	<p>The main strategy that will be adopted in the delivery of this unit is to encourage students to participate in the exercises, while improving and expanding their thinking skills at the same time. This will be achieved through interactive classes and tutorials and by thinking of the kind of simple graphics that include some applications of interest to the students.</p>

## Student Workload (SWL)

الحمل الدراسي للطالب

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	102	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعياً	7
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	98	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعياً	6.5
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	200		

## Module Evaluation

تقييم المادة الدراسية

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

## Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
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<b>Week 1</b>	Introduction -Engineering drawing, what is engineering drawing? Drawing application in fields.
<b>Week 2</b>	How to start AutoCAD program.
<b>Week 3</b>	Setting the 2D Drafting& Annotation Workspace.
<b>Week 4</b>	Ribbon. The ribbon is turned on by default when you start the software in either the 2D Drafting & Annotation or the 3D Modeling workspace.
<b>Week 5</b>	Drawing Area. The large area in the center of the screen. This is where you will draw. This area represents a piece of paper.
<b>Week 6</b>	Crosshairs Can be anywhere in the Drawing Area. The movement of the Crosshairs is controlled by the movement of the pointing device such as a mouse.
<b>Week 7</b>	Command window the command window is normally located at the bottom of the application window, between the drawing area and status bar.
<b>Week 8</b>	Status Bar. The status bar is located at the bottom of the application window. The left end of the status bar displays the coordinates that show the numerical position of the crosshairs in the drawing.
<b>Week 9</b>	UCS (User Coordinate System).
<b>Week 10</b>	Select Multiple Objects.
<b>Week 11</b>	Line , Rectangle, Circle, Arc and polygon commands
<b>Week 12</b>	Modify command
<b>Week 13</b>	Object snap
<b>Week 14</b>	Cartesian, absolute, and relative coordinates.
<b>Week 15</b>	Preparatory Week
<b>Week 16</b>	Final Exam

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	An Introduction to AutoCAD for Beginners.	Yes
Recommended Texts	AutoCAD 2021 Tutorial First Level 2D Fundamentals Randy H. Shih.	No
Websites		

APPENDIX:

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>	مقبول بقرار	(45-49)	More work required but credit awarded
	<b>F – Fail</b>	راسب	(0-44)	Considerable amount of work required

Note:

NB 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.