MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	COMPUTER PROGRAMMING	Module Delivery	
Module Type	SUPLEMENT	Theory Lecture Lab Practical	
Module Code	COSC108		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	1	Semester of Delivery	2
Administering Department	Laser and Optoelectronic Engineering Department	College	
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name	-	e-mail	
Review Committee Approval		Version Number	1.0

Relation With Other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	-
Co-requisites module	None	**Semester**	-

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. Learning Windows 7 , Copy, Cut, Paste and delete 2. Learning the use of basic windows office application 3. Learn how to create, save, edit text filesspreadsheet files. 4. Understanding the concept of programming languages 5. Learning input and output methods, menu bar, toolbar, and images 6. Learning how to program physics, chemical, and mathematics lows in Visual Basic 7. Drawing methods
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understanding the basic component of computers 2. Understanding the concept of operating systems 3. Understanding the concept of computer networks 4. Understanding the concept of number systems 5. Understanding the concept of logic gates 6. Windows 7 7. Learn how to create, save, edit text files 8. Learn how to create spread sheet 9. Learn how to create a presentation file 10. Integrated Development Environment of Visual Basic 11. Objects, Properties, Methods, and Events 12. Input and Output methods 13. Menu bar , ToolBar, and images 14. Drawing Methods
Indicative Contents المحتويات الإرشادية	1. Learn the main concept of digital computers 2. Learn different computer types 3. Understand the main components of a computer 4. Understand the meaning of operating systems and how they work 5. Understand the concept of computer networks 6. Learn the number systems and how to convert between different number systems 7. Learn about the logic gates 8. Learn how to use windows 9. Learning The main icons of the desktop, start menu, and desktop,

	changing display and time. Copy, Cut, Paste and delete.
	10. Learn how to create, edit, and print documents in (Word) program
	11. Learn how to organize, format, calculate, and sort the values in the spreadsheet in (Excel) program
	12. Learn how to create a slide show of important information, charts, and images in presentation software (Power Point)
	13. Learn the concept of programming language (Visual Basic).
	14. Understanding Objects, Properties, Methods, and Events
	15. Learning input and output methods like using labels, textbox, and command button, or using inputbox and messagebox or by using vertical bar to select number within range and writing programs in different fields by using these methods.
	16. Writing programs by using menu bar and tool bar, display pictures by using images.,CheckBox and OptionButton and learn the difference between them, and use both of them within picturebox., drawing methods by using tools or by using methods.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	1. Analyze the problem and put the procedure to solve then writing the program together and select the suitable method to solve the problem 2. Give the students another problem to be solved alone

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	30	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	Quizzes				
	Assignments				
	Projects				
	Report				
Summative assessment	Midterm Exam	1 hr	10% (10)	Week 8	
	Final Exam	2 hr	50% (50)	Week 15	
Total assessment			100% (100 Marks)	-	

	Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر
	Material Covered
Week 1	**Introduction to Computers** **Practical: Windows (Windows 7)**
Week 2	**Computer types,** **Practical: Windows (Windows 7)**
Week 3	**Components of computers** **Practical: Windows (Windows 7)**
Week 4	**Components of computers** **word processing software / Word**
Week 5	**Concept of operating systems** **word processing software / Word**
Week 6	**Introduction to computer networks** **word processing software / Word**
Week 7	**Number systems** **spreadsheet software / Excel**
Week8	**Number systems** **spreadsheet software / Excel**
Week9	**Logic gates** **Presentation software/ Power point**
Week10	**Visual Basic part1, Constant, and variable**
Week11	**Math function**
Week12	**Menu and image applications**
Week13	**CheckBox, OptionButton, PictureBox applications**
Week14	**Drawing , Drawing applications**
Week15	**Final Exam**

	Learning and Teaching Resources مصادر التعلم والتدريس	
	Text	**Available in the Library?**
Required Texts	**Fundamentals of Computer**	-
Recommended Texts		
Websites		

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.	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	AC ELECTRICAL ANALYSIS		Module Delivery	
Module Type	CORE		**Theory**	
Module Code	LOEC114		**Lecture**	
ECTS Credits	9		**Lab**	
SWL (hr/sem)	225		**Tutorial** **Practical** **Seminar**	
Module Level	1	Semester of Delivery	1	
Administering Department	Type Dept. Code	College	Type College Code	
Module Leader		e-mail		
Module Leader's Acad. Title		Module Leader's Qualification	Ph.D.	
Module Tutor	None	e-mail	None	
Peer Reviewer Name		e-mail		
Review Committee Approval		Version Number		

Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

	أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية
Module Aims أهداف المادة الدراسية	1. To develop problem solving skills and understanding of circuit theory through the application of techniques. 2. This course deals with the basic concept of electrical circuits. 3. This is the basic subject for all electrical. 4. To understand Kirchhoff's current and voltage Laws problems. 5. To perform mesh and Nodal analysis. 6. To understand the sinusoidal waveforms and phasors. 7. To analyze the electrical circuits under ac currents. 8. To study the rms and average power. 9. To study the resonance and filters circuits.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize how electricity works in electrical circuits. 2. List the various terms associated with electrical circuits. 3. Summarize what is meant by a basic electric circuit. 4. Describe electrical power, charge, and current. 5. Define Ohm's law. 6. Identify the basic circuit elements and their applications. 7. Discuss the operations of sinusoid and phasors in an electric circuit. 8. Discuss the various properties of resistors, capacitors, and inductors. 9. Explain the two Kirchoff's laws used in circuit analysis. 10. Identify the capacitor and inductor phasor relationship with respect to voltage and current.
Indicative Contents المحتويات الإرشادية	
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	117	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	108	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	225		

Module Evaluation
تقييم المـادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes				
	Assignments				
	Projects / Lab.				
	Report				
Summative assessment	Midterm Exam				
	Final Exam				
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	**AC Electrical Analysis** - Sinusoidal Alternating Waveforms - Average and RMS Values
Week 2	- The Basic Elements and Phasors (response of the R, L, and C to a sinusoidal voltage and current. - Average power & power factor
Week 3	- Complex Numbers - Phasors
Week 4	- Series ac Circuits - Parallel ac Circuits - Series -Parallel ac Circuits
Week 5	- Series -Parallel ac Circuits
Week 6	- Power (ac) - Series resonant circuit
Week 7	- Parallel Resonant circuit
Week 8	**MidTerm Exam**

Week 9	Filters - R-C low pass filters - R-C high pass filters
Week 10	- Pass band filters. - Stop band filters
Week 11	- Techniques of AC circuit analysis - Mesh analysis
Week 12	- Thevenin's Theorem
Week 13	- Norton's Theorem
Week 14	- Superposition Theorem
Week 15	- Magnetic circuits
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	- Lab 1: - Transient Response of R.L. Circuit
Week 2	- Lab 2: - Transient Response of R.C. Circuit
Week 3	- Lab 3: - Power on (resistive –inductive & capacitive) load Series connection
Week 4	- Lab 4: Resonant Circuit (Series Resonance)
Week 5	- Lab 5: Resonant Circuit (Parallel Resonance)
Week 6	- Lab 6: Filters - Low –pass filter (integrator R.C. circuit)
Week 7	- Lab 7: Pass-Band Filter

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	- Electric Circuits, Nilsson. Riedel, ninth edition.	

	- Introductory Circuit Analysis, Robert L Boylestad, Twelfth Edition, 2014.	
Recommended Texts	Introductory AC circuit theory by K. mann and G. I. Russel.	
Websites		

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
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	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 laser and optoelectronics Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	ENGINEERING DRAWING	Module Delivery	
Module Type	CORE	**Theory** **Lecture** **Lab**	
Module Code	ENDR121		
ECTS Credits	6		
SWL (hr/sem)	150		

Module Level	1	Semester of Delivery	2
Administering Department		College	
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Review Committee Approval		Version Number	

Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	• Explain the concept of graphic communication, their type, and their role in sanitary construction. • Familiarize with different drawing equipment, technical standards, and procedures for construction of geometric figures. • Equipped with the skill that enables them to convert pictorial (3-D) drawings to orthographic (2-D) drawings and vice versa. • Explain the principle and application of sectioning. • Well familiar with the purpose, procedures, materials, and conventional symbols utilized to make sketch maps.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	LO1 communicate effectively in a modern technical environment; LO2 construct and present quality engineering drawings in a well-drafted manner. LO3 present correct lettering, figures, and dimensions to a defined style and standard LO4 produce detailed Civil Engineering drawings using AutoCAD
Indicative Contents المحتويات الإرشادية	a) Paper size, Lettering & title blocks (b) Orthographic projection (c) Isometric and oblique projection (d) Perspective drawing (e) Freehand sketching (f) Basic geometrical solids (g) Development of surfaces (h) Practical freehand sketching exercises

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	

<table>
<tr><td colspan="4" align="center">**Student Workload (SWL)**
الحمل الدراسي للطالب</td></tr>
<tr><td>**Structured SWL (h/sem)**
الحمل الدراسي المنتظم للطالب خلال الفصل</td><td>93</td><td>**Structured SWL (h/w)**
الحمل الدراسي المنتظم للطالب أسبوعيا</td><td>6</td></tr>
<tr><td>**Unstructured SWL (h/sem)**
الحمل الدراسي غير المنتظم للطالب خلال الفصل</td><td>57</td><td>**Unstructured SWL (h/w)**
الحمل الدراسي غير المنتظم للطالب أسبوعيا</td><td>3.8</td></tr>
<tr><td>**Total SWL (h/sem)**
الحمل الدراسي الكلي للطالب خلال الفصل</td><td colspan="3">150</td></tr>
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Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	10% (10)	3, 5, 7, 10	LO #1-4, 5-8
	Assignments	24	20% (20)	1-14	LO # 1-4
	Projects	1	10% (10)	14	LO# 1-4
	Report	0	0	0	0
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO # 1-4
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Graphic Communication+ Drawing Equipment
Week 2	Lettering and Lines +Lettering and Lines
Week 3	Geometric Construction + Engineering drawing process
Week 4	Projection + Projection
Week 5	Section + Projection of a point, Lines, and planes
Week 6	Dimension and mapping
Week 7	Mid-term Exam
Week 8	AutoCAD Introduction
Week 9	Commands orthographic Drawing
Week 10	Commands Dimensioning Drawing
Week 11	Commands Section View

Week 12	Working Drawing in AutoCAD
Week 13	Isometric drawing
Week 14	AutoCAD tutorial
Week 15	**Preparatory Week**
Week 16	**Final Exam**

<table>
<tr><td colspan="2" align="center">**Delivery Plan (Weekly Lab. Syllabus)**
المنهاج الاسبوعي للمختبر</td></tr>
<tr><td></td><td>**Material Covered**</td></tr>
<tr><td>**Week 1**</td><td></td></tr>
<tr><td>**Week 2**</td><td></td></tr>
<tr><td>**Week 3**</td><td></td></tr>
<tr><td>**Week 4**</td><td></td></tr>
<tr><td>**Week 5**</td><td></td></tr>
<tr><td>**Week 6**</td><td></td></tr>
<tr><td>**Week 7**</td><td></td></tr>
</table>

<table>
<tr><td colspan="3" align="center">**Learning and Teaching Resources**
مصادر التعلم والتدريس</td></tr>
<tr><td></td><td align="center">**Text**</td><td>**Available in the Library?**</td></tr>
<tr><td>**Required Texts**</td><td>Engineering Drawing</td><td>Yes</td></tr>
<tr><td>**Recommended Texts**</td><td></td><td></td></tr>
<tr><td>**Websites**</td><td></td><td></td></tr>
</table>

APPENDIX:

<table>
<tr><td colspan="5" align="center">**GRADING SCHEME**
مخطط الدرجات</td></tr>
<tr><td>**Group**</td><td>**Grade**</td><td>التقدير</td><td>**Marks (%)**</td><td>**Definition**</td></tr>
<tr><td rowspan="4">**Success Group (50 - 100)**</td><td>**A -** Excellent</td><td>امتياز</td><td>90 - 100</td><td>Outstanding Performance</td></tr>
<tr><td>**B -** Very Good</td><td>جيد جدا</td><td>80 - 89</td><td>Above average with some errors</td></tr>
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<tr><td>**D -** Satisfactory</td><td>متوسط</td><td>60 - 69</td><td>Fair but with major shortcomings</td></tr>
</table>

	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

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 DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	MATHEMATICS	Module Delivery	
Module Type	SUPLEMENT	Theory Lecture Lab Tutorial Practical Seminar	
Module Code	LOEC113		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1	Semester of Delivery	1
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Dr. Saad Zahraw Sekhi	e-mail	140094@uotechnology.edu.iq
Module Leader's Acad. Title		Module Leader's Qualification	Ph.D.
Module Tutor	None	e-mail	None
Peer Reviewer Name		e-mail	
Review Committee Approval	01/06/2023	Version Number	

Relation with Other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	The objective of teaching Mathematics has some main aspects: 1. The aims of teaching and learning mathematics are to encourage and enable students to: recognize that mathematics permeates the world around us. appreciate the usefulness, power, and beauty of mathematics. enjoy mathematics and develop patience and persistence when solving problems. 2. The following prominent methods for effective instruction in mathematics include the Problem-solving method, Lecture method, Questioning method, and Discovery method. Problem-solving is the most independent learning method used in teaching mathematics.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Students will recognize problem-solving techniques appropriate to a given situation, including the development of mathematical models, the identification of assumptions, the understanding of the limitations of models, and the use of both graphical and numerical methods. 2. Comprehend, analyze, synthesize, evaluate, and make generalizations so as to solve mathematical problems. 3. Collect, organize, represent, analyze, interpret data, and make conclusions and predictions from its results. 4. Apply mathematical knowledge and skills to familiar and unfamiliar situations. 5. Recognize the basic of mathematics. 6. Define the functions, domain, range, and graph of functions. 7. Recognize how combining functions; shifting and scaling graphs. 8. Study the inverse functions and logarithms. 9. Recognize limits and continuity. 10. Study the trigonometric and inverse trigonometric functions. 11. Define differentiation, the basic rule of differentiation, and the application of differentiation. 12. Study the Integration; Indefinite integral and the basic rule of -integrations. 13. Identify the standard method of integration. 14. Study the definite integral and their applications in calculating the area under the curves. 15. Study the integration by substitution. 16. Study the integration by parts.
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	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 much homework involving some sampling activities that are interesting to the students.

Student Workload (SWL)			
الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	60	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	90	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation					تقييم المادة الدراسية
		Time/ Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	6	20 % (20)	3, 5, 7, 13, 14, 15	LO # 8, 9, 11, 14, 15 and 16
	Assignments	4	20 % (20)	5, 7, 14, 15	LO # 9, 11, 15 and 16
	Projects / Lab.	-	-		
	Report	-	-		
Summative assessment	**Midterm Exam**	3 hr	10 % (10)		LO # 5 – 11
	Final Exam	3 hr	50 % (50)		All
Total assessment		100% (100 Marks)			

Delivery Plan (Weekly Syllabus)	المنهاج الاسبوعي النظري

	Material Covered
Week 1	- Integration; Indefinite integral
Week 2	- Integration; Indefinite integral
Week 3	- Basic rule of integrations
Week 4	- Standard Method of integration
Week 5	- Standard Method of integration
Week 6	- Definite integral
Week 7	- Definite integral
Week 8	Mid Term Exam
Week 9	- Application of integration; calculation area under the curves
Week 10	- Application of integration; calculation area under the curves
Week 11	- Application of integration; calculation area under the curves
Week 12	- Integration by substitution
Week 13	- Integration by substitution
Week 14	- Integration by parts
Week 15	- Integration by parts
Week 16	Final Exam

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	- Thomas, Calculus, 12th Edition, 2010.	
Recommended Texts		
Websites		

APPENDIX:

GRADING SCHEME				
مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
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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
College of Engineering
Department of Laser and Optoelectronics
Engineering

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	ENGINEERING MECHANICS	Module Delivery	
Module Type	CORE	**Theory** **Lecture** **Tutorial** **Seminar**	
Module Code	ENME122		
ECTS Credits	6		
SWL (hr/sem)	150		

Module Level	1	Semester of Delivery	2
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Dr. Sudad I. Younis	e-mail	Sudad.i.younis@uotechnology.edu.iq
Module Leader's Acad. Title	Asst. Prof.	Module Leader's Qualification	Ph.D.
Module Tutor	None	e-mail	None
Peer Reviewer Name		e-mail	
Review Committee Approval		Version Number	

Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. This course deals with the basic concept of Mechanical Engineering. 2. providing students with the basics of scientific knowledge in the field of mechanical engineering and improving their professional abilities in the direction of analytical and creative thinking using mathematical laws and equations, data analysis and modern methods in formulating and solving problems. 3. Providing theoretical knowledge and linking between the principles of static science and Dynamics, and the ability to analyze and solve engineering mechanics problems. 4. Clarifying and discussing the main theoretical principles and improving teamwork ability. 5. Using different methods to solve the same problem. 6. Ensure accuracy in solving problems without any approximation. 7. Preparing the student to understand the mechanics of different materials to use this information and methods of solution later in the specialized lessons in the stages that follow the first stage
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Make the students able to recognize different force systems, moments, and couples. 2. The ability to draw Free Body Diagram and label the reactions on it. 3. Make the students able to apply equilibrium equations in statics. 4. Make the students able to find the center of any shape from its area or volume. 5. The ability to understand Newton's law in motion and recognize different kinds of particle motions. 6. Identify the equations of linear and nonlinear motion and the relationship between displacement, velocity and acceleration and represent them graphically. 7. Recognize the movement of the hypotheses and solve the problems related to them.
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The lectures must provide a method for solving each problem that includes the steps to be followed to analyze and understand the problem before proceeding to solve it. Discuss a phenomenon and its interpretation by watching a video. Each student must solve the problems at home and submit it as a report. Students are divided into groups or work teams to solve a problem that is identified by us.

<table>
<tr><td colspan="4" align="center">**Student Workload (SWL)**
الحمل الدراسي للطالب</td></tr>
<tr>
<td>**Structured SWL (h/sem)**
الحمل الدراسي المنتظم للطالب خلال الفصل</td>
<td>63</td>
<td>**Structured SWL (h/w)**
الحمل الدراسي المنتظم للطالب أسبوعيا</td>
<td>4</td>
</tr>
<tr>
<td>**Unstructured SWL (h/sem)**
الحمل الدراسي غير المنتظم للطالب خلال الفصل</td>
<td>87</td>
<td>**Unstructured SWL (h/w)**
الحمل الدراسي غير المنتظم للطالب أسبوعيا</td>
<td>5.8</td>
</tr>
<tr>
<td>**Total SWL (h/sem)**
الحمل الدراسي الكلي للطالب خلال الفصل</td>
<td colspan="3">150</td>
</tr>
</table>

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	10min/2	10% (10)	4,10	LO #1, 2 & 5,6
	Assignments	2	10% (10)	2,12	LO # 3,4 & 6
	Projects	1	10% (10)	5	LO # 3,4
	Report	2	10% (10)	6,14	LO # 1-4 & 5-7
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO # 1-4
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Statics 1.1 Definitions and units 1.2 Force systems 1.3 Resultant
Week 2	Moments and couples
Week 3	Equilibrium
Week 4	Centroid and moment of inertia
Week 5	Friction
Week 6	Tutorial
Week 7	Mid Term Exam
Week 8	Dynamics Newton's laws of motion
Week 9	9.1 linear motion 9.2 Rectilinear motion
Week 10	The relationship between displacement, velocity, and acceleration (derivative method)
Week 11	The relationship between displacement, velocity, and acceleration (integral method)

Week 12	Graphical representation of displacement, velocity, and acceleration
Week 13	Projectile
Week 14	Tutorial
Week 15	**Preparatory Week**
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

	Material Covered

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	-Engineering Mechanics, Volume 1, Statics & Dynamics, Fifth Edition by J.L. Meriam & L.G. Kraig -Engineering Mechanics, Singer. -Lecture notes.	yes
Recommended Texts	Engineering Mechanics, Statics, 11Th Edition by R.C. Hibler -Engineering Mechanics, Dynamics , 11th Edition by R.C. Hibler	yes
Websites		

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
College of Engineering
Department of Laser and Optoelectronics
Engineering

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information		
معلومات المادة الدراسية		

Module Title	MEDICAL PHYSICS	Module Delivery	
Module Type	BASIC	Theory Lecture Tutorial Seminar	
Module Code	MPHY123		
ECTS Credits	6		
SWL (hr/sem)	150		

Module Level	1	Semester of Delivery	2
Administering Department		College	
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Review Committee Approval		Version Number	

Relation With Other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. This course deals with the basic concept of Medical Physics. 2. Providing students with the basics of scientific knowledge in the physical principles on which many processes in the human body depend.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Make the students able to understand physical issues concerning the human body. 2. The ability to understand fluids and how pressures and forces affect them. 3. Understanding the types of fluid flow and the effect of viscosity on it, and linking these concepts to blood flow in the human body, in addition to knowing how to measure blood pressure. 4. Make the student able to know how vision occurs and the structure of the human eye. 5. The student is given information on how to detect light entering the eye through the retina, which is the light detector in the human eye. 6. The student learns the basics of sound waves and their properties because of their great importance in medical applications. 7. The student understands the method of hearing and the structure of the human ear as well as ultrasound and its medical applications. 8. The student studies the mechanical properties of the human body, especially what is related to the skeletal system and bones. 9. The student is given basic information about radiation, radiation doses, nuclear decay and their effect on cells and the human body. 10. Understand the basics of X-rays and how they are generated due to their wide use in medical applications.
Indicative Contents المحتويات الإرشادية	
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The lectures must provide a method for solving each problem that includes the steps to be followed to analyze and understand the problem before proceeding to solve it. Discuss a phenomenon and its interpretation by watching a video. Each student must solve the problems at home and submit it as a report. Students are divided into groups or work teams to solve a problem that is identified by us.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	10% (10)	2, 4, 8, 10	LO #1, 2,3,4,5 & 6,7,8,9
	Assignments	4	10% (10)	2,12	LO # 3,4 & 6
	Projects / Disc.	1	10% (10)	5	LO # 3,4
	Report	2	10% (10)	6,14	LO # 1-4 & 5-7
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO # 1-4
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	**INTRODUCTION**
Week 2	**FLUID**
Week 3	**THE MOTION OF FLUIDS**
Week 4	**VISION AND EYES**
Week 5	**EYES IMAGE DETECTOR**
Week 6	**SOUND**
Week 7	**Midterm Exam**
Week 8	**HEARING AND ULTRASONIC WAVE**
Week 9	**ELASTIC PROPERTIES OF THE BODY**
Week 10	**BONE FRACTURES**
Week 11	**Radiation**
Week 12	**Radiation Dosimetry**
Week 13	**EFFECT OF RADIATION ON THE BODY**

Week 14	NUCLEAR DECAY PROCESSES
Week 15	X-ray
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	The fall of a body through a viscous medium The aim: Determine the viscosity of the medium by using a small sphere falls with constant terminal velocity.
Week 2	The surface tension The aim: To calculate the surface tension of water by the capillary tube method
Week 3	Pressure and Blood Pressure The aim: Measurement of blood pressure
Week 4	Hooke's Law The aim: Confirm Hooke's law for coil springs under tension
Week 5	Bernoulli's experiment
Week 6	Archimedes' Principle The aim: Determining buoyant updraught as a function of immersion depth.
Week 7	Static and Dynamic Friction The aim: Measurement of friction forces

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	- Introduction to Medical Physics, by Stephen Keevil Renato Padovani Slavik Tabakov Tony Greener Cornelius Lewis - Physics in Biology and Medicin, Third Edition by Paul Davidovits.	yes
Recommended Texts	-Physics of the Human Body by Irving P. Herman - Introduction to Health Physics Fourth Edition by Herman Cember and Thomas E. Johnson	yes
Websites		

APPENDIX:

GRADING SCHEME مخطط الدرجات				
Group	**Grade**	**التقدير**	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
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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.				

Course Description Form

1. *Course Name:*
Electromagnetic fields
2. *Course Code:*
LOPC 223
3. *Semester / Year:*
2023-2024
4. *Description Preparation Date:*
Dec, 2023
5. Available Attendance Forms:
On-campus
6. Number of Credit Hours (Total) / Number of Units (Total)
60 hour per semester
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Aya Hekmet Makki   *Email: 140101@uotechnolgy.edu.iq*

8. Course Objectives	
A. Course Objectives	1. Give Students an Introduction to and deep study of the physical and Mathematical concepts of electricity and magnetism and any other related aspects. 2. Build strong physical, quantitive, and analytical abilities for students to deal with static electric and magnetic theorems and conditions. 3. Prepare students to understand and apply Maxwell's equations to solve

9. Teaching and Learning Strategies	
B. Strategy	1. Cooperative learning with group assignments 2. Tutorials *3.* Visualizing technologies during classes
C.Assessment Methods	1. Final exam 2. Midterm exam 3. Quizzes and assignments

4. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	None	Introduction to course structure	B.3	None
2	4	A.1&2	Vectors Algebra	B.1&2	C 2&3
3	4	A.1&2	Advanced Vectors Theorem	B.1&2	C 2&3
4	4	A.1&2	Electrostatic Force and Field	B.1&2	C
5	4	A.1&2	Gauss's Law and its Applications	B.1&2	C
6	4	A	DIT and DIF FFT algorithems	B	C
7	4	A	Current, Potentials and Capacitancs	B	C
8	4	A	Electrostatic Boundary Condition	B.1 & B.2	C
9	4	A	Introduction to Steady Magnetics	B.1&2	C
10	4	A	Magnetic Force and Gauss Law	B.1&2	C

11	4	A	Ampere's Law and its Applications	B.1&2	C
12	4	A	Magnetic Field in Matters	B.1&2	C
13	4	A	Magnetic Field Boundary Condition	B.1&2	C
14	4	A	Faraday's Law and Maxwell's Eqs.	B.1&2	C
15	4	A	Final Exam	None	C

5. Course Evaluation

Attendance : 5%

Assignments : 10%

Quizzes : 5%

Midterm exam : 20%

6. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Introduction to Electrodnamics by Griffith
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. *Course Name*
Computer Applications

2. *Course Code:*
LOPCL211

3. *Semester / Year:*
1ˢᵗ / 2024

4. *Description Preparation Date:*
24/4/2024

5. Available Attendance Forms:
Practical attendance in lab

6. Number of Credit Hours (Total) / Number of Units (Total) 2 hours

7. Course administrator's name (mention all, if more than one name)
Name: Lec. Eman Yousif Nasir *Email: Eman.Y.Nasir@uotechnology.edu.iq*

8. Course Objectives

Course Objectives	**Understanding principles of programming using MatLab** **Convert mathematics equations to Matlab instruction** **Input and output methods** **Drawing methods** **Writing conditional and repetition statements** **Solve series, integration and differentiation equations**

9. Teaching and Learning Strategies

Strategy	*Practical applications by using computers*

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
One	2 hours	Learn Matlab window	Introduction to MATLAB window	Practical	Practical Quiz+Homework
Two	2 hours	Format types	Format types		
Three	2 hours	Arithmetic operations with vectors	Vectors		
Four	2 hours	Arithmetic operations with matrices	Matrices		
Five	2 hours	Basic functions in MATLAB	Basic functions in MATLAB		
Six	2 hours	Plotting 2D methods	Plotting functions		
Seven	2 hours	Midterm Exam	Midterm Exam		
Eight	2 hours	Plotting 3D methods	Plotting 3D		
Nine	2 hours	Plotting multiple plots	Plotting multiple plots		
Ten	2 hours	Conditional statement: if	Conditional statement: if		
Eleven	2 hours	Conditional statement: Switch	Conditional statement: Switch		

Twelve	2 hours	For – end loop with series	For – end loop		
Thirteen	2 hours	While – end loop with series	While – end loop		
Fourteen	2 hours	Integration & differentiation	Integration & differentiation		
Fifteen	2 hours	Final Exam	Final Exam		

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports …. etc
20% Homework (10% Homework+10% Quiz), 25% Midterm Exam, 5% Attendance, 50% Final exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. MATLAB an Introduction with Applications 2. An Introduction to Programming a Numerical Methods in MATLAB
Main references (sources)	
Recommended books and references (scientific journals, reports...)	BASICS OF MATLAB and Beyond
Electronic References, Websites	

Course Description Form

1. *Course Name:*
English Language

2. *Course Code:*
LOPC326

3. *Semester / Year:*
2nd / 2024

4. *Description Preparation Date:*
24\4\2024

5. Available Attendance Forms:
In class

6. Number of Credit Hours (Total) / Number of Units (Total)
2 Hours

7. Course administrator's name (mention all, if more than one name)
Name: Duaa Hammoud *Email: doaa.h.dayyir@uotechnology.edu.iq*

8. Course Objectives	
Course Objectives • To enable the students comprehend the spoken form • To develop students ability to use English in day-to-day life and real life situation • To understand the written text and able to use skimming, scanning skills To write simple English to express ideas etc	• To enable the students comprehend the spoken form • To develop students ability to use English in day-to-day life and real life situation • To understand the written text and able to use skimming, scanning skills • To write simple English to express ideas

| | | etc | |

9. Teaching and Learning Strategies

Strategy
- Identify genres, conventions, and period-specific discourses and their relevance to broader historical forces.
- Describe their own writing practices and how they have evolved.
- Apply relevant theoretical concepts to literary or other texts and practices
- Students will heighten their awareness of correct usage of English grammar in writing and speaking.
- Students will improve their speaking ability in English both in terms of fluency and
- Comprehensibility.

10. Course Structure

Week	Hours	Module Topic \ Title	Teachi				
1	2	**Getting to know you**					
2	2	**Whatever makes you happy**					
3	2	**What's in the news**					
4	2	**Eat, drink and be merry**					
5	2	**Looking forward**					
6	2	**The way I see it**					
7	2	**Living history**					
8	2	**Girls and boys**					
9	2	**Time for a story**					
10	2	**Our interactive world**					
11	2	**Life's what it make you**					

12	2	**Just wondering**						
13	2	**Be happy**						
14		**Mid Term Exam**						
15		**Review Lecture**						

11.Course Evaluation

Pre-requisites	Pass the second year of BSc level
Min. No. of Students	10
Max. No. of Students	35

12.Learning and Teaching Resources

1- Lecture Methods (lecture) 2- Dialogue modalities 3- Methods centered on the learner's activity (paper and oral tests)	

Course Description Form

1. *Course Name:*		
AC Circuit Electrical Analysis II		
2. *Course Code:*		
LOPC 221		
3. *Semester / Year:*		
2023 - 2024		
4. *Description Preparation Date:*		
24.4.2024		
5. Available Attendance Forms:		
On-campus		
6. Number of Credit Hours (Total) / Number of Units (Total)		
30 hours		
7. Course administrator's name (mention all, if more than one name)		
Name: *Dr. Saad Zahraw Sekhi*		
Email: *140094@uotechnology.edu.iq*		

8. Course Objectives

Course Objectives	1.To develop problem solving skills and understanding of Ac circuit theory through the application of techniques. 2.This course deals with the basic concept of Ac electrical circuits. 3. To understand the types of powers in Ac electrical circuits. 4.To study the rms and average power. 5. To study the Apparent power. 6. To study the reactive power. 7. To study the resonance circuits. 8. To perform series and parallel Ac circuit analysis. 9. To study the filters circuits.

9. Teaching and Learning Strategies

Strategy	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, by looking at a lot of homework, doing calculations, and by connecting some circuits in the lab.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

				The following prominent methods for effective instruction in Ac circuits include the Problem-solving method, Lecture method, Questioning method, and Discovery method. Problem-solving is the most independent learning method used in teaching Ac circuits and empowers the students to initiate their own learning.	Divide students into different groups and ask them to solve the Equations depending on their syllabus- then assess them. 1. Homework 2. Midterm exam 3. Final exam
1	2	Recognize the power types in Ac electrical circuits.	Power (AC)		
2	2	Recognize the power types in Ac electrical circuits.	Power (AC)		
3	2	Describe average, apparent, and reactive power in electrical circuits.	Power (AC)		
4	2	Describe average, apparent, and reactive power in electrical circuits.	Power (AC)		
5	2	Study the resonance in electrical circuits	resonance		
6	2	Study the resonance in electrical circuits	resonance		
7	2	Study the resonance in electrical circuits	resonance		
8	2	Analysis series resonance circuits.	resonance		
9	2	Analysis series resonance circuits.	resonance		
10	2	Analysis parallel resonance circuits.	resonance		
11	2	Analysis parallel resonance circuits.	resonance		
12	2	Study the filters types	filters		
13	2	Study the filters types	filters		
14	2	Study the filters types	filters		
15	2	Study the filters types	filters		

11. Course Evaluation
Quizzes & Homework: 10 %
the attendance: 5 %
Evaluation: 5 %
Midterm Exam: 20 %
Final Exam: 60 %

12. Assignments	
Required textbooks (curricular books, if any)	Robert L Boylestad, Introductory Circuit Analysis, 12th ed. Pearson Education Limited 2014.
Main references (sources)	Robert L Boylestad, Introductory Circuit Analysis, 12th ed. Pearson Education Limited 2014.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. *Course Name:*
Laser Physics I

2. *Course Code:*
LE222

3. *Semester / Year:*
2nd Semester 2024

4. *Description Preparation Date:*
20 April 2024

5. Available Attendance Forms:
In class delivery mode

6. Number of Credit Hours (Total) / Number of Units (Total)
2 Hpw (30 Hps) / 2 Credit Units

7. Course administrator's name (mention all, if more than one name)
Name: Hiba Hassan Abdullah
Email: Hiba.h.abdullah@uotechnology.edu.iq

8. Course Objectives

Course Objectives	1. **The course aims to develop a working knowledge and conceptual understanding of important topics in contemporary laser physics at a quantitative level. A key objective is to enable the student to undertake quantitative problem-solving relating to the design, performance and applications of lasers through thereby acquiring an ability to put such knowledge into practice by way of numerical calculations**

9. Teaching and Learning Strategies

Strategy	1. Enable the student to know and understand the basic characteristics of laser Physics. 2. Enable the student to the optimal use of the mathematical equations for laser physics

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	1,2	Laser gain	Lectures	ALL
2	2	1,2	Fluorescence line shape & fluorescence linewidth	Lectures	ALL
3	2	1,2	Mathematica expressions of fluorescence line width	Lectures	ALL
4	2	1,2	Laser gain curve & Natural broadening	Lectures	ALL
5	2	1,2	Doppler broadening & Pressure Broadening	Lectures	ALL
6	2	1,2	Loop Gain (without looss)	Lectures	ALL
7	2	1,2	Exam	Lectures	ALL
8	2	1,2	Loop gain (with loss)	Lectures	ALL
9	2	1,2	calculating threshold gain	Lectures	ALL
10	2	1,2	Holl berrning and active	Lectures	ALL

			medium gain		
11	*2*	*1,2*	Saturation gain in cw laser Gain and output power of cw laser.	Lectures	*ALL*
12	*2*	*1,2*	Continues wave laser & Pulsed laser	Lectures	*ALL*
13	*2*	*1,2*	Pulse shape out of a pulsed Ruby laser	Lectures	*ALL*
14	*2*	*1,2*	Laser radiation properties	Lectures	*ALL*
15	*2*	*1,2*	Exam	Lectures	*ALL*

11.Course Evaluation

Mid-term Exam, Quizzes, Final Exam, In class cooperation

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. Laser Electronics , THIRD EDITION JOSEPH T. VERDEYEN 2. Laser Fundamentals, SECOND EDITION WILLIAM SILFVAST
Main references (sources)	1. Laser Electronics , THIRD EDITION JOSEPH T. VERDEYEN 2. Laser Fundamentals, SECOND EDITION WILLIAM SILFVAST
Recommended books and references (scientific journals, reports...)	*N/A*
Electronic References, Websites	*N/A*

Course Description Form

1. *Course Name:*
Probability and Engineering Statistics

2. *Course Code:*
LOPC224

3. *Semester / Year:*
2nd / 2024

4. *Description Preparation Date:*
2024-02-01

5. Available Attendance Forms:
On Campus

6. Number of Credit Hours (Total) / Number of Units (Total)
60 / 4

7. Course administrator's name (mention all, if more than one name)
Name: Lec. Dr. Taif A. Faisal *Email: taif.a.faisal@uotechnology.edu.iq*

8. Course Objectives	
Course Objectives	• **Providing students with a general knowledge of probability theories and their scientific applications** • **Equipping students with the essential tools for statistical analyses.** • **Fostering understanding through real-world statistical applications**

9. Teaching and Learning Strategies	
Strategy	*A- Knowledge and Understanding* *A1: Develop problem-solving techniques needed to accurately calculate probabilities.* *A2: Apply problem-solving techniques to solving real-world events* *A3: Apply selected probability distributions to solve problems* *A4: Present the analysis of derived statistics to all audiences* *B- Subject-specific skills* *B1: Using Software tools that help evaluate the student level in day-to-day statistical use* *B2: Applying implementation of probability objects and criti[cal] thinking skills* *1- Group participation.* *2- Homework* *3- Quizzes*

4- Reports
5- Mid-term exam
6- Final exam
C- Thinking Skills
C1: Support mental ability to understand basic probability roles
C2: Support decision making statistical approach
C3: Support Application and software skills and implementation
1- Group participation.
2- Homework
3- Quizzes
4- Reports
5- Mid-term exam
6- Final exam
D- General and Transferable Skills (other skills relevant to employability and
personal development)
D1: Using Microsoft Excel
D2: Using SPSS Software
D3: Apply Knowledge to everyday life events
D4: Apply knowledge to different scientific realms

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	2	The student Understand the Lesson	Sample Space	1,2,3,4	1-4
2nd	2	The student Understand the Lesson	General Probability	1,2,3,4	1-4
3rd	2	The student Understand the Lesson	Permutation and Combination	1,2,3,4	1-4
4th	2	The student Understand the Lesson	Conditional Probability	1,2,3,4	1-4
5th	2	The student Understand the Lesson	Discrete Random Variables	1,2,3,4	1-4
6th	2	The student Understand	Probability Distribution	1,2,3,4	1-4

			the Lesson	Functions (PDF)		
7th	2	The student Understand the Lesson	Special Discrete Distribution Functions	1,2,3,4	1-4
8th	2	The student Understand the Lesson	Continuous Distribution Functions	1,2,3,4	1-4
9th	2	The student Understand the Lesson	Special Continuous Distribution Functions	1,2,3,4	1-4
10th	2	The student Understand the Lesson	Introduction to Statistics	1,2,3,4	1-4
11th	2	The student Understand the Lesson	Understanding Statistical Plots	1,2,3,4	1-4
12th	2	The student Understand the Lesson	Statistical Methods	1,2,3,4	1-4
13th	2	The student Understand the Lesson	Parametric and Nonparametric Analysis	1,2,3,4	1-4
14th	2	The student Understand the Lesson	SPSS	1,2,3,4	1-4
15th	2	The student Understand the Lesson	Variable Analysis	1,2,3,4	1-4

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	*Hwei P. Hsu , "Theory and Problems of Probability, Random Variables, and Random Processes", McGraw Hill, 1997*
Main references (sources)	**Ronald E. Walpole "Probability and Statistics for Engineers and Scientists" 9th Edition, 2021, Pearson**

Recommended books and references (scientific journals, reports...)	*Murray R. Spiegel, "Probability and Statistics", 4th edition, McGraw Hill, 2013*
Electronic References, Websites	www.jmap.org

Course Description Form

1. Course Name:
AC Circuits Electrical Analysis I

2. Course Code:
LOPC213

3. Semester / Year:
1ˢᵗ /Second year

4. Description Preparation Date:
24/4/2024

5. Available Attendance Forms:

6. Number of Credit Hours (Total) / Number of Units (Total)
2 hours(week)/2 units

7. Course administrator's name (mention all, if more than one name)
Name: Lec. Dr. Esraa kahtan Hamed Email: Esraa.K.Hamed@uotechnology.edu.iq

8. Course Objectives	
Course Objectives	**This course deals with the basic concept of electrical ac circuits. It aims to develop problem solving skills and understanding of circuit theory through the application of techniques by understand sinusoidal waveforms and phasors, analyze the electrical circuits under ac currents.**

9. Teaching and Learning Strategies	
Strategy	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.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Knowledge and Understanding	Sinusoidal Alternating Waveforms _1	Lectures	Discussion Home works Quizzes
2	2	Knowledge Understanding	Sinusoidal Alternating Waveforms_2	Lectures	=
3	2	=	Average and RMS Values	Lectures	=
4	2	=	The Basic Elements and Phasors	Lectures	=
5	2	=	Solving Problems	Lectures	=
6	2	=	The Basic Elements and Phasors	Lectures	=
7	2	=	Mid-Term Exam	Lectures	=
8	2	=	Complex Numbers	Lectures	=
9	2	=	Phasors	Lectures	=
10	2	=	Solving Problems	Lectures	=
11	2	=	Series ac Circuits	Lectures	=
12	2	=	Parallel ac Circuits	Lectures	=
13	2	=	Series and Parallel ac Circuits	Lectures	=
14	2	=	Series -Parallel ac Circuits II	Lectures	=
15	2	=	Solving problems	Lectures	=

11. Course Evaluation

Home works =5M
Sudden exams=5M
Mid Term exam=20M
The student's performance=5M
Discussions=5M
Final Exam=60M

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	- Introductory Circuit Analysis, Robert L Boylestad, Twelfth Edition, 2014.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	Lecture Notes
Electronic References, Websites	---

Course Description Form

1. Course Name:
Semiconductor devices

2. Course Code:
LOPCL325

3. Semester / Year:
2ndsemester/2023-2024

4. Description Preparation Date:
24/4/2024

5. Available Attendance Forms:
Attendance in the classroom

6. Number of Credit Hours (Total) / Number of Units (Total):
56/4

7. Course administrator's name (mention all, if more than one name)
Name: Prof.Dr.Abdulhadi Kadhim Email: Abdulhadi.k.judran@uotechnology.edu.iq

8. Course Objectives	
Course Objectives	Teaching third-year students semiconductor materials How to form energy packs Types of these materials according to the energy gap Charge carriers and their transport methods The process of manufacturing devices and their specifications and applicaions.

9. Teaching and Learning Strategies	
Strategy	Learn , understand and application

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Engineering is laser and .. optoelectronic	structure of atoms . hydrogen atom -2 many- electron atoms 1-3 degeneracy of energy levels in free atoms 1-4 formation of energy bands in crystals -5 filling of energy	Attendance in the classroom	QUIZES Reports Mid. Exam Final exam

			ands by electrons 6 division of solids into conductors , miconductors and dielectrics -Band structure of semiconductors l free electrons and holes 2-2 types of semiconductors -3 Intrinsic (pure) Extrinsic (doping) 2-5 the general uations of intrinsic and Extrinsic semiconductor semiconductor in Equilibrium none- Equilibrium Excess carriers in semiconductor 2-6 movement of change carrier in niconductor (major an min carriers) -7 Hall effect and carrier density 8 photoconduction l absorption of light 2-9 Avalanche breakdown , reakdown devices 1- UJT 2- SCR 3- Triac 4- Diac 5- SCS Contact phenomena 3-1 Metal – niconductor contact -2 Fermi-level in semiconductor 4- Semiconductor iodes and junction transistors P-N junction (Zero plied bias , forward biasing , reverse biasing) junction transistor Bipolar transistor -3 Tunnel Diodes 4-4 Field effect transistor (JFET ,MOSFET[DE-OSFET,E-MOSFET])		

			-5 Semiconductor njection (Diode) laser 6 semiconductor at resent and future		

11.Course Evaluation

The course is evaluated through daily and surprise examinations and monthly oral and written examinations

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Semicoductor physics and devices by Neamen , 3rd edition
Main references (sources)	Semicoductor devices physics and Technology by Sze , 2nd edition
Recommended books and references (scientific journals, reports...)	**Solid state electronic devices by streetman, 4th edition**
Electronic References, Websites	

Course Description Form

1. Course Name:
Engineering analysis I

2. Course Code:
LOPC311

3. Semester / Year:
1st Semester 2024

4. Description Preparation Date:
24 April 2024

5. Available Attendance Forms:
In class delivery mode

6. Number of Credit Hours (Total) / Number of Units (Total)
2 Hpw (30 Hps) / 2 Credit Units

7. Course administrator's name (mention all, if more than one name)
Name: Razi Jabur Al-azawi
Email: 140009@uotechnology.edu.iq

8. Course Objectives

Course Objectives	Teaching the student how to apply mathematical functions within the field of study specialized in optics and lasers. The student also learns to use mathematics in solving scientific problems.

9. Teaching and Learning Strategies

Strategy	1. Knowledge and Understanding 2. Analyzing algorithms

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	1	Complex Variables: Complex Numbers	Lectures	ALL
2	2	1	Complex Variables: Cauchy-Riemann Equations	Lectures	ALL
3	2	1	Complex Variables: Complex Functions	Lectures	ALL
4	2	1	Complex Variables: Integrations	Lectures	ALL
5	2	2	Fourier Analysis :Fourier Series	Lectures	ALL
6	2	2	Fourier Analysis: Odd and Even Functions	Lectures	ALL
7	2	1,2	Fourier Analysis: Half-Wave Fourier series.	Lectures	ALL
8	2	1	Fourier Analysis: Frequency spectra Transformations.	Lectures	ALL
9	2	1,2	Z Transform	Lectures	ALL

10	2	1	Laplace Transformation: Partial Fractions	Lectures	ALL
11	2	1,2	Laplace Transformation: Transformations	Lectures	ALL
12	2	1,2	Laplace Transformation: Solving Differential Equations	Lectures	ALL
13	2	1,2	Laplace Transformation: Solving Differential Equations	Lectures	ALL
14	2	1,2	Applications	Lectures	ALL
15	2	1,2	Final Examination	Lectures	ALL

11. Course Evaluation

Mid-term Exam, Quizzes, Final Exam, In class cooperation

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1) Erwin Kreyszig "Advanced Engineering Mathemati 1979, John wily & sons, New York. 2) Murray R. Spiegel "Advanced Calculus", 19 McGraw-Hill book company.
Main references (sources)	1) Erwin Kreyszig "Advanced Engineering Mathemati 1979, John wily & sons, New York. 2) Murray R. Spiegel "Advanced Calculus", 19 McGraw-Hill book company.
Recommended books and references (scientific journals, reports...)	N/A
Electronic References, Websites	N/A

Course Description Form

1. Course Name:
Engineering analysis II

2. Course Code:
LOPC321

3. Semester / Year:
2nd Semester 2024

4. Description Preparation Date:
24 April 2024

5. Available Attendance Forms:
In class delivery mode

6. Number of Credit Hours (Total) / Number of Units (Total)
2 Hpw (30 Hps) / 2 Credit Units

7. Course administrator's name (mention all, if more than one name)
Name: Razi Jabur Al-azawi
Email: 140009@uotechnology.edu.iq

8. Course Objectives	
Course Objectives	Teaching the student how to apply mathematical functions within the field of study specialized in optics and lasers. The student also learns to use mathematics in solving scientific problems.

9. Teaching and Learning Strategies	
Strategy	1. Knowledge and Understanding 2. Analyzing algorithms

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	1	Fourier Transform	Lectures	ALL
2	2	1	Fourier Transform :Odd and Even Functions	Lectures	ALL
3	2	1	Table transformation of Fourier Transform	Lectures	ALL
4	2	1	Laws Fourier Transform	Lectures	ALL
5	2	2	Inverse Fourier Transform	Lectures	ALL
6	2	2	Table transformation of Inverse Fourier Transform	Lectures	ALL
7	2	1,2	Laws of Inverse Fourier Transform	Lectures	ALL
8	2	1	Partial Fraction of Inverse Fourier Transform	Lectures	ALL
9	2	1,2	First order of Differential equation	Lectures	ALL

10	2	1	Separable Differential equation	Lectures	ALL
11	2	1,2	Homogenous Differential equation	Lectures	ALL
12	2	1,2	Exact Differential equation	Lectures	ALL
13	2	1,2	Linear Differential equation	Lectures	ALL
14	2	1,2	Bernoulli Differential equation	Lectures	ALL
15	2	1,2	Final Examination	Lectures	ALL

11.Course Evaluation

Mid-term Exam, Quizzes, Final Exam, In class cooperation

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	1) Erwin Kreyszig "Advanced Engineering Mathemati 1979, John wily & sons, New York. 2) Murray R. Spiegel "Advanced Calculus", 19 McGraw-Hill book company.
Main references (sources)	1) Erwin Kreyszig "Advanced Engineering Mathemati 1979, John wily & sons, New York. 2) Murray R. Spiegel "Advanced Calculus", 19 McGraw-Hill book company.
Recommended books and references (scientific journals, reports...)	N/A
Electronic References, Websites	N/A

Course Description Form

1. Course Name:
Signal and systems

2. Course Code:
LOPC312

3. Semester / Year:
1ˢᵗ semester / 2023-2024

4. Description Preparation Date:
24/04/2024

5. Available Attendance Forms:
Full attendance on campus

6. Number of Credit Hours (Total) / Number of Units (Total)
2*15=30 / 2 credits

7. Course administrator's name (mention all, if more than one name)
Name: zahraa sabeeh qasim Email: zahraa.s.qasim@uotechnology.edu.iq

8. Course Objectives

Course Objective	Analysis and processing of signals in the time and frequency domains. Evaluation of density spectra, electricity and energy. Evaluation of signal components using Four series and representation transform. Study some applications of Fourier transform such modulation, sampling, and correlation. Analysis of linear time constant systems us response functions, impulse transfer and Fourier techniques. Study low-pass, band-p and high-pass filters (LPF, BPF, HPF). Analysis of discrete time signals and systems us discrete Fourier transform (DFT) and fast Fourier transform. Introduction to Transform.

9. Teaching and Learning Strategies

Strategy	Lecture Methods (lecture) Dialogue modalities Methods centered on the learner's activity (paper and oral tests)

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Learning and knowledge	Representation and classifica of systems and signals		
2	2	Learning and knowledge	A signal continuous with tir continuous time domain		
3	2	Learning and	Representation using the gen Fourier series		

			knowledge			
4	2	Learning and knowledge	Energy and power signal cont			
5	2	Learning and knowledge	Spectrum of the signal			
6	2	Learning and knowledge	Fourier and its application Fourier transform			
7	2	Learning and knowledge	Conjugation functions. T analysis of continuous system time - Analysis of the t domain of the signal			
8	2	Learning and knowledge	Intermittent signals over ti Discrete Fourier transf (DFT).			
9	2	Learning and knowledge	Fast Fourier transform (F DFT spectroscopy			
10	2	Learning and knowledge	Z-Transform and examples			
11	2	Learning and knowledge	Computer project - project al signals and systems			
12	2	Learning and knowledge	review			

11.Course Evaluation

Daily Duties
Monthly Reports
Mid Term Exam
Final Exam

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	-Signals and Systems Primer with MATLAB Alexander D. Poularikas · 2018 -Signals and Systems Shaila Dinkar Apte · 2016
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Spectroscopy

2. Course Code:
LE324

3. Semester / Year:
2023-2024

4. Description Preparation Date:
2024-04-24

5. Available Attendance Forms:
Complete Hours

6. Number of Credit Hours (Total) / Number of Units (Total)
4 Hours / Week (Theory)   4H ×15W = 60H/semester

7. Course administrator's name (mention all, if more than one name)
Name: Lec. Azhar Kadhim Sadkhan Aziz Al-Zaidy   Email: azhar.k.sadkhan@uotechnology.edu.iq

8. Course Objectives

Course Objectives	1-Introduction to advanced concepts in spectral science and the nature of light and electromagnetic waves 2-Preparing the student theoretically to work in the field of electromagnetic spectr analysis. 3-Definition of frequencies, wavelengths and energy levels for each electromagnetic spectrum.

9. Teaching and Learning Strategies

Strategy	1- Study of electromagnetic waves, spectrometer types and atomic spectra. 2- Study the quantum numbers and the nature of light 3- Studying the spectrum of microwave and infrared waves. 4- Studying the splitting of the electromagnetic spectrum.

10. Course Structure

Week	Hours	Required Learning	Unit or subject name	Learning method	Evaluation method

			Outcomes			
1	4Hrs/week	Literature	Definition principles spectroscopy	1.Tutorials 2. Power point literatures by Data show Reviews.	- Classroom discussions to identify the potential of the student to analyze issues. - Homework. - Sudden exams. - Quarterly examinations. - Performance the laboratory.
2-4	4Hrs/week	=	Light electromagnetic wa	=	=
5-7	4Hrs/week	=	Atomic spectra	=	=
8-10	4Hrs/week	=	- Bohr and hydrogen atom - Schrodinger equations Wave function	=	=
11-1	4Hrs/week	=	Microwave spectroscopy	=	=
14-1	4Hrs/week	=	Infrared spectrosc	=	=

11.Course Evaluation

Audience5 Marks
Homework 5 Marks
Daily exams 10 Marks
Midterm exam 20 Marks
Final exam 60 Marks
Final score 100 Marks

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Science of the spectra / Abdulh Kadhim
Main references (sources)	- Spectrophysics / Anne Thorne Fundamental of molecu

	spectroscopy / C.N.Banwell
Recommended books and references (scientific journals, reports...)	- Spectrophysics / Anne Thorne - Foundamental of molecular spectroscopy / C.N.Banwell Science of the spectra / Abdulh Kadhim
Electronic References, Websites	Internet web sites like: www.ivsl.org , www.iasj.net

Course Description Form

1. Course Name:
Semiconductor devices

2. Course Code:
LOPCL325

3. Semester / Year:
2ndsemester/2023-2024

4. Description Preparation Date:
24/4/2024

5. Available Attendance Forms:
Attendance in the classroom

6. Number of Credit Hours (Total) / Number of Units (Total):
56/4

7. Course administrator's name (mention all, if more than one name)
Name: Prof.Dr.Abdulhadi Kadhim Email: Abdulhadi.k.judran@uotechnology.edu.iq

8. Course Objectives	
Course Objectives	Teaching third-year students semiconductor materials How to form energy packs Types of these materials according to the energy gap Charge carriers and their transport methods The process of manufacturing devices and their specifications and applicaions.

9. Teaching and Learning Strategies	
Strategy	Learn , understand and application

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Engineering is laser and .. optoelectronic	structure of atoms . hydrogen atom -2 many- electron atoms -3 degeneracy of energy levels in free atoms 1-4 formation of energy bands in crystals -5 filling of energy	Attendance in the classroom	QUIZES Reports Mid. Exam Final exam

			ands by electrons		
			6 division of solids into conductors , miconductors and dielectrics		
			-Band structure of semiconductors		
			l free electrons and holes		
			2-2 types of semiconductors		
			-3 Intrinsic (pure) Extrinsic (doping)		
			2-5 the general uations of intrinsic and Extrinsic semiconductor semiconductor in Equilibrium none- Equilibrium Excess carriers in semiconductor		
			2-6 movement of change carrier in niconductor (major an min carriers)		
			-7 Hall effect and carrier density		
			8 photoconduction l absorption of light		
			2-9 Avalanche breakdown , reakdown devices		
			1- UJT		
			2- SCR		
			3- Triac		
			4- Diac		
			5- SCS		
			ontact phenomena		
			3-1 Metal – niconductor contact		
			-2 Fermi-level in semiconductor		
			- Semiconductor iodes and junction transistors		
			P-N junction (Zero plied bias , forward biasing , reverse biasing) junction transistor Bipolar transistor		
			-3 Tunnel Diodes		
			4-4 Field effect transistor (JFET ,MOSFET[DE-OSFET,E-MOSFET])		

			-5 Semiconductor njection (Diode) laser 6 semiconductor at resent and future		

11.Course Evaluation

The course is evaluated through daily and surprise examinations and monthly oral and written examinations

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Semicoductor physics and devices by Neamen , 3rdedition
Main references (sources)	Semicoductor devices physics and Technology by Sze , 2ndedition
Recommended books and references (scientific journals, reports...)	**Solid state electronic devices by streetman, 4th edition**
Electronic References, Websites	

نموذج وصف المقرر

	1.	اسم المقرر
		اتصالات بصرية

	2.	رمز المقرر
		LOPC411

	3.	الفصل / السنة
		الفصل الدراسي الثاني / السنة الدراسية ٢٠٢٤

	4.	تاريخ اعداد الوصف
		٢٠ / ٤ / ٢٠٢٤

	5.	اشكال الحضور المتاحة
		حضوري

	6.	عدد الساعات الدراسية (الكلي) / عدد الوحدات (الكلي)
		4 ساعة اسبوعياً (٣٠ ساعة اسبوعياً) / 4 وحدة

	7.	اسم مسؤول المقرر الدراسي
		الاسم: أ.د. عبدالله خضير عباس
		الايميل:Abdulla.k.abass@uotechnology.edu.iq

	8.	اهداف المقرر
اهداف المادة الدراسية	1. مقدمة على الاتصالات الضوئية وتطورها والاجيال التي تم العمل بها حتى الان. 2. شرح مكونات منظومات الاتصالات الضوئية بصورة عامة 3. شرح انواع وسط الانتقال في منظومات الاتصالات الضوئية مثل الليف الضوئي و الفضائ الحر. 4. شرح المشاكل التي تواجه المصمم لمنظومات الاتصالات الضوئية مثل التوهين والتشت. 5. شرح طرق معالجة المشاكل التي تواجه المصمم لمنظومات الاتصالات الضوئية مثل المضخمات الضوئية ومعوضات التشتت.	

	9.	استراتيجيات التعليم والتعلم
الاستراتيجية	1. المعرفة والفهم 2. تحليل منظومات الاتصالات الضوئية	

	10.	بنية المقرر

الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة او الموضوع	طريقة التعلم	طريقة التقييم
1	4	1	مقدمة عن الاتصالات الضوئية	محاضرات صفية	جميع الطرق المذكورة
2	4	2,3	الليف الضوئي وانواعه	محاضرات صفية	جميع الطرق المذكورة
3	4	3	الفضاء الحر وانتقال الضوء فيه	محاضرات صفية	جميع الطرق المذكورة
4	4	3	الخسائر التي تصاحب انتقال الضوء في الليف الضوئي	محاضرات صفية	جميع الطرق المذكورة
5	4	3	الخسائر التي تصاحب انتقال الضوء في الفضاء الحر	محاضرات صفية	جميع الطرق المذكورة

جميع الطرق المذكورة	محاضرات صفية	المضخمات الضوئية	3,4	4	6
جميع الطرق المذكورة	محاضرات صفية	التشتت وانواعة	2,3	4	7
جميع الطرق المذكورة	محاضرات صفية	معالجة التشتت	2,3	4	8
جميع الطرق المذكورة	محاضرات صفية	طرق تحسين سرعة ارسال البيانات WDM, SDM	2,3,4	4	9
جميع الطرق المذكورة	محاضرات صفية	المرسلات في الاتصالات الضوئية	1,2,34	4	10
جميع الطرق المذكورة	محاضرات صفية	انواع المرسلات LED, LD	1,2,34	4	11
جميع الطرق المذكورة	محاضرات صفية	المستقبلات في الاتصالات الضوئية	1,2,34	4	12
جميع الطرق المذكورة	محاضرات صفية	منظومات الاتصالات الضوئية انواعها	1,2,3,4,5	4	13
جميع الطرق المذكورة	محاضرات صفية	مراجعة	1,2,3,4,5	4	14
جميع الطرق المذكورة	محاضرات صفية	الامتحان النهائي	1,2,3,4,5	4	15

11. تقييم المقرر	
الاختبارات المفاجئة – الاختبار الفصلي – الاختبار النهائي – الحضور – المناقشات والمشاركات الصفية	
12. مصادر التعلم والتدريس	
الكتب المقررة المطلوبة (المنهجية ان وجدت)	John M. Senior, Optical Fiber Communications Principles and Practice, Third edition, 2009
المراجع الرئيسية (المصادر)	Hemani Kaushal, Free Space Optical Communication, 2017
الكتب والمراجع الساندة التي يوصى بها	N/A
المراجع الالكترونية – مواقع الانترنت	N/A

نموذج وصف المقرر

1. اسم المقرر:	
تصميم انضمة الليزر II	
2. رمز المقرر:	
LE4307	
3. الفصل / السنة	
الفصل الدراسي الثاني	
4. تاريخ اعداد الوصف:	
2024/4/23	
5. اشكال الحضور المتاحة:	
دوام كامل	
6. عدد الساعات الدراسية (الكلي) / عدد الوحدات (الكلي):	
ساعتان نظري لفرع هندسة الليزر	
7. اسم مسؤول المقرر الدراسي:	
الاسم: ا.د. محمد جلال عبدالرزاق	
الايميل:	

8. اهداف المقرر	
اهداف المادة الدراسية	• التعريف بمفاهيم متقدمة في هندسة تصاميم منظومات الليزرالمختلفة لطلاب المرحلة الرابعة في فرع هندسة الليزر. كنظرية إنتقال الضوء داخل الاوساط الليزرية الفعالة و أنواع المرنان البصري والعوامل التي تؤثر سَلباً على كفائة القدرة الخارجة لمنظومات الليزر المختلفة. • تهيئة الطالب نظرياً وعملياً للعمل في حقل اختصاص المقرر في شركات القطاع العام والخاص. • التعريف بالتاثيرات الحرارية المصاحبة لعملية الضخ وتاثيراتها على كفاءة الخرج الليزر.

9. استراتيجيات التعليم والتعلم	
الاستراتيجية	يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

10. بنية المقرر

الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة او الموضوع	طريقة التعلم	طريقة التقييم
1 - 4	2 ساعة نظرية أسبوعيا	التطبيقات العملية لبعض انواع المرنان البصري	حسابات تصميم المرنان البصري غير المستقر	تحفيز الطالب على تطوير قدراته في تحليل معطيات السؤال وتشخيص	المناقشات. الواجبات المنزلية. الامتحانات الفجائية. الامتحانات الفصلية. المشاريع والحلقات

المختبرات. الدراسية.	المشكلة ووصف الحل.				
المناقشات. الواجبات المنزلية. الامتحانات الفجائية. الامتحانات الفصلية. المشاريع والحلقات الدراسية. المختبرات.	تحفيز الطالب على تطوير قدراته في تحليل معطيات السؤال وتشخيص المشكلة ووصف الحل.	حساب الخسائر المتولدة في منظومة ليزر النديميوم-ياك المستمر وايجاد الحل الامثل لتصميم منظومة التبريد	خسائر منظومات الليزر	2 ساعة نظرية أسبوعيا	5-9
المناقشات. الواجبات المنزلية. الامتحانات الفجائية. الامتحانات الفصلية. المشاريع والحلقات الدراسية. المختبرات.	تحفيز الطالب على تطوير قدراته في تحليل معطيات السؤال وتشخيص المشكلة ووصف الحل.	حساب توزيعات درجات الحرارة والاجهادات المتولدة في الوسط الليزر	التاثيرات الحرارية المتولدة في الاوساط الليزرية	2 ساعة نظرية أسبوعيا	10-13

11.	تقييم المقرر

- المناقشات الصفية والتعرف على إمكانيات الطالب على تحليل المسائل.
- الواجبات المنزلية.
- الامتحانات الفجائية.
- الامتحانات الفصلية.

12.	مصادر التعلم والتدريس

الكتب المقررة المطلوبة (المنهجية ان وجدت)	1. Solid-State Laser Engineering (W.Koechner)
المراجع الرئيسية (المصادر)	1. Principles of Lasers (O.Svelto)
الكتب والمراجع الساندة التي يوصى بها	1. Solid-State Laser Engineering (W.Koechner) 2. Principles of Lasers (O.Svelto)
المراجع الالكترونية – مواقع الانترنت	مراجعة للدوريات والنشريات العالمية والمحلية من المواقع الالكترونية www.ivsl.org www.iasj.net

نموذج وصف المقرر

1. اسم المقرر	
الكترونيك رقمي	
2. رمز المقرر	
LE414	
3. الفصل / السنة	
الاول \ 2023	
4. تاريخ اعداد الوصف	
11-09-2023	
5. اشكال الحضور المتاحة	
حضوري	
6. عدد الساعات الدراسية (الكلي) / عدد الوحدات (الكلي)	
30\ 4	
7. اسم مسؤول المقرر الدراسي	
الاسم: م.د. طيف عائد فيصل	
الايميل: taif.a.faisal@uotechnology.edu.iq	
8. اهداف المقرر	
اهداف المادة الدراسية	• تزويد الطلاب بالمعرفة العامة بالإلكترونيات الرقمية وتطبيقاتها العلمية • تزويد الطلاب بالأدوات الأساسية لتحليل الدوائر الرقمية. • تعزيز التفاهم من خلال التطبيقات الرقمية في العالم الحقيقي
9. استراتيجيات التعليم والتعلم	
الاستراتيجية	أـ المعرفة والفهم ج1: تطوير تقنيات حل المشكلات اللازمة لحل المشكلات الرقمية بدقة. ج2: تطبيق تقنيات حل المشكلات لحل تطبيقات العالم الحقيقي ج3: تطبيق نظريات مختارة لحل المشكلات ج4: تقديم تحليل الدوائر الرقمية لجميع الجماهير بـ المهارات الخاصة بالموضوع B1:تطبيق تنفيذ الدوائر الرقمية ومهارات التفكير الناقد 1- المشاركة الجماعية. 2- الواجبات المنزلية 3- الاختبارات 4- التقارير 5- امتحان منتصف الفصل 6- الامتحان النهائي جـ مهارات التفكير C1:دعم القدرة العقلية على فهم التصميم الرقمي الأساسي C2:استراتيجيات الدعم للتصميم الرقمي المعقد

C3:دعم مهارات التطبيق والبرمجيات وتنفيذها

1- المشاركة الجماعية.

2- الواجبات المنزلية

3- الاختبارات

4- التقارير

5- امتحان منتصف الفصل

6- الامتحان النهائي

د- المهارات العامة والقابلة للتحويل (المهارات الأخرى ذات الصلة بالتوظيف والتنمية الشخصية)

D1:تطبيق المعرفة على أحداث الحياة اليومية

D3: تطبيق المعرفة على المجالات العلمية المختلفة

					10. بنية المقرر
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
الطالب يفهم الدرس	شرح المحاضرة و توفير جميع الطرق اللازمة	Digital Concepts	1 و 2 و 3 و 4	2	1
الطالب يفهم الدرس	شرح المحاضرة و توفير جميع الطرق اللازمة	Number System Arithmetic	1 و 2 و 3 و 4	2	2
الطالب يفهم الدرس	شرح المحاضرة و توفير جميع الطرق اللازمة	Logic Gates and their Applications I	1 و 2 و 3 و 4	2	3
الطالب يفهم الدرس	شرح المحاضرة توفير جميع الطرق اللازمة	Logic Gates and their Applications II	1 و 2 و 3 و 4	2	4
الطالب يفهم الدرس	شرح المحاضرة توفير جميع الطرق اللازمة	Boolean Algebra and Logic Simplification I	1 و 2 و 3 و 4	2	5
الطالب يفهم الدرس	شرح المحاضرة توفير جميع الطرق اللازمة	Boolean Algebra and Logic Simplification II	1 و 2 و 3 و 4	2	6
الطالب	شرح المحاضرة و	Combinational Logic Analysis	1 و 2 و 3 و 4	2	7

يفهم الدرس	توفير جميع الطرق اللازمة				
الطالب يفهم الدرس	شرح المحاضرة و توفير جميع الطرق اللازمة	Functions of Combinational Logic I	1 و 2 و 3 و 4	2	8
الطالب يفهم الدرس	شرح المحاضرة و توفير جميع الطرق اللازمة	Functions of Combinational Logic II	1 و 2 و 3 و 4	2	9
الطالب يفهم الدرس	شرح المحاضرة و توفير جميع الطرق اللازمة	Sequential Circuits I	1 و 2 و 3 و 4	2	10
الطالب يفهم الدرس	شرح المحاضرة و توفير جميع الطرق اللازمة	Sequential Circuits II	1 و 2 و 3 و 4	2	11
الطالب يفهم الدرس	شرح المحاضرة و توفير جميع الطرق اللازمة	Sequential Circuits III	1 و 2 و 3 و 4	2	12
الطالب يفهم الدرس	شرح المحاضرة و توفير جميع الطرق اللازمة	Design of Complex digital Circuits I	1 و 2 و 3 و 4	2	13
الطالب يفهم الدرس	شرح المحاضرة و توفير جميع الطرق اللازمة	Design of Complex digital Circuits II	1 و 2 و 3 و 4	2	14
الطالب يفهم الدرس	شرح المحاضرة و توفير جميع الطرق اللازمة	Design of Complex digital Circuits III	1 و 2 و 3 و 4	2	15

11. تقييم المقرر
الامتحانات اليومية و الشهرية و التقارير و الامتحان النهائي و النشاطات الخارجية

12. مصادر التعلم والتدريس

Thomas Floyd, "Digital Fundamentals", 11th edition, Pearson, 2015	الكتب المقررة المطلوبة (المنهجية ان وجدت)
Samuel C. Lee "Digital Circuits and Logic Design" 1st edition, Prentice-Hall, 1976.	المراجع الرئيسية (المصادر)
M. Morris Mano, "Digital Design", 4th edition,	الكتب والمراجع الساندة التي يوصى بها

Prentice Hall, 1995	
https://www.youtube.com/@khanacademypartners6264	المراجع الالكترونية – مواقع الانترنت

Course Description Form

1. Course Name:
Laser System Design I

2. Course Code:
LE4307

3. Semester / Year:
1st Semester /2024-2024

4. Description Preparation Date:
23/4/2024

5. Available Attendance Forms:
Complete Hours

6. Number of Credit Hours (Total) / Number of Units (Total):
Two Hours / Week (Theory) 2H X15W=30H/Year

7. Course administrator's name (mention all, if more than one name)

Name: Prof. Dr. Mohammed Jalal Abdulrazzaq
Email: mohammed.j.abdulrazzaq@uotechnology.edu.iq

8. Course Objectives

Course Objectives	• Introduction of advanced concepts in engineering design of different laser systems for students in the fourth phase of Laser Engineering Branch, like theory of light transmission, effective types of laser optical resonator
	• Introduction .to the factors that negatively affect the efficiency beyond the ability of different laser systems.
	• Prepare students both theoretical and practical work in the field of competence of the companies to be in public and private sector.

9. Teaching and Learning Strategies

Strategy	The development of the student's ability to apply the knowledge in order to be able to correct analysis of question and thus put the appropriate assumptions and interpretation to reach the best solution thro textbooks and lectures, in addition to the practical experiences in laser systems laboratory.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-4	2Hrs/week		Design Consideration and Scaling Laws for Gas Lasers.	1.Tutorials 2. Power point literatures by Data show Reviews.	- Classroom discussions to identify the potential of the student to analyze issues.

					- Homework. - Sudden exams. - Quarterly examinations. - Performance in the laboratory.
5-8	2Hrs/week		Optical Pump Systems.	1.Tutorials 2. Power point literatures by Data show Reviews.	- Classroom discussions to identify the potential of the student to analyze issues. - Homework. - Sudden exams. - Quarterly examinations. - Performance in the laboratory.
9-13	2Hrs/week		Optical Pump Systems.	1.Tutorials 2. Power point literatures by Data show Reviews.	- Classroom discussions to identify the potential of the student to analyze issues. - Homework. - Sudden exams. - Quarterly examinations. - Performance in the laboratory.

11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc
- Classroom discussions to identify the potential of the student to analyze issues.
- Homework.
- Sudden exams.
- Quarterly examinations.

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Solid-State Laser Engineering (W.Koechner)
Main references (sources)	Principles of Lasers (O.Svelto)
Recommended books and references (scientific journals, reports...)	1. Solid-State Laser Engineering (W.Koechner) 2. Principles of Lasers (o. Svelto)

Course Description Form

1. Course Name:
Laser System Design II

2. Course Code:
LE4307

3. Semester / Year:
2nd Semester /2024-2024

4. Description Preparation Date:
23/4/2024

5. Available Attendance Forms:
Complete Hours

6. Number of Credit Hours (Total) / Number of Units (Total):
Two Hours / Week (Theory) 2H X15W=30H/Year

7. Course administrator's name (mention all, if more than one name)

Name: Prof. Dr. Mohammed Jalal Abdulrazzaq
Email: mohammed.j.abdulrazzaq@uotechnology.edu.iq

8. Course Objectives

Course Objectives	• Introduction of advanced concepts in engineering design of different laser systems for students in the fourth phase of Laser Engineering Branch, like theory of light transmission, effective types of laser optical resonator • Introduction .to the factors that negatively affect the efficiency beyond the ability of different laser systems. • Prepare students both theoretical and practical work in the field of competence of the companies to be in public and private sector.

9. Teaching and Learning Strategies

Strategy	The development of the student's ability to apply the knowledge in order to be able to correct analysis of question and thus put the appropriate assumptions and interpretation to reach the best solution thro textbooks and lectures, in addition to the practical experiences in laser systems laboratory.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-4	2Hrs/week	Literature	Optical Pump Systems.	1.Tutorials 2. Power point literatures by Data show Reviews.	- Classroom discussions to identify the potential of the student to analyze issues. - Homework. - Sudden exams.

					- Quarterly examinations. - Performance in the laboratory.
5-9	2Hrs/week	Literature	Optical Resonator	1.Tutorials 2. Power point literatures by Data show Reviews.	- Classroom discussions to identify the potential of the student to analyze issues. - Homework. - Sudden exams. - Quarterly examinations. - Performance in the laboratory.
10-13	2Hrs/week	Literature	Thermo-Optic Effects	1.Tutorials 2. Power point literatures by Data show Reviews.	- Classroom discussions to identify the potential of the student to analyze issues. - Homework. - Sudden exams. - Quarterly examinations. - Performance in the laboratory.

11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc
- Classroom discussions to identify the potential of the student to analyze issues.
- Homework.
- Sudden exams.
- Quarterly examinations.

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Solid-State Laser Engineering (W.Koechner)
Main references (sources)	Principles of Lasers (O.Svelto)
Recommended books and references (scientific journals, reports...)	1. Solid-State Laser Engineering (W.Koechner) 2. Principles of Lasers (o. Svelto)

Course Description Form

1. Course Name:
English Language

2. Course Code:
LOPC416

3. Semester / Year:
1st semester / 2023-2024

4. Description Preparation Date:
24/4/2024

5. Available Attendance Forms:
On campus/ physical attendance

6. Number of Credit Hours (Total) / Number of Units (Total)
2 H * 15 Week = 30 / 2 credits

7. Course administrator's name (mention all, if more than one name)
Name: zahraa sabeeh qasim   Email: zahraa.s.qasim@uotechnology.edu.iq

8. Course Objectives

Course Objectives	To enable the students comprehend the spoken form To develop students ability to use English in day-to-day life and real life situation To understand the written text and able to use skimming, scanning skills To write simple English to express ideas etc

9. Teaching and Learning Strategies

Strategy	1- Lecture Methods (lecture) 2- Dialogue modalities 3- Methods centered on the learner's activity (paper and oral tests)

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Learning and understanding	**Getting to know you**	1,2,3	1-4
2	2	Learning and understanding	**Whatever makes you happy**	1,2,3	1-4
3	2	Learning and understanding	**What's in the news**	1,2,3	1-4
4	2	Learning and understanding	**Eat, drink and be merr**	1,2,3	1-4
5	2	Learning and understanding	**Looking forward**	1,2,3	1-4
6	2	Learning and understanding	**The way I see it**	1,2,3	1-4
7	2	Learning and understanding	**Living history**	1,2,3	1-4
8	2	Learning and understanding	**Girls and boys**	1,2,3	1-4
9	2	Learning and understanding	**Time for a story**	1,2,3	1-4
10	2	Learning and understanding	**Our interactive world**	1,2,3	1-4

11	2	Learning and understanding	**Life's what it make you**	1,2,3	1-4
12	2	Learning and understanding	**Just wondering**	1,2,3	1-4
13	2	Learning and understanding	**Be happy**	1,2,3	1-4

11.Course Evaluation

Daily Duties
Monthly Reports
Mid Term Exam
Final Exam

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	The new Headway – pre intermediate by Jo And Liz
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	