	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

ACADEMIC DESCRIPTION CURRICULUM FOR THE FIRST STAGE (1st Semester)

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	MATHEMATICS I			**Module Delivery**	
Module Type	BASIC			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	COE 101				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	UGI-1		**Semester (s) offered**	1	
Administering Department	BSc – COMM		**College**	College of Engineering	
Module Leader	Basim Abood Yasir		**e-mail**	basim.alkhafaji@uos.edu.iq	
Module Leader's Acad. Title	Assist. Prof.		**Module Leader's Qualification**	Ph.D	
Module Tutor	Basim Abood Yasir		**e-mail**	basim.alkhafaji@uos.edu.iq	
Peer Reviewer Name	Prof. Hussain K. Chaiel		**e-mail**	hussain.kamel_uos.edu.iq@uos.edu.iq.	
Review Committee Approval	10/9/2023		**Version Number**	1.0	

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	
Module Aims, Learning Outcomes, Indicative Contents and Brief Description أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر			
Module Aims أهداف المادة الدراسية	This module aims to provide students with an understanding of, and competence in the use of, mathematical techniques that are relevant to the solution of engineering problems. It will also give students a firm foundation from which to develop solutions to a wider and deeper range of engineering problems that they will encounter throughout their undergraduate engineering program of study.		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Preliminaries : Explain mathematical coordinate systems, representing line, slope of line, shifting of lines 2. Vectors: Demonstrate an understanding of vectors in plane and space. 3. Function: Demonstrate an understanding of function and related variables, range and domain of function, types of functions and their graphs. 4. Limits and Continuity: Demonstrate an understanding of the fundamental concepts of calculus including limits, continuity, and differentiability. 5. Derivatives: Apply the techniques of differentiation at different types of functions including transcendental functions 6. Applications of derivatives: Apply the techniques of differentiation to solve problems involving rates of change, linearization, curve sketching, mean value theorem and Initial value problem. 7. Complex numbers: Demonstrate an understanding of complex numbers with basic operations and their mathematical and graphical representations including Euler's Formula		

Indicative Contents المحتويات الإرشادية	The topics listed under the indicative content below are the underpinning areas of knowledge and understanding that will be obtained from successful completion of the module. The mathematical topics are illustrated in the context of relevant engineering scenarios. • **Preliminaries** Cartesian coordinates, polar coordinates, slope of lines, angle of inclination. • **Functions**, types of functions, graph of the functions, domain and range of function • **Review of trigonometric function:** graph of trigonometric function, range and domain of trigonometric functions, identities. • **Limits and Continuity:** Properties, limits involving infinity, continuity. • **Transcendental functions**: Inverse function, graph of inverse function, Logarithmic and exponential functions, inverse trigonometric functions, hyperbolic functions, inverse hyperbolic functions. • **Derivatives:** Definition, rules of derivative, Implicit differentiation, L hospital's rule, derivative of inverse functions • **Applications of derivatives:** rate of change problems, Relative maximum and relative minimum, Curve sketching with 1^{st} and 2^{nd} derivative, Linearization, Mean value theorem, Initial value problem,. • **Complex numbers:** Basic definitions. The geometric representations of the complex numbers**,** argand diagram, Basic operations with complex numbers, Euler's Formula • **Vectors**: Introduction to vectors
Course Description	This course lays the foundation for a robust understanding of mathematical concepts that underpin the various disciplines within engineering. It covers a breadth of topics ranging from coordinate systems, slopes of lines, and angles of inclination to the introduction of two- and three-dimensional coordinate systems. A focus is also given to the understanding and manipulation of functions, including domain and range determination and function composition. The course incorporates a substantial overview of trigonometry, limits, continuity, derivatives, including their applications in real-world engineering contexts in addition to complex numbers and their mathematical representation. By the end of the course, students will have a sound understanding of these principles, preparing them for more advanced engineering courses in their respective fields.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Begin In Mathematics I, then employ a range of teaching strategies to ensure first-year engineering students fully grasp the various mathematical concepts. Instructional methods include interactive lectures, where core mathematical principles are explained in detail, and practical problem-solving sessions to provide hands-on learning experiences. Collaborative group work encourages peer-to-peer learning and reinforces understanding through shared insights. Regular formative assessments will be conducted to monitor students' understanding of the material, and feedback will be promptly given to guide their learning process. Instructors will maintain office hours for personalized support, and online resources will be available to supplement classroom instruction. Emphasis will be placed on relating mathematical concepts to real-world engineering applications to make the learning experience more relevant and engaging. These strategies aim to develop students' critical thinking skills, enhance their problem-solving abilities, and prepare them for advanced engineering studies.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation
تقييم المادة الدراسية

		Time (hr)	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	20% (20)	3,5, 10, 12, 14	LO #1, 2, 3, 4 ,5 and 7
	Assignments	6	10% (10)	4, 8, 12	LO # 1, 2, 3, 4, 5 and 6
	Home Work	6	10% (10)	2,5,7,9,11,13	LO # 1, 2, 3, 4, 5,6 and 7
Summative assessment	**Midterm Exam**	2	10% (10)	7	LO # 1,4
	Final Exam	3	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Cartesian coordinates, slope of lines, angle of inclination, functions, types of functions, graph of the functions, domain and range ،identifying functions, Circles and parabolas
Week 2	Introduction to vectors
Week 3	•Preliminaries Sum, differences, products and quotients of Composite functions, shifting a graph of a function, scaling and reflecting a graph of a function, Absolute value
Week 4	•Review of trigonometric function graph of trigonometric function, range and domain, identities
Week 5	•Limits and Continuity Properties, limits involving infinity, continuity
Week 6	•Transcendental functions Inverse function, graph of inverse function, Logarithmic and exponential functions, trigonometric functions , inverse trigonometric functions, hyperbolic functions, inverse hyperbolic functions
Week 7	•Derivatives Definition, rules of derivative, slopes , tangent lines, chain rule, derivative of trigonometric functions, Implicit differentiation, L hospital's rule

Week 8	derivative of inverse trigonometric functions, derivative of exponential and logarithmic functions
Week 9	•Applications of derivatives Speed and acceleration, Relative maximum and relative minimum
Week 10	Curve sketching with 1st and 2nd derivative
Week 11	Linearization
Week 12	rate of change problems
Week 13	Mean value theorem -Initial value problem
Week 14	Complex numbers**:** Basic definitions. The geometric representations of the complex numbers**,** argand diagram
Week 15	Basic operations with complex numbers, Euler's Formula
Week 16	**Final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	George B. Thomas and Ross L. Finney, "Calculus and Analytic Geometry, Addison- Wesley	Yes
Recommended Texts	Thomas Calculus, by George B.Thomas,Jr,Elevnth Edition Media Upgrade 2008 Calculus Early Transcendental (Sixth Edition) James Stewart	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 Sumer** **College of Engineering** Department of Communications Engineering	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Electrical Engineering Fundamentals I**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**DoE 101**				
ECTS Credits	**8**				
SWL (hr/sem)	**200**				
Module Level	UGI-1		**Semester of Delivery**	1	
Administering Department	BSc – COMM		**College**	College of Engineering	
Module Leader	Hussain K. Chaiel		**e-mail**	hussain.kamel_uos.edu.iq@uos.edu.iq.	
Module Leader's Acad. Title	Prof.		**Module Leader's Qualification**	Ph.D	
Module Tutor and Lab	Maysam Kadhim Jiweed		**e-mail**	maysam.kadhim@uos.edu.iq	
Peer Reviewer Name	Assist. Prof. Basim Abood Yasir		**e-mail**	basim.alkhafaji@uos.edu.iq	
Scientific Committee Approval Date	10 /09/2023		**Version Number**	1.0	

	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

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 Objectives أهداف المادة الدراسية	1. This course deals with the basic concept of electrical circuits. 2. This is the basic subject for all electrical and electronic circuits. 3. To understand voltage, current and power from a given circuit. 4. To develop problem solving skills and understanding of circuit theory through the application of techniques. 5. To understand Kirchhoff's current and voltage Laws problems. 6. To perform mesh and Nodal analysis. 7. To perform Maximum Power Transfer and reciprocity theorems 8. To understand Magnetic 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. Discuss the reaction and involvement of atoms in electric circuits. 5. Describe electrical power, charge, and current. 6. Define Ohm's law. 7. Identify the basic circuit elements and their applications. 8. Discuss the operations of sinusoid and phasors in an electric circuit. 9. Discuss the various properties of resistors, capacitors, and inductors. 10. Explain the two Kirchoff's laws used in circuit analysis. 11. Identify the capacitor and inductor phasor relationship with respect to voltage and current. 12. Understanding Maximum Power Transfer and reciprocity theorems 13. Understanding Magnetic Circuits
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. **Part A - Basic Concepts** Introduction, Systems of Units, Charge and Current, Voltage, Power and Energy,

	Circuit Elements [18 hrs] **Part B - Basic Laws** Ohm's Law, Nodes, Branches, and Loops, Kirchhoff's Laws, Series Resistors and Voltage Division, Parallel Resistors and Current Division, Wye-Delta Transformations. [15 hrs] **Part C - Methods of Analysis** Nodal Analysis, Nodal Analysis with Voltage Sources, Mesh Analysis, Mesh Analysis with Current Sources [12 hrs] **Part D - Circuit Theorems** Superposition, Source Transformation, Thevenin's Theorem, Norton's Theorem, Maximum Power Transfer [24 hrs] Revision problem classes [6 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**1. Behavior management** Behavior management strategies foster an atmosphere of mutual respect, reduce disruptive behavior and ensure students have an equal opportunity to fulfill their potential in the classroom. It's crucial to provide them with both a positive and productive learning environment. Examples include establishing a reward system with an interactive chart where students move up or down depending on their performance and behavior in class. **2. Blended learning** With a blended learning teaching strategy, technology is incorporated with traditional learning. This allows students to work at their own pace, research their ideas and become more physically engaged during lessons. Examples include providing interactive tablets or whiteboards with engaging activities and posting classwork online for easier access. **3. Cooperative learning** Group work is a cooperative learning strategy that allows students with various learning levels to work together. By encouraging them to express their own ideas and listen to others' ideas as a group, you help students develop communication and critical

	thinking skills. Examples include solving math puzzles together, performing skits as a team or working on group presentations. **4. Formative assessment** A formative assessment is used periodically to monitor student learning incrementally. This can more effectively measure the process of learning as opposed to end-of-unit tests and can help you to improve your teaching methods throughout the year. Examples of this teaching strategy include self-evaluation exercises and summarizing a topic in multiple ways. **5. Student-led teaching** The student-led teaching strategy lets students become the teacher. In a classroom with learners at different levels, you can better engage those learning faster by showing them how to teach and give feedback to their peers.They may team-teach or work in groups to teach a new topic. Examples include letting a student teach an entire lesson or having advanced writers lead a peer-editing session as well as provide constructive criticism.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ **15** اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	124	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	8
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	76	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.1
Total SWL (h/sem) 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 and 12	LO #1, #4 and #8, #11
	Assignments	2	10% (10)	3 and 13	LO #3, #4 and #10, #14
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	14	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	8	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	• Electrical Engineering: An Overview • The International System of Units conversions (metric prefixes) • Free electrons, electric charge & types of electric materials • Definition of: electric current, electric current flowing through a conductor, electric voltage
Week 2	• Polarity of electric voltage across an element • The difference between electric potentials and electric voltage • Linear and non-linear elements: resistances, conductance, capacitances, and inductances • Definition of: Power and energy, Sources (Independent Source & Dependent Source)
Week 3	• Ohm's Law • Definition of: Nodes, Branches, and Loops
Week 4	• Series & parallel connections of resistors • Series Resistors and Voltage Division • Parallel Resistors and Current Division
Week 5	• Short and Open Circuits • Star-Delta Transformations

Week 6	• Kirchhoff's Laws
Week 7	• Methods of Analysis: Nodal Analysis
Week 8	**Mid-term Exam**
Week 9	• Methods of Analysis: Mesh Analysis
Week 10	• Circuit Theorems: Superposition, Source Transformation
Week 11	• Circuit Theorems: Source Transformation
Week 12	• Circuit Theorems: Thevenin's Theorem
Week 13	• Circuit Theorems: Norton's Theorem, Derivations of Thevenin's and Norton's Theorems
Week 14	• Circuit Theorems: Maximum Power Transfer Theorem • Millman's Theorem, Substitution Theorem, Reciprocity Theorem
Week 15	• Magnetic Circuits: Definitions, Composite Series Magnetic Circuit, Ampere-turns , Comparison Between Magnetic and Electric Circuits, Parallel Magnetic Circuits, Series-Parallel Magnetic Circuits, Leakage Flux and Hopkinson's Leakage Coefficient, Magnetization Curves.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to Lab. Equipment's and How to use Avometer
Week 2	Lab 2: How to measure DC Voltage, current, power and resistor
Week 3	Lab 3: Resistor Color Code
Week 4	Lab 4: Ohm's Law
Week 5	Lab 5: Series, parallel and series- parallel circuits
Week 6	Lab 6: Star-Delta Transformations
Week 7	Lab 7: Kirchhoff's Voltage and Current Laws
Week 8	Lab 8: Nodal Analysis
Week 9	Lab 9: Mesh Analysis

Week 10	Lab 10: Superposition theorems
Week 11	Lab 11: Thevenin's theorems
Week 12	Lab 12: Norton's theorems
Week 13	Lab 13: Maximum Power Transfer Theorem
Week 14	Lab 14: Composite Series Magnetic Circuit
Week 15	**Final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	• Theraja, B. L. **A Textbook of Electrical Technology-Volume I (Basic Electrical Engineering)**. Vol. 1. S. Chand Publishing, 2005. • C.K. Alexander and M.N.O Sadiku, **Fundamentals of Electric Circuits**, McGraw-Hill Education, Fifth Edition, 2013	Yes
Recommended Texts	• Allan H. Robbins and Wilhelm C. Miller, **Circuit analysis: Theory and practice**, Cengage Learning, Fifth Edition, 2013. • Nilsson, James William, **Electric circuits**, Pearson Education India, 2008.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

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

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Ministry of Higher Education and Scientific Research - Iraq
University of Sumer
College of Engineering
Department of Communications Engineering

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Digital Techniques**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**DoE 103**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level		UGI-1	**Semester of Delivery**		1
Administering Department		BSc – COMM	**College**	College of Engineering	
Module Leader	Jafaar Fahad A.Rida		**e-mail**	j.fahad@uos.edu.iq	
Module Leader's Acad. Title		Assist. Prof.	**Module Leader's Qualification**		Ph.D
Module Tutor (Lab)	Maysam Kadhim Jaweed		**e-mail**	maysam.kadhim@uos.edu.iq	
Peer Reviewer Name		Assist. Prof. Basim Abood Yasir	**e-mail**	basim.alkhafaji@uos.edu.iq	
Scientific Committee Approval Date		12/09/2023	**Version Number**	1.0	

	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

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 Objectives أهداف المادة الدراسية	1. To acquire the basic knowledge of Digital techniques levels and application of knowledge to understand digital electronics circuits. 2. Have a thorough understanding of the fundamental concepts and techniques used in digital electronics 3. To understand and examine the structure of various number systems and its application in digital design. 4. The ability to understand, analyze and design various combinational and sequential circuits. 5. Ability to identify basic requirements for a design application and propose a cost effective solution. 6. To prepare students to perform the analysis and design of various digital electronic circuits.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. express basic concepts and logic circuits 2. Explains number systems and convert number systems. 3. explains logical AND,OR,NOT,NAND,NOR,EX-OR,EX-NOR functions 4. can show the simplification of logical statements 5. explains the simplification of logical statements with using Boolean rules and de-Morgan theorems 6. Writes Boolean equation by using truth table and shows its logic circuits. 7. Writes Boolean equation by logic circuits and shows its truth table.

	8. explains the simplification of logical statements with karnaugh maps. 9. identifies 10. explains half and full adders 11. explains half and full subtractors 12. identifies combinational circuit 13. explains the working principles of decoder, encoder, 14. recognize 7-segmented displayers 15. explains the working principles of multiplexer and De multiplexer, 16. shows the applications of combinational circuits
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A – number system and simplification of digital circuit design. **Introduction to digital quantities and System Numbers:** Decimal , Binary , Binary arithmetic , Octal and Hexadecimal Numbers, Conversions of System Numbers, Arithmetic Operations with different number systems, and Signed Numbers. [24 hrs] **Digital Codes**: Binary coded decimal [BCD], Exc-3 code, Gray codes. [5 hrs] **Simplification of digital circuit design:** Boolean algebra, De 'Morgan theorems, Simplification Using Boolean Algebra, Standard Forms of Boolean Expressions (SOP and POS form), The karnaugh Map (Three, Four and Five-Variable Kamaugh Maps.[25 hrs] Part B - Combinational Logic **Functions of Combinational Logic:** Adders, Subtracters, Parallel Binary Adders, multiplier, and Magnitude comparators.[25 hrs]. Encoders, Decoders, Multiplexers, Demultiplexers, Parity Generators /Checkers, and code conversion circuits [25 hrs]. **Flip-Flops:** Latches, Edge-Triggered Flip-Flops and its applications. [5 hrs].

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 types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ **15** اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	57	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.8
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**	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Digital Techniques and logic gates, General number formula : Binary, octal, decimal, hexadecimal numbers
Week 2	Conversions of System Numbers
Week 3	Arithmetic operations with different number systems, complements of number systems, binary codes, BCD codes, Ex-3 code , and gray code.
Week 4	Boolean algebra , De'Morgan theorems , Simplification Using Boolean Algebra,
Week 5	Standard Forms of Boolean Expressions (SOP and POS form)
Week 6	The Karnaugh Map (two, Three, Four and Five- Variable Karnaugh Maps)
Week 7	Introduction to Combinational Logic circuit and circuit analysis
Week 8	Adders, Subtractors, Parallel Binary Adders,
Week 9	Binary multiplier circuits and Magnitude comparators circuit.
Week 10	Flip-Flops:(Latches, Edge-Triggered Flip-Flops) and it's applications.
Week 11	Counter and Shift register
Week 12	Encoders, and Decoders circuits
Week 13	Multiplexers, and Demultiplexers circuits.
Week 14	Parity Generators/Checkers and design of code conversion circuits.
Week 15	Analogue to Digital convertor and Digital to Analogue convertor
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to logic gates
Week 2	Lab 2: NOR Gate, NAND Gate, and XOR Gate application
Week 3	Lab 3: Comparator Circuit
Week 4	Lab 4: Half –Adder
Week 5	Lab 5: full –Adder Circuit
Week 6	Lab 6: Half Subtractor
Week 7	Lab 7: full Subtractor Circuit
Week 8	Lab 8: Even and odd Parity Generator and Checker Circuit
Week 9	Lab 9: Code converter Circuits
Week 10	Lab 10: Encoder Circuit
Week 11	Lab 11: Decoder Circuit
Week 12	Lab 12: Multiplexer Circuit
Week 13	Lab 13 : De - Multiplexer Circuit.
Week 14	Lab 14 : Flip- Flop application Circuits
Week 15	Lab 15 : Counter circuit
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Digital Fundamentals, Thomas .L. Floyd, Pearson international edition.	Yes
Recommended Texts	Digital Design, M. Morris. Mano, Pearson prentice Hall .	No
Websites		

Grading Scheme
مخطط الدرجات

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

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Engineering Drawing**			**Module Delivery**	
Module Type	**Basic**			☐**Theory** ☐ **Lecture** ☐**Lab** ☐**Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**DoE 106**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	UGI-1		**Semester of Delivery**	1	
Administering Department	BSc – COMM		**College**	College of Engineering	
Module Leader	Rashad Raad Jawad		**e-mail**	rashad.r.jawad@uos.edu.iq	
Module Leader's Acad. Title	Assist. Lecturer		**Module Leader's Qualification**	Master	
Module Tutor (Practical)	Assist. Lect. Abduladheem Salman khudhair		**e-mail**	a.salman@uos.edu.iq	
Peer Reviewer Name	Lect. Thamer Hussain Shaeel		**e-mail**	thamer.h.amer@uos.edu.iq	
Scientific Committee Approval Date	13/09/2023		**Version Number**	1.0	
Relation with other Modules العلاقة مع المواد الدراسية الأخرى					
Prerequisite module	None		**Semester**		
Co-requisites module	None		**Semester**		

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	9. Understanding the basis for any geometric shape or system, so teaching and training the student on engineering drawing will be able to perform engineering drawing or understand and read engineering drawings. 10. To have the knowledge of interpretation of dimensions of different quadrant projections. 11. To understand the basic principles of engineering drawing 12. To have the knowledge of generating the pictorial views 13. To understand the development of surfaces 14. To understand projections concept 15. To use the drawing tools professionally 16. To grew the ability of free hand sketching
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	14. Understanding the components of an engineering drawing and how to implement an engineering drawing 15. Learn engineering drawing and complete simple and complex engineering drawings 16. Prepare and understand drawings. 17. Identify various D curves used in Engineering Drawing and their applications. 18. Use the principles of orthographic projections. 19. By studying about projections of solids, students will be able to visualize three-dimensional objects and that will enable them to design new products. 20. Design and fabricate surfaces of different shapes. 21. Represent the objects in three-dimensional appearances.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. **<u>Part A - Introduction</u>** Introduction to Engineering Drawing and Drawing Instruments, Conventions, Viewing

	of engineering drawing sheets, Method of Folding of printed Drawing sheet , Drawing board, T-square, Drafter (Drafting M/c), Set squares, Protector, Drawing Instrument Box (Compass, Dividers, Scale, and Diagonal Scales etc.), pencils of different grades, Drawing pins/ Clips. [18 hrs] **Part B - Free hand drawing** Lines, polygons, ellipse etc., Geometrical figures and blocks with dimension, Transferring measurement from the given object to the free hand sketches., Solid objects, Cube, Cuboids, Cone, Prism, Pyramid, Frustum of Cone with dimensions, Free hand drawing of hand tools and measuring tools, simple fasteners (nuts, bolts, rivets etc.) trade related sketches. [16 hrs] **Part C - Method of presentation of Engineering Drawing** Pictorial View, Orthographic View [12 hrs]. **Symbolic representation – different symbols used in the trades:** Fastener (Rivets, Bolts and Nuts), Bars and profile sections, Weld, Brazed and soldered joints, Electrical and electronics element**,** Piping joints and fitting [18hrs.] **Part D - Projections** Concept of axes plane and quadrant, Orthographic projections, Method of first angle and third angle projections (definition and difference), Symbol of 1st angle and 3rd angle projection in 3rd angle [24 hrs] Orthographic projection from isometric projection, Reading of fabrication drawing Sign and Symbols of Electrical, Electronics and related trades, Sketch of Electrical and Electronics/ trade related components, Electrical and Electronics wiring diagram/ trade related Layout diagram, Electrical earthling diagram – Drawing the schematic diagram of plate and pipe earthling., Electrical, Electronics/ trade related circuit diagram, Block diagram of Instruments/ equipment of related trade [8 hrs]
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**1. Behavior management** Behavior management strategies foster an atmosphere of mutual respect, reduce disruptive behavior and ensure students have an equal opportunity to fulfill their potential in the classroom. It's crucial to provide them with both a positive and productive learning environment. Examples include establishing a reward system with an interactive chart where students move up or down depending on their performance and behavior in class. **2. Blended learning**

	With a blended learning teaching strategy, technology is incorporated with traditional learning. This allows students to work at their own pace, research their ideas and become more physically engaged during lessons. Examples include providing interactive tablets or whiteboards with engaging activities and posting classwork online for easier access. **3. Cooperative learning** Group work is a cooperative learning strategy that allows students with various learning levels to work together. By encouraging them to express their own ideas and listen to others' ideas as a group, you help students develop communication and critical thinking skills. Examples include solving math puzzles together, performing skits as a team or working on group presentations. **4. Formative assessment** A formative assessment is used periodically to monitor student learning incrementally. This can more effectively measure the process of learning as opposed to end-of-unit tests and can help you to improve your teaching methods throughout the year. Examples of this teaching strategy include self-evaluation exercises and summarizing a topic in multiple ways. **5. Student-led teaching** The student-led teaching strategy lets students become the teacher. In a classroom with learners at different levels, you can better engage those learning faster by showing them how to teach and give feedback to their peers.They may team-teach or work in groups to teach a new topic. Examples include letting a student teach an entire lesson or having advanced writers lead a peer-editing session as well as provide constructive criticism.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #4 and #8, #11
	Assignments	2	10% (10)	3 and 13	LO #3, #4 and #10, #14
	Homework	8	20% (20)	Continuous	All
Summative assessment	Midterm Exam	2hr	10% (10)	12	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي العملي

	Material Covered
Week 1	**Engineering Drawing – Introduction** • Introduction to Engineering Drawing and Drawing Instruments • Conventions • Viewing of engineering drawing sheets • Method of Folding of printed Drawing sheet
Week 2	**Drawing Instrument** • Drawing board, T-square, Drafter (Drafting M/c), Set squares, Protector, Drawing Instrument Box (Compass, Dividers, Scale, and Diagonal Scales etc.), pencils of different grades, Drawing pins/ Clips.
Week 3	**Free hand drawing** • Lines, polygons, ellipse etc. • Geometrical figures and blocks with dimension. • Transferring measurement from the given object to the free hand sketches. • Solid objects – Cube, Cuboids, Cone, Prism, Pyramid, Frustum of Cone with dimensions. • Free hand drawing of hand tools and measuring tools, simple fasteners (nuts, bolts, rivets etc.) trade related sketches

Week 4	**Lines** • Definition, types and applications in drawing as per BIS: 46-2003 • Classification of lines (Hidden, center, construction, extension, Dimension, Section) • Drawing lines of given length (Straight, curved). • Drawing of parallel lines, perpendicular line • Methods of Division of line segment
Week 5	**Drawing of Geometrical figures:** • Definition, nomenclature and practice of – • Angle: Measurement and its types, method of bisecting. • Triangle: different types • Rectangle, Square, Rhombus, Parallelogram. • Circle and its elements • Different polygon and their values of included angles. Inscribed and circumscribed polygons
Week 6	**Dimensioning , Lettering & Numbering** • Single Stroke, Double Stroke, Inclined. • Definition, types and methods of dimensioning (functional, non-functional and auxiliary) • Position of dimensioning (Unidirectional, Aligned) • Types of arrowheads • Leader line with text • Symbols preceding the value of dimension and dimensional tolerance
Week 7	**Sizes and layout of drawing sheets** • Selection of sizes • Title Block, its position and content • Item Reference on Drawing Sheet (Item list)
Week 8	**Method of presentation of Engineering Drawing** • Pictorial View • Orthographic View • Isometric View
Week 9	**Symbolic representation – different symbols used in the trades** • Fastener (Rivets, Bolts and Nuts) • Bars and profile sections • Weld, Brazed and soldered joints • Electrical and electronics element • Piping joints and fitting

Week 10	**Projections** • Concept of axes plane and quadrant • Orthographic projections • Method of first angle and third angle projections (definition and difference) • Symbol of 1st angle and 3rd angle projection in 3rd angle
Week 11	• Orthographic projection from isometric projection • Reading of fabrication drawing
Week 12	**Mid – term Exam**
Week 13	• Sign and Symbols of Electrical, Electronics and related trades • Sketch of Electrical and Electronics/ trade related components • Electrical and Electronics wiring diagram/ trade related Layout diagram
Week 14	• Electrical earthing diagram – Drawing the schematic diagram of plate and pipe earthing. • Electrical, Electronics/ trade related circuit diagram • Block diagram of Instruments/ equipment of related trade
Week 15	• Maps, and Charts, Reading Datasheets and Manuals
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	• الرسم الهندسي، عبد الرسول الخفاف، ٢٠٠٣ • تمارين في الرسم الهندسي (متوفر في مكتبة كلية الهندسة) تاليف : سليمان توفيق احمد الناشر: دار الاعصار العلمي للنشر والتوزيع / الاردن	Yes
Recommended Texts	Colin H. Simmons, Dennis E. Maguire, Manual Of Engineering Drawing to British and International Standards, Elsevier Newnes, second edition, 2004, Typeset by Replika Press Pvt Ltd, India, Printed and bound in Great Britain	No
Websites	http://www.kutub.info/library	

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

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Computer Skills**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UoS 103**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	UGI-1		**Semester of Delivery**	١	
Administering Department	BSc – COMM		**College**	College of Engineering	
Module Leader	Abduladheem Salman khudhair		**e-mail**	a.salman@uos.edu.iq	
Module Leader's Acad. Title	Assist. Lect.		**Module Leader's Qualification**	Master	
Module Tutor (Lab)	Assist. Lect. Maysam Kadhim Jiweed		**e-mail**	maysam.kadhim@uos.edu.iq	
Peer Reviewer Name	Assist. Prof. Jafaar Fahad A.Rida		**e-mail**	j.fahad@uos.edu.iq	
Scientific Committee Approval Date	15/9/2023		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Training students on the basics of using the computer and providing them with the necessary skills to deal with the computer with high efficiency. 2. Assisting the student in distinguishing and developing his scientific and artistic abilities. 3. Enriching the student's skills to be able to deal with the computer with high efficiency. 4. Providing students with a way to use other modern technologies related to the educational process.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Enabling the student to know the concepts of information technology by learning the basics of the computer. 2. Enabling the student to know about the use of GUI operating systems. 3. Enabling the student to deal with the skills of using the operating system (Windows operating system) through exploring, customizing, and controlling its settings. 4. Enabling the student to work on the word processing program (Microsoft Word). 5. Enabling the student to work on the spreadsheet program (Microsoft Excel). 6. Enabling the student to work on the presentation program (Microsoft PowerPoint).
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** • Course introduction (4 hrs) • Working with GUI operating systems with a focus on Microsoft Windows OS (8 hrs) • Microsoft Office Word (MS Word) (16 hrs) • Microsoft Office Excel (MS Excel) (16 hrs) • Microsoft Office PowerPoint (MS PowerPoint) (16 hrs)
Description	Overview of computers: basic components, applications. GUI operating systems: Microsoft Windows operating system. Microsoft Office Word: getting started with Word, editing a document and formatting text and paragraphs, adding tables and inserting graphic objects, controlling page appearance and proofing a document. Microsoft Office Excel: getting started with Excel, sorting, selecting and subtotaling data, formulas and functions, worksheet formatting and presentation. Microsoft Office PowerPoint: getting started with PowerPoint, developing a PowerPoint presentation, adding graphical elements to your presentation and modifying objects in your

	presentation, adding graphical elements, tables and charts to your presentation and modifying objects in your presentation, prepare to deliver your presentation.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**In this course, students are guided by:** • Using different examples. • Using different styles of discussion that aim to connect the theoretical and practical sides. • Asking questions and giving exercises that require analysis and conclusions related to lectures. • Encourage students to participate in discussions and do the practical work. • Encourage students to work in groups.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**64**	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	**4**
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	**36**	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	**2.4**
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	6 and 12	LO #1 to #3 and #4 to #6
	Assignments	2	10% (10)	2 and 13	LO #3 to #6
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #3, #4 and #6
Summative assessment	Midterm Exam	2hr	10% (10)	9	LO #1 - #5
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Overview of computers and their basic components and applications
Week 2	Operating computer using GUI operating systems
Week 3	The basic use of Microsoft Windows operating system
Week 4	**Microsoft Office Word:** Getting Started with Word
Week 5	**Microsoft Office Word:** Editing a Document and Formatting Text and Paragraphs
Week 6	**Microsoft Office Word:** Adding Tables and Inserting Graphic Objects
Week 7	**Microsoft Office Word:** Controlling Page Appearance and Proofing a Document
Week 8	**Microsoft Office Excel:** Getting Started with Excel
Week 9	**Microsoft Office Excel:** Sorting, Selecting and Subtotaling data
Week 10	**Microsoft Office Excel:** Formulas and Functions
Week 11	**Microsoft Office Excel:** Worksheet Formatting and Presentation

Week 12	**Microsoft Office PowerPoint:** Getting Started with PowerPoint
Week 13	**Microsoft Office PowerPoint:** Developing a PowerPoint Presentation, Adding Graphical Elements to Your Presentation and Modifying Objects in Your Presentation
Week 14	**Microsoft Office PowerPoint:** Adding Graphical Elements, tables and charts to Your Presentation and Modifying Objects in Your Presentation
Week 15	**Microsoft Office PowerPoint:** Prepare to deliver your presentation
Week 16	**Preparatory week before the final exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to the lab and get started with use of computer
Week 2	Basic use of Windows operating system
Week 3	General view of Windows OS tools with a focus on Microsoft Office tools
Week 4	**Microsoft Office Word:** Getting Started with Word
Week 5	**Microsoft Office Word:** Editing a Document and Formatting Text and Paragraphs
Week 6	**Microsoft Office Word:** Adding Tables and Inserting Graphic Objects
Week 7	**Microsoft Office Word:** Controlling Page Appearance and Proofing a Document
Week 8	**Microsoft Office Excel:** Getting Started with Excel
Week 9	**Microsoft Office Excel:** Sorting, Selecting and Subtotaling data
Week 10	**Microsoft Office Excel:** Formulas and Functions
Week 11	**Microsoft Office Excel:** Worksheet Formatting and Presentation
Week 12	**Microsoft Office PowerPoint:** Getting Started with PowerPoint
Week 13	**Microsoft Office PowerPoint:** Developing a PowerPoint Presentation, Adding Graphical Elements to Your Presentation and Modifying Objects in Your Presentation
Week 14	**Microsoft Office PowerPoint:** Adding Graphical Elements, tables and charts to Your Presentation and Modifying Objects in Your Presentation
Week 15	**Microsoft Office PowerPoint:** Prepare to deliver your presentation

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	• Joan Lambert and Steve Lambert, Windows 10 step by step, 1st Edition 2015. • Joan Lambert and Curtis Frye, Microsoft Office 2016 step by step, 1st Edition 2015.	Yes
Recommended Texts	• Michael Miller, ABSOLUTE BEGINNER'S GUIDE TO COMPUTER BASICS, 5th EDITION, QUE Indianapolis, Indiana 46240, 2010. • Paul McFedries, TEACH YOURSELF VISUALLY MICROSOFT WINDOWS 10, ANNIVERSARY	No
Websites	Microsoft Help, https://support.microsoft.com/en-us/products Learn Microsoft Office, https://www.goskills.com/Microsoft-Office	

Grading Scheme
مخطط الدرجات

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

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**ENGLISH LANGUAGE**			**Module Delivery**	
Module Type	BASIC			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	UOS 104				
ECTS Credits	2				
SWL (hr/sem)	50				
Module Level	UGI-1		**Semester (s) offered**	1	
Administering Department	BSc - COMM		**College**	College of Engineering	
Module Leader	Ahmed M. Hashim		**e-mail**	Hamedm.hashem@yahoo.com	
Module Leader's Acad. Title	Assist. Lect.		**Module Leader's Qualification**	Master	
Module Tutor			**e-mail**		
Peer Reviewer Name	Assist. Lect. Athraa Hameed Turki		**e-mail**	alabbasiathraa@gmail.com	
Review Committee Approval	13/9/2023		**Version Number**	1.0	

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

Module Aims, Learning Outcomes, Indicative Contents and Brief Description أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر	
Module Aims أهداف المادة الدراسية	The module aims to develop the students' English skills in reading, writing, listening and speaking.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	8. Read and understand simple texts in English. 9. Answer simple comprehension questions and match sentences about texts. 10. Reconstruct texts by reordering sentences. 11. Understand the main idea of a text. 12. Identify specific information in a text. 13. Writing and paraphrasing paragraphs.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. i) Grammar has a core place in language teaching and learning. ii) A wide variety of practice tasks in all the four skills are essential to language learning. iii) Everyday expressions, particularly of spoken English, also need a place in the syllabus. These can be functional, social, situational or idiomatic.
Course Description	Each unit is organized to enhance students' basic knowledge of vocabulary and grammar through reading texts. The students will learn how to form simple sentences and use them in real life situations as well as in writing different assignments. By the end of the course, students will be able to produce basic sentences and communicate in simple real-life situations.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Headway's trusted methodology combines solid grammar and practice, vocabulary development, and integrated skills with communicative role-plays and personalization. Authentic material from a variety of sources enables students to see new language in context, and a range of comprehension tasks, language and vocabulary exercises, and extension activities practice the four skills. 'Everyday English' and 'Spoken grammar' sections practice real-world speaking skills, and a writing section for each unit at the back of the book provides models for students to analyze and imitate.

	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation
تقييم المادة الدراسية

		Time (hr)	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	5% (5)	5, 10, 12, 15	All
	Assignments	6	20% (20)	2, 4, 6, 8, 10, 12	LO # 1, 3, 4, 5 and 6
	Seminars	2	5% (5)	Continuous	LO # 1-5
Summative assessment	**Midterm Exam**	2	20% (10)	7	LO # 1-3
	Final Exam	3	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	GRAMMAR, READING , MAIN COURSE SPEAKING, LISTENING ,VOCABULARY am/is/are my/your This is… Introduction dialogues, Everyday English dialogues Introductions, Good morning! Practicing introduction dialogues. People meet each other and introduce someone else. How are you? What's this in English? Numbers 1-10 and plurals.
Week 2	He/she/they His/her. Questions Where are they from?, Two people are on holiday in New York. Students ask and answer questions about where people are from. Countries, Numbers 10-20 A set of cities and countries: Brazil, Spain… Adjectives: awful, really good, fantastic,

	beautiful Nouns: centre, hospital, building, park
Week 3	Verb to be is recycled and extended to include negative and question forms. We're in Las Vegas! Roleplay: in a band. An interview with the band Metro 5. Jobs: a nurse, a doctor.. Personal information: surname, first name, address, married … Social expressions: I'm sorry, thanks, please…
Week 4	Possessive adjectives. Possessive 's. Has/ have Adjective + noun Irregular Plurals Paddy McNab and his family, My best friend. The alphabet, On the phone, Saying email addresses. Who are they? Listen and identify the people. The family: mother, son.. Describing a friend: very beautiful, really funny…
Week 5	Present Simple: I/you/we/they a/an Adjective + noun Colin Brodie from Dundee. Role play: At a party. Where is Colin? Who is he with? At a party: Flavia and Terry are at a party in London. The lexical set of sports/food/drinks. Languages and nationalities.
Week 6	Present Simple: He/she Question and negatives Adverbs of frequency Prepositions of time Lois Maddox Talking about daily routines, Asking and answering questions about daily routines, Lifestyle questionnaire Listening a phone conversation between Lois and Elliot. Days of the week. The time. Words that go together: watch TV, get up early…
Week 7	Question words Subject pronouns Object pronouns Possessive pronouns This and that A postcard from San Francisco, A holiday postcard. Describing lifestyles, preferences and places, Roleplay: conversations in town. Listening the requests with Can I……..? Adjectives: lovely, terrible, comfortable, friendly… Opposite adjectives: new/old, big/small Places: chemist, post office
Week 8	There is /are Prepositions: in, on, under, next to Vancouver-the best city in the world, What to do and where to go. Talking and asking about rooms and furniture, Giving directions. My home town, Steve talks about living in Vancouver. Rooms and furniture: living room, bedroom … In and out of town: beach, mountain, sailing,…
Week 9	Was/were born Past simple: irregular verbs It's a Jackson Pollock. Telling a story from pictures, Saying the dates in English. Magalie Dromand, Magalie dromand talks about her family. Saying years People and jobs Irregular verbs Have, do, go: have lunch, do homework, go shopping
Week 10	Past simple: regular and irregular Questions Negatives Ago Dialogues with simple past. Did you have a good weekend? Asking about holidays, A questionnaire, My last holiday, Roleplay: asking and giving directions. Angie and Rick are at work, Jack and Millie's holiday. Weekend activities: go to the cinema, have a meal… Time expressions: on Monday,

	last night… Sports and leisure: tennis, skiing, windsurfing… Play or go: play tennis, go skiing… Seasons: winter, summer…
Week 11	Can / can't, Adverbs, Adjective + noun Requests and offers The Internet, What can you do on the internet? Talking about what you can do, Talking about everyday problems, Five people talk about what they do on the internet. Verbs: draw, run, drive… Verb+noun: Listen to the radio, chat to friends Adjective+noun: fast car, busy city, dangerous sport Opposite adjectives: dangerous/ safe, old/modern, old/young.
Week 12	I'd like, You are what you eat, Discussion-what is a good diet? Conversation with Adam, Shopping: bread, milk, fruit, Please and thank you Some /any, Like and would like People from different parts of the world describe what they eat. Roleplay: Ordering a meal. Birthday wishes, What people want on their birthday. stamps, cheese, ham… Food: cereal, salad, pasta, fish… In a restaurant: menu, starter, desert, soup, salmon
Week 13	Present continuous, Present simple and present continuous. This week is different, Colin, a millionaire, gives money to homeless teenagers What's the matter? Why don't you ….? What is Nigel wearing? Nigel is on holiday, What's the matter. Colours: blue, red, green… Clothes: jacket, trousers, shoes and socks… Opposite verbs: buy/sell, love/hate, open/close…
Week 14	Future plans, Revision: question words, tenses. Seven countries in seven days, Life's big events: three people talk about their family, education, work and ambitions. A mini autobiography. Eddie is talking to a friend about his holiday plans, social expressions Transport: travel by bus, coach, motorbike, plane… Revision
Week 15	Irregular verbs, phonetic symbols, consonants and vowels.

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	New Headway Beginner, by lizand john soars	Yes
Websites	https://www.learnenglish.de/ https://www.englishgrammar.org/ https://www.phrasebank.manchester.ac.uk/	

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 Sumer** **College of Engineering** Department of Communications Engineering	

ACADEMIC DESCRIPTION CURRICULUM FOR THE FIRST STAGE (2nd Semester)

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية				
Module Title	MATHEMATICS II		**Module Delivery**	
Module Type	BASIC		☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	COE 102			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	UGI-1	**Semester (s) offered**	2	
Administering Department	BSc – COMM	**College**	College of Engineering	
Module Leader	Thamer Hussain Sheeal	**e-mail**	thamer.h.amer@uos.edu.iq	
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Ph.D	
Module Tutor	Thamer Hussain Sheeal	**e-mail**	thamer.h.amer@uos.edu.iq	
Peer Reviewer Name	Prof. Hussain K. Chaiel	**e-mail**	hussain.kamel_uos.edu.iq@uos.edu.iq.	
Review Committee Approval	15/ 09/2023	**Version Number**	1.0	

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	
Module Aims, Learning Outcomes, Indicative Contents and Brief Description أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر			
Module Aims أهداف المادة الدراسية	This module aims to provide students with an understanding of, and competence in the use of, mathematical techniques that are relevant to the solution of engineering problems. It will also give students a firm foundation from which to develop solutions to a wider and deeper range of engineering problems that they will encounter throughout their undergraduate engineering program of study.		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	14. Integration: Demonstrate an understanding of the fundamental concept of integration and antiderivative including types of integrations 15. Integration and transcendental functions: Extend the concept of integration to cover the integration of different types of transcendental functions 16. Numerical integration: Explain the fundamentals of numerical integration focusing on trapezoidal rule and Simpson's rule. 17. Methods of integration: Apply the techniques of integration to evaluate the integrals that cannot be solved directly. 18. Application of definite integrals: Extend the concept of integration to solve several problems involving area, volume, length of curve, surface area by revolution, center of mass and moment of inertia. 19. Area with polar coordinates: Demonstrate an understanding of polar coordinate system and its difference with Cartesian coordinate system, graphing and problems solution of such system. 20. Matrix: Explain the concept of matrix in mathematics, matrix algebra and solution of system of linear equations.		

Indicative Contents المحتويات الإرشادية	The topics listed under the indicative content below are the underpinning areas of knowledge and understanding that will be obtained from successful completion of the module. The mathematical topics are illustrated in the context of relevant engineering scenarios. • **Integration:** Definition, antiderivative, definite and indefinite integral**.** • **Integration and transcendental functions:** integration of trigonometric and inverse trigonometric functions, integration of exponential and logarithmic functions, Integration of hyperbolic and inverse hyperbolic functions. • **Numerical integration:** Introduction, trapezoidal rule and Simpson's rule**.** • **Methods of integration:** Substitution method, integration by parts**,** Trigonometric substitution method**,** integration by partial fraction**.** • **Application of definite integrals:** Area**,** Volume**,** Lengths of curves in the plane**,** Areas of surfaces of revolution, Center of mass, moment of inertia**.** • **Area of polar coordinates**: Definition, polar equation, relating polar and Cartesian coordinates, Graph in polar coordinates، applications using polar coordinate system • **Matrix:** definition, matrix algebra, Determinant of matrix, Grammar's rule, Inverse of matrix, Gauss Elimination Method
Course Description	This course discuss the foundation for a robust understanding of mathematical concepts that underpin the various disciplines within engineering. It covers the integration and its types followed by methods of integration. The concept of numerical integration is also highlighted. Students will be able to utilize integration to solve several problems such as area between curves and volume by revolution. A focus is also given to the understanding of polar coordinate system and how to graph the curves and solve difficult integral in an easy way using such system. Matrix topic is also covered in this course so the students will be able to solve system of linear equations using matrix in different approaches. By the end of the course, students will have a sound understanding of these principles, preparing them for more advanced engineering courses in their respective fields

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Begin In Mathematics II, then employ a range of teaching strategies to ensure first-year engineering students fully grasp the various mathematical concepts. Instructional methods include interactive lectures, where core mathematical principles are explained in detail, and practical problem-solving sessions to provide hands-on learning experiences. Collaborative group work encourages peer-to-peer learning and reinforces understanding through shared insights. Regular formative assessments will be conducted to monitor students' understanding of the material, and feedback will be promptly given to guide their learning process. Instructors will maintain office hours for personalized support, and online resources will be available to supplement classroom instruction. Emphasis will be placed on relating mathematical concepts to real-world engineering applications to make the learning experience more relevant and engaging. These strategies aim to develop students' critical thinking skills, enhance their problem-solving abilities, and prepare them for advanced engineering studies.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.8
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**	3	20% (20)	3,5, 10, 12, 14	LO #1, 2, 3, 4 ,5 and 7
	Assignments	6	10% (10)	4, 8, 12	LO # 1, 2, 3, 4, 5 and 6
	Home Work	6	10% (10)	2,5,7,9,11,13	LO # 1, 2, 3, 4, 5,6 and 7
Summative assessment	**Midterm Exam**	2 hr	10% (20)	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	**Integration:** Definition, antiderivative, definite and indefinite integral
Week 2	**Integration and transcendental functions:** (trigonometric and inverse trigonometric functions, exponential and logarithmic functions)
Week 3	**Integration and transcendental functions:** Integration and transcendental functions (hyperbolic and inverse hyperbolic functions)
Week 4	• **Numerical integration** Introduction, trapezoidal rule and Simpson's rule
Week 5	• **Methods of integration** Substitution method, integration by parts
Week 6	• **Methods of integration** Trigonometric substitution method
Week 7	• **Methods of integration** Integration by partial fraction method**.**

Week 8	• **Application of definite integrals** Areas under the curve, area between curves,
Week 9	• **Application of definite integrals** Volume by revolution
Week 10	• **Application of definite integrals** Length of curve in the plane**,** Area of surface of revolution
Week 11	• **Application of definite integrals** Center of mass, moment of inertia
Week 12	• **Application of definite integrals** Area by polar coordinates
Week 13	• **Matrix** Definition, matrix algebra
Week 14	• **Matrix** Determinant of matrix, Grammar's rule
Week 15	• **Matrix** Inverse of matrix, Gauss Elimination Method
Week 16	**Final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	George B. Thomas and Ross L. Finney, "Calculus and Analytic Geometry, Addison- Wesley	Yes
Recommended Texts	Thomas Calculus, by George B.Thomas,Jr,Elevnth Edition Media Upgrade 2008 Calculus Early Transcendental (Sixth Edition) James Stewart	Yes
Websites		

GRADING SCHEME مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	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 Sumer
College of Engineering
Department of Communications Engineering

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Electrical Engineering Fundamentals II**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**DoC 102**				
ECTS Credits	**8**				
SWL (hr/sem)	**200**				
Module Level	UGI - 1		**Semester of Delivery**	2	
Administering Department	BSc - COMM		**College**	Type College Code	
Module Leader	Hussain K. Chaiel		**e-mail**	hussain.kamel_uos.edu.iq@uos.edu.iq.	
Module Leader's Acad. Title	Prof.		**Module Leader's Qualification**	Ph.D	
Module Tutor and Lab	Assist. Lect. Maysam Kadhim Jiweed		**e-mail**	maysam.kadhim@uos.edu.iq	
Peer Reviewer Name	Assist. Prof. Basim Abood Yasir		**e-mail**	basim.alkhafaji@uos.edu.iq	
Scientific Committee Approval Date	15/09/2023		**Version Number**	1.0	

	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

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 Objectives أهداف المادة الدراسية	17. This course deals with the basic concept of AC electrical circuits. 18. To understand ac voltage and current from a given circuit. 19. To understand Root Mean-Square (R.M.S.) & Average Value 20. To understand ac power Average power, Reactive power, Complex power. 21. To analysis the RL, RC, RLC circuit analysis 22. To perform mesh and Nodal analysis in AC circuit. 23. To develop problem solving skills and understanding of circuit theory through the application of techniques.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	22. Recognize advantages of use alternating current. 23. Recognize why using Sine Waveform 24. Define inductors and capacitors. 25. How generation of alternating voltages and currents. 26. Recognize Phasor representation of AC quantities. 27. Define Ohm's Law in AC. Circuits. 28. Identify the basic circuit elements and their applications. 29. Explain the two Kirchoff's laws used in circuit analysis. 30. Discuss the Sinusoidal Steady-State Analysis.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. **Part A - A.C. Fundamentals** Introduction, Sinusoids, Phasors, Phasor Relationships for Circuit Elements, Root Mean-Square (R.M.S.) & Average Values, Impedance and Admittance, [18 hrs] **Part B - A.C Circuit** Introduction, Capacitors, Series and Parallel Capacitors, Inductors, Series and Parallel

	Inductors, Series A.C. circuits, Parallel A.C. Circuits, Kirchhoff's Laws in the Frequency Domain, Impedance Combinations. [15 hrs] **Part C - Sinusoidal Steady-State Analysis** Nodal Analysis, Nodal Analysis with Voltage Sources, Mesh Analysis, Mesh Analysis with Current Sources, Superposition Theorem, Thevenin and Norton Equivalent Circuits [24 hrs] **Part D - Frequency Response** Series Resonance, Parallel Resonance, [6 hrs] Revision problem classes [6 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**1. Behavior management** Behavior management strategies foster an atmosphere of mutual respect, reduce disruptive behavior and ensure students have an equal opportunity to fulfill their potential in the classroom. It's crucial to provide them with both a positive and productive learning environment. Examples include establishing a reward system with an interactive chart where students move up or down depending on their performance and behavior in class. **2. Blended learning** With a blended learning teaching strategy, technology is incorporated with traditional learning. This allows students to work at their own pace, research their ideas and become more physically engaged during lessons. Examples include providing interactive tablets or whiteboards with engaging activities and posting classwork online for easier access. **3. Cooperative learning** Group work is a cooperative learning strategy that allows students with various learning levels to work together. By encouraging them to express their own ideas and listen to others' ideas as a group, you help students develop communication and critical thinking skills. Examples include solving math puzzles together, performing skits as a team or working on group presentations. **4. Formative assessment**

	A formative assessment is used periodically to monitor student learning incrementally. This can more effectively measure the process of learning as opposed to end-of-unit tests and can help you to improve your teaching methods throughout the year. Examples of this teaching strategy include self-evaluation exercises and summarizing a topic in multiple ways. **5. Student-led teaching** The student-led teaching strategy lets students become the teacher. In a classroom with learners at different levels, you can better engage those learning faster by showing them how to teach and give feedback to their peers. They may team-teach or work in groups to teach a new topic. Examples include letting a student teach an entire lesson or having advanced writers lead a peer-editing session as well as provide constructive criticism.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	124	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	8
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	76	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.1
Total SWL (h/sem) 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 and 12	LO #1, #4 and #8, #11
	Assignments	2	10% (10)	3 and 13	LO #3, #4 and #10, #14
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	14	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	• Introduction: AC Circuits, A.C. Fundamentals, Types of waveforms
Week 2	• Definition of: Waveform, Instantaneous value, Cycle, Time period, Frequency, Amplitude, Peak-to-peak value, Phase, Phase angle, Phase difference, Angular Frequency
Week 3	• Root-Mean-Square (R.M.S.) & Average Values
Week 4	• Capacitors, Series and Parallel Capacitors • Inductors, Series and Parallel Inductors
Week 5	• A.C. Through Resistance, Inductance and Capacitances
Week 6	• Series A.C. circuits
Week 7	• Parallel A.C. circuits: Vector or Phasor Method, Admittance Method (Y), Complex or Phasor Algebra
Week 8	**Mid-term Exam**
Week 9	• Kirchhoff's Laws in the Frequency Domain

	• Impedance Combinations • Star-to-Delta transformations
Week 10	• Sinusoidal Steady-State Analysis: Nodal Analysis, Mesh Analysis
Week 11	• Sinusoidal Steady-State Analysis: Mesh Analysis
Week 12	• Circuit Theorems: Superposition, Source Transformation
Week 13	• Circuit Theorems: Thevenin and Norton Equivalent Circuits
Week 14	• AC Power Analysis: Power Triangle, Power Factor, Complex Power
Week 15	• Frequency Response: Series Resonance, Parallel Resonance
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: A.C. Measurement Instruments
Week 2	Lab 2: Introduction to Oscilloscope
Week 3	Lab 3: Inductors
Week 4	Lab 4: Capacitors
Week 5	Lab 5: Ohm's Law in A.C. Circuits
Week 6	Lab 6: Series and Parallel Combinations
Week 7	Lab 7: Star-Delta Transformations
Week 8	Lab 8: Kirchhoff's Laws in the Frequency Domain
Week 9	Lab 9: Superposition theorems
Week 10	Lab 10: Thevenin's theorems
Week 11	Lab 11: Norton's theorems
Week 12	Lab 12: Power in AC circuit
Week 13	Lab 13: Series Resonance
Week 14	Lab 14: Parallel Resonance

Week 15	**Final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	• Theraja, B. L. **A Textbook of Electrical Technology-Volume I (Basic Electrical Engineering)**. Vol. 1. S. Chand Publishing, 2005. • C.K. Alexander and M.N.O Sadiku, **Fundamentals of Electric Circuits**, McGraw-Hill Education, Fifth Edition, 2013	Yes
Recommended Texts	• Allan H. Robbins and Wilhelm C. Miller, **Circuit analysis: Theory and practice**, Cengage Learning, Fifth Edition, 2013. • Nilsson, James William, **Electric circuits**, Pearson Education India, 2008.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

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

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Electronic Physics**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **L Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**DoC104**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level		UGI- 1	**Semester of Delivery**		2
Administering Department		BSc - COMM	**College**	College of Engineering	
Module Leader	Jafaar Fahad A.Rida		**e-mail**	j.fahad@uos.edu.iq	
Module Leader's Acad. Title		Assist. Prof	**Module Leader's Qualification**		Ph.D
Module Tutor (Lab)	Assist. Lect. Maysam Kadhim Jiweed		**e-mail**	maysam.kadhim@uos.edu.iq	
Peer Reviewer Name		Basim Abood Yasir	**e-mail**	basim.alkhafaji@uos.edu.iq	
Scientific Committee Approval Date		15/09/2023	**Version Number**		1.0

	**Ministry of Higher Education and Scientific Research - Iraq** **University of Sumer** **College of Engineering** Department of Communications Engineering	

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 Objectives أهداف المادة الدراسية	١-During the school year, the student learns an idea about the atomic structure, energy levels, and conductivity of minerals 2- The student will be introduced to semiconductors and diodes, their types and applications in the field of communication science, and an understanding of electronic circuits and the most important electronic elements included in the designs of these circuits. 3- The study material aims to develop the student's mind and enable him to visualize the transmission of information and the foundations of establishing various electrical circuits. 4- Teaching this subject is the consolidation of the theoretical principles and foundations that depend on the creation of any electronic electrical circuit and its absolute understanding.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	This course is intended for teaching the basic principle of electronic physical for engineering students at the beginning graduate level. The course will have these important outcomes: (1) Understanding Energy Levels and Atomic Structure ; (2) Recognize how electricity works in electrical circuits. (3) List the various terms associated with electrical circuits. (4) Discuss the reaction and involvement of atoms in electric circuits. (5) Describe electrical conductivity, charge, and current. (6) Define Ohm's law. (7) Learn and understand the basics of transmitting electromagnetic signals through different mediums (8) Learn and understand the basics of creating electrical waves (9) Understanding the operating principle of Semiconductor , P-N Junction

	(10) the students will learn Rectifiers ,and its types (11) Explain the diode Circuit Applications and other Types of Semiconductor Diodes; such as zener diodes voltage regulators , clipping circuits , clamping circuits and wave form generation , (12) Understanding the waveform change of diode clipping and clamping circuits and Calculate and explain DC current-voltage behaviour of diodes and BJTs
Indicative Contents المحتويات الإرشادية	**Part A** - The atom models , wave nature of light , dual nature of matter, energy – band theory of metals , insulators and Semiconductors and explain the influence of excess minority carrier recombination of the performance of the devices.(7 hrs) **Part B-** p-n junction in equilibrium , current-voltage characteristics , charge control decryption of a diode transition and diffusion capacitance , diode switching Times, diode models, small-signal model and load line concept .(12 hrs) **Part c-,** the students will learn Rectifiers , zener diodes voltage regulators , clipping circuits , clamping circuits and wave form generation ,Varactor diode, tunnel diode, photodiode and photovoltaic (solar)cell, Light Emitting diode, principle and operation of semiconductor laser, metal Electronic Palasisics semiconductor diode. On the last objective explain the waveform change of diode clipping and clamping circuits and the function of each one.(10 hrs)
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1-Encourage the student to think about ways of generating the electromagnetic wave 2- Encourage the student to think about the importance of the frequency and energy of the wave and the time periods. 3- Encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students. 4- Urge the student to think about the factors affecting wave transmission in the media. 5- Enable students to link theories to the practical reality of electrical circuits. 6- Enable students to pass professional exams organized by local or international bodies. 7- Enabling students to continue self-development after graduation.

	8- Setting up special seminars for students for the purpose of self-development of their personalities.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.8
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**	2	10% (10)	2 and 12	LO #1, #3 ,#5, #6,, 9, #10, #11,12
	Assignments	2	10% (10)	2 and 12	LO #9, #10 and #11, #12
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #1, #9 and #10,11
Summative assessment	**Midterm Exam**	2hr	10% (10)	10	LO #1 - #10
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	**The models of atoms** :Explain the models of atoms and the mathematical equations of each model
Week 2	**Dual nature of matter**: Studying the dual nature of light and their mathematical relations, especially electromagnetic waves
Week 3	**Energy-band theory of metals Insulators and Semiconductors**: The theory of energy bands in conductors, insulators and semiconductors and the difference between them
Week 4	**Internal structure of materials cell packing:** Internal arrangement of various materials Metals, insulators and semiconductors
Week 5	**Brags law and x-ray diffraction** : The importance of Braque's law in the study of x-ray diffraction
Week 6	**electronic ballistics, Hall effect electronic ballistics**, Hall effect: The effect of electric and magnetic fields on electron movement and the Hall effect
Week 7	**Mobility and conduction ,energy distribution of electro**ns: Mobility, conductivity and energy distribution study of semiconductors
Week 8	**Diffusion and drift motion and Carrier life time**: Explanation of the phenomena of diffusion and drift
Week 9	**semiconductors materials**: Fermi-level in semiconductor: Semiconductor materials and Fermi level study of these materials and Study the types of semiconductors and the difference between them
Week 10	**p-n junction in equilibrium, current-voltage characteristics**: Studying the P-N junction and its voltage and current characteristics
Week 11	**Small-signal model and load line concept**: Studying the model of the minimum signal and the concept of the load line
Week 12	**Rectifiers and the types of rectifiers** : Study the rectifier and its types
Week 13	**Types of Diodes:** study the types of diodes used in electrical circuits, especially communication circuits, and the characteristics of each of them
Week 14	**Clipping circuits and wave form generation:** Study clipping circles and clamping circles, And configure the output waveform through circuit applications

Week 15	**Transistor biasing PNP, NPN, FET**: A study of the types of transistor bias PNP, NPN, FET
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Electrical and magnetic properties of materials Electrical and magnetic properties of materials	Yes
Recommended Texts	1. M.S. Tyagi, Introduction to Semiconductor Materials and Devices, Wiley & Sons 2. S.M. Sze, Semiconductor Devices, Wiley & Sons	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/phusical electronics	

Grading Scheme
مخطط الدرجات

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

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	C++ Programming			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**DoC 105**				
ECTS Credits	**6**				
SWL (hr/sem)	**125**				
Module Level	UGI- 1		**Semester of Delivery**	2	
Administering Department	BSc - COMM		**College**	College of Engineering	
Module Leader	Yassir Kareem Hamadi		**e-mail**		
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Master	
Module Tutor (Lab)	Assist. Lect. Maysam Kadhim Jiweed		**e-mail**	maysam.kadhim@uos.edu.iq	
Peer Reviewer Name	Assist. Prof. Jafaar Fahad A.Rida		**e-mail**	j.fahad@uos.edu.iq	
Scientific Committee Approval Date	13/06/2023		**Version Number**	1.0	

	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

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 Objectives أهداف المادة الدراسية	Upon completion of this course, the student will be able to: 5. Understand computers and classify programming languages . 6. Write simple C++ program. 7. Learn data types, variables, arithmetic operators, assignment and input statements. 8. Learn relational operators and logical expressions. 9. Using selection in program like if/if…else ,block statements , switch structures. 10. Develop executable programs by using repetition control structures: While Looping, Do…while Looping, For Looping, Break and continue Statements Define and use functions in C++ program. 11. Learn Enumeration type with Functions 12. Learn how to define String type with string Operations 13. Learn define and use arrays and strings 14. Define pointer data types , Address of Operator (&) ,Pointer Variables 15. Perform simple file I/O streams.		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	7.Recognize computer system and programming languages . 8.Build simple program by using different data types. 9.Define the relational operators and logical expressions. 10. Adding new abilities to program by using selection control structures. 11. Applying repetition control structures in programs. 12. Perform , Break and continue Statements. 13. Recognize functions in C++ program and their types and how to use		

	them in program 14. Define the Enumeration type with Functions 15. Identify String type with string Operations 16. Using arrays with their types in programs and strings with functions. 17. Applying pointer data types and classes. 18. Apply recursion in functions 19. Perform simple file I/O streams
Indicative Contents المحتويات الإرشادية	Introduction to computers and Classification of programming languages (1 hours), Introduction to problem solving (3 hours), Computers and Programming Languages (3 hours), Processing a C++ Program (3 hours). Basics of a C++ Program, Data Types, Variables, Arithmetic Operators (3 hours) , Assignment and Input Statements (3 hours). Input / Output, I/O Streams (3 hours), Predefined Functions, Output Formatting (3 hours), Control Structures I (Selection): Relational Operators, Logical Expressions (3 hours), If/If…else, Block Statements (3 hours), Switch Structures (3 hours),Control Structures I (Repetition) : While Looping, Do…while Looping (3 hours), For Looping (3 hours), Break and continue Statements (3 hours), Preparatory week before the final Exam User-Defined Functions (6 hours), User-defined simple data types and the string type (6 hours), Arrays and strings (6 hours), Pointers, Classes (3 hours), File Input/Output (3 hours).
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, homework's and examples. Practical examples help students to understand the course material.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**64**	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	**4**
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	**61**	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	**4.1**
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	8 and 13	LO #1 to #4 and #6 to #8
	Assignments	3	10% (10)	4, 7 and 11	LO #2, #3, #4, #5 and #7,#8,#9
	Projects / Lab.	1	20% (20)	Continuous	All
	Report	0			
Summative assessment	Midterm Exam	2 hr	10% (10)	9	LO #1 - #7
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	History of C++ Language - Typical C++ Development Environment
Week 2	The main structure of C++ programs- OOP Classes declaration
Week 3	Data types - Variable declaration - Constant declaration - Simple Input/Output, I/O Streams
Week 4	Arithmetic Operators - Relational Operators - Logical Operators - Assignment Operators
Week 5	Increment & Decrement Operators -Bitwise Operators - Misc Operators.
Week 6	Conditional (Selection) Statement: if statement - if...else statements
Week 7	Nested if statements - Switch statement
Week 8	Iteration (Repetition) statements: while statement - do/while statement
Week 9	for statement - Nested for statement- Break and continue Statements
Week 10	**Mid-term Exam**
Week 11	Array: Array declaration - Single dimensional array - Multiple –subscripted Arrays
Week 12	String (1D array of characters) - Array of strings (2D array of characters).
Week 13	Functions: Function Prototypes (declaration) - Calling Function - Function Definition
Week 14	Passing Arguments functions.
Week 15	Pointers: Advantage of using pointers - pointers in array.
Week 16	**Preparatory week before the final Exam**

	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Review of typical C++ Environment and program instillation package
Week 2	Understand structure of C++ programs- OOP Classes declaration
Week 3	executing examples of Data types - Variable declaration - Constant declaration - Simple Input/Output, I/O Streams
Week 4	Applying of Arithmetic Operators - Relational Operators - Logical Operators - Assignment Operators
Week 5	Applying of Increment & Decrement Operators -Bitwise Operators - Misc Operators.
Week 6	Using Conditional (Selection) Statement: if statement - if...else statements
Week 7	Utilizing Nested if statements - Switch statement
Week 8	Appling Iteration (Repetition) statements: while statement - do/while statement
Week 9	Using for statement - Nested for statement- Break and continue Statements
Week 10	Applying Array: Array declaration - Single dimensional array
Week 11	Executing of Multiple –subscripted Arrays
Week 12	Test String - Array of strings.
Week 13	Understanding Functions: Function Prototypes (declaration) - Calling Function - Function Definition
Week 14	Applying Passing Arguments functions.
Week 15	Understanding Pointers: Advantage of using pointers - pointers in array.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. C++ Programming: From Problem Analysis to Program Design, 6th Edition; D.S. Malik	Yes
Recommended Texts	• Programming and problem solving with C++: comprehensive sixth edition, Nell Dale and Chip Weems.	No

	• Computer Science Textbook class XI, First Edition, 2019. • C++ Primer Plus, Sixth Edition	
Websites	▪ http://www.cplusplus.com/doc/tutorial/	

Grading Scheme
مخطط الدرجات

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

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**WORKSHOPS SKILLS**			**Module Delivery**	
Module Type	**BASIC**			☐**Theory** ☐ **Lecture** ☐**Lab** ☐**Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**DoC 107**				
ECTS Credits	**3**				
SWL (hr/sem)	**75**				
Module Level		UGI -1	**Semester of Delivery**		2
Administering Department		BSc - COMM	**College**	Collage of Engineering	
Module Leader	Maysam Kadhim Jiweed		**e-mail**	maysam.kadhim@uos.edu.iq	
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name		Assist. Prof. Jafaar Fahad A.Rida	**e-mail**	j.fahad@uos.edu.iq	
Scientific Committee Approval Date		13/09/2023	**Version Number**	1.0	
Relation with other Modules العلاقة مع المواد الدراسية الأخرى					
Prerequisite module	None		**Semester**		
Co-requisites module	None		**Semester**		

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

Module Objectives أهداف المادة الدراسية	**أ- الاهداف المعرفية** ١- أفهام وتعليم الطالب مفاهيم ومبادى مادة الورش الهندسية العامة . ٢- تمكين الطلبة من الحصول على المعرفة والفهم الكامل لكافة مهارات الورش الهندسية . ٣- افهام الطالب وتعريفه بكافة المهارات نظريا وعمليا وتعريفه بكافة أجزاء الماكنة التي يتم تطبيق المهارة بالإضافة الى التطبيق العملي على الماكنة لكل طالب ولكافة المهارات. ٤- تمكين الطلبة من الحصول على المعرفة والفهم لكل أجزاء الماكنة وفائدة كل جزء . ٥- تمكين الطلبة من الحصول على المعرفة والفهم على تشخيص انواع الاعمال التي تنجزها كل ماكنة وطريقة العمل عليها . **ب – الأهداف المهاراتية الخاصة بالبرنامج** ١ - شرح المهارات بالتفصيل وتطبيقها على الماكنة عمليا والتاكيد على الطلبة بضرورة الالتزام بقواعد السلامة المهنية. ٢ - تزودهم بمعلومات وطرق حل المشاكل العملية المتعلقة بجميع المهارات. ٣ - يتم عرض مواضيع كافة المهارات نظريا. ٤ - يتم التركيز على العملي في المهارات وضرورة مشاركة الطالب في العملي.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**مخرجات التعلم للمادة الدراسية** ١- بناء الطالب علميا وعمليا وتأهيله للعمل في مجال تقنيات الهندسة. ٢- بناء وإعداد الطالب نفسيا ليقوم بدوره كمهندس يعتمد عليه في هذا المجال. ٣- بناء طلبة قادرين على التنافس مع مهندسين اخرين لفرص العمل و الحصول على المقاعد المطلوبة في اكمال دراسات عليا. ٤- قابلية التقديم لاختبارات خارجية من قبل هيئات محليةأو أقليمية أو عالمية لغرض اكمال الدراسة او التعيين. ٥- حث الطالب على الإبداع والتفكير في مشاريع التخصص ومواكبة التطور الحاصل في هذا المجال. ٦- تزويد الطلبة بمهارات علمية وعملية ومهارات ذاتية تمكنه من حل المشاكل العملية والتعامل معها بمفاهيم علمية.
Indicative Contents المحتويات الإرشادية	**المحتويات الإرشادية** **اولا-: السلامة المهنية.** يتم تعريف الطالب بقواعد وإجراءات السلامة المهنية لجميع المهارات وجميع الأقسام لاجل سلامة المستخدم من مخاطر التعامل مع هذه الأدوات والمكائن (٣ ساعات). **ثانيا-: مهارة القياسات.** شرح نظري لمهارة القياسات وتعريف الطالب بجميع العدد والأدوات المستخدمة في عملية القياس بالتفصيل ومن ثم يتم التطبيق العملي لمهارة القياسات حيث يقوم كل طالب باجراء عملية القياس لمختلف الأدوات إضافة الى تسليم ومناقشة التقارير الخاصة بالمهارة (٦ساعات)

ثالثا:- مهارة اللحام .

شرح نظري لمهارة اللحام وتعريف الطالب بجميع العدد والأدوات المستخدمة في عملية اللحام وشرح طرق اللحام بالتفصيل إضافة الى التطبيق العملي حيث يقوم كل طالب بعملية اللحام وذلك لاكتساب الخبرة العملية إضافة الى تسليم ومناقشة التقارير الخاصة بالمهارة (٦ساعات).

رابعا:- مهارة البرادة .

شرح نظري لمهارة البرادة وتعريف الطالب بجميع العدد والأدوات المستخدمة في عملية البرادة وشرح طرق البرادة بالتفصيل إضافة الى التطبيق العملي حيث يقوم كل طالب بعملية البرادة يدويا وذلك لاكتساب الخبرة العملية إضافة الى تسليم ومناقشة التقارير الخاصة بالمهارة (٦ساعات).

خامسا:- مهارة السباكة .

شرح نظري لمهارة السباكة وتعريف الطالب بجميع العدد والأدوات المستخدمة في عملية السباكة وشرح طرق السباكة بالتفصيل إضافة الى التطبيق العملي حيث يقوم كل طالب بعملية السباكة يدويا وذلك لاكتساب الخبرة العملية إضافة الى تسليم ومناقشة التقارير الخاصة بالمهارة (٦ساعات)

سادسا:- مهارة التفريز .

شرح نظري لمهارة التفريز وتعريف الطالب بجميع أجزاء ماكنة التفريزاضافة الى العدد والأدوات المستخدمة في عملية التفريز وشرح طرق التفريز بالتفصيل إضافة الى التطبيق العملي حيث يقوم كل طالب بالعمل على ماكنة التفريز وتنفيذ التمارين المختلفةعلى الماكنة وذلك من اجل اكتساب الخبرة العملية إضافة الى تسليم ومناقشة التقارير الخاصة بالمهارة (٦ساعات).

سابعا:- مهارة التجليخ .

شرح نظري لمهارة التجليخ وتعريف الطالب بجميع أجزاء ماكنة التجليخ اضافة الى العدد والأدوات المستخدمة في عملية التجليخ وشرح طرق التفريز بالتفصيل إضافة الى التطبيق العملي حيث يقوم كل طالب بالعمل على ماكنة التفريز وتنفيذ التمارين المختلفةعلى الماكنة وذلك من اجل اكتساب الخبرة العملية إضافة الى تسليم ومناقشة التقارير الخاصة بالمهارة (٦ساعات).

ثامنا:- مهارة الخراطة .

شرح نظري لمهارة الخراطة وتعريف الطالب بجميع أجزاء ماكنة الخراطة اضافة الى العدد والأدوات المستخدمة في عملية الخراطة وشرح طرق الخراطة بالتفصيل إضافة الى التطبيق العملي حيث يقوم كل طالب بالعمل على ماكنة الخراطة وتنفيذ التمارين المختلفةعلى الماكنة وذلك من اجل اكتساب الخبرة العملية إضافة الى تسليم ومناقشة التقارير الخاصة بالمهارة (٦ساعات).

تاسعا:- مهارة التأسيسات الكهربائية .

شرح نظري لمهارة التأسيسات الكهربائية وتعريف الطالب بجميع العدد والأدوات المستخدمة في عمليات التأسيسات الكهربائية وشرح طرق التأسيسات الكهربائي إضافة الى التطبيق العملي حيث يقوم كل طالب بالعمل على ربط الدوائر الكهربائية المختلفة وذلك من اجل اكتساب الخبرة العملية إضافة الى تسليم ومناقشة التقارير الخاصة بالمهارة (٦ساعات).

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	***امتحانات يومية باسئلة عملية وعلمية.** ***درجات مشاركة لاسئلة المنافسة الصعبة بين الطلاب .** ***وضع درجات للواجبات البيتية والتقاريرالمكلفة بهم.** ***امتحانات فصلية للمنهج الدراسي اضافة الى امتحان نصف السنة والامتحان النهائي.**

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	٤٨	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	٢٧	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	٧٥		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري والعملي

	Material Covered
Week 1	شرح نظري وعملي لمبادئ السلامة المهنية وبيان خطورة عدم الالتزام بها على حياة الطالب.
Week 2	شرح نظري لمهارة القياسات وتعريف جميع العدد والأدوات المستخدمة في القياس.
Week 3	تطبيق عملي لمهارة القياسات.
Week 4	شرح نظري لمهارة اللحام وتعريف جميع العدد والأدوات المستخدمة في عملية اللحام.
Week 5	تطبيق عملي لمهارة اللحام.
Week 6	شرح نظري لمهارة البرادة وتعريف جميع العدد والأدوات المستخدمة في عملية البرادة.
Week 7	تطبيق عملي لمهارة البرادة.
Week 8	شرح نظري لمهارة السباكة وتعريف جميع أجزاء فرن السباكة.
Week 9	تطبيق عملي لمهارة السباكة.
Week 10	شرح نظري لمهارة التفريز وتعريف الطالب بجميع أجزاء ماكنة التفريز.
Week 11	تطبيق عملي لمهارة التفريز.
Week 12	شرح نظري لمهارة التجليخ وتعريف الطالب بجميع أجزاء ماكنة التجليخ.
Week 13	تطبيق عملي لمهارة التجليخ.
Week 14	شرح نظري لمهارة التاسيسات الكهربائية مع التطبيق العملي.
Week 15	شرح نظري لمهارة الخراطة وتعريف الطالب بجميع أجزاء ماكنة الخراطة.
Week 16	تطبيق عملي لمهارة الخراطة.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	MECH6014 - Mechanical Workshop Practice Tarafdar, J.C. and Raliya, R., "The Nanotechnology", Published by Scientific Publisher (SP), India, (2012).	Yes
Recommended Texts	MECH6028 - Mechanical Workshop Practice 2 - CIT Modules	No
Websites	https://www.coursera.org/browse/workshop-and-engineering/workshop -	

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

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**حقوق الانسان والديمقراطية**			**Module Delivery**	
Module Type	B			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	UoS101				
ECTS Credits	2				
SWL (hr/sem)	30				
Module Level		UGI - 1	**Semester of Delivery**		2
Administering Department		BSc – COMM	**College**	College of Engineering	
Module Leader	Mohommod Rasheed Majeed		**e-mail**	m@uos.edu.iq	
Module Leader's Acad. Title		Assist. Lect.	**Module Leader's Qualification**		Master
Module Tutor			**e-mail**		
Peer Reviewer Name		Assist. Prof. Abduladheem Salman khudhair	**e-mail**	a.salman@uos.edu.iq	
Scientific Committee Approval Date		12/09/2023	**Version Number**		

	**Ministry of Higher Education and Scientific Research - Iraq** **University of Sumer** **College of Engineering** Department of Communications Engineering	

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 Objectives أهداف المادة الدراسية	١- يتعلم الطالب خلال السنه الدراسية اساسيات حقوق الانسان والديمقراطية ما حقوقه كيف يدافع عنها بالطرق القانونية وماهي ضماناتها الداخلية والدولية. ٢-استحصال المعرفة في مجال الديمقراطية وأنواع أنظمتها واثرها على حقوق الانسان . ٣-تنمية شخصية الطالب وتعزيز وعيهم في الأنظمة السياسية الديمقراطية وتفاصيلها وكيفية تطبيقها على ارض الواقع واهمية ان يكون فعال في المجتمع من خلال احترامه لحقوق الاخرين ومعرفه ان الحقوق والحريات تنتهي عند بداية حقوقهم وحرياتهم ويؤدي واجباته بدلا من اكتساب الحقوق فقط. ٤- تعزيز ثقافة السلام القائمة على العدل والمساواة.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	١ -تمكين الطالب من معرفة اساسيات الدفاع عن حقوقه وحقوق الاخرين بعد معرفتها ومعرفة أهميتها له وللمجتمع بصورة عامة وأيضا معرفه كل شخص حدود حقوقه وحريته . ٢- تمكين الطالب في المشاركة السياسية وذلك من خلال معرفته بأهمية مشاركته في الانتخابات وتأثير هذه المشاركة على سير الانتخابات وتشكيل السلطة فيما بعد. ٣- معرفه الطالب ضمانات حقوقه وحرياته وماهي مصادرها.

	٤ – معرفة الفرق بين الحقوق والحريات. ٥- تمكين الطالب من معرفة ماهي المفهوم العلمي للديمقراطية وماهي جذورها وانواعها واشكالها. ٦- يتعلم الطالب كيف يؤثر النظام الديمقراطي على حقوق الانسان وماهي العلاقة بينها. ٧ – ادراك الطالب ضرورة ان يكون مواطن فعال في المجتمع ايضاً معرفه شروط الناخب وشروط المرشح للانتخابات. ٨- معرفه أنظمة الانتخابات وايهما افضل. ٩ – فهم الطالب للقانون الدولي لحقوق الانسان وايضاً معرفة مختصرة عن المنظمات الدولية والية عملها كالأمم المتحدة ومنظمة الصليب الأحمر وغيرها.
Indicative Contents المحتويات الإرشادية	١ الجزء الأول -تعريف حقوق الانسان وحقوق الانسان في الحضارات القديمة. (تعريف الحق وتعريف الانسان ومعرفة أهمية حقوق الانسان بالنسبة للإنسان والمجتمع أيضا دراسة حقوق الانسان في الحضارات كالحضارة المصرية والعراقية واليونانية والرومانية)(٤ساعات) الجزء الثاني معرف حقوق الانسان في الأديان السماوية واهمها الإسلام (٢ساعة) مصادر حقوق الانسان تتضمن (مصادر دولية كالإعلان العالمي لحقوق الانسان والعهدان الدوليان والمصادر الإقليمية التي تشمل الاتفاقيات الإقليمية كالاتفاقية الاوربية والأمريكية والدستور)(٢ساعة) ضمانات حقوق الانسان (كالضمانات الدستورية والقانونية)(٢ساعة) الاتفاقيات الدولية والإقليمية لحقوق الانسان (٢ساعة) الحريات العامة وانواعها والمقارنة فيما بينها (٢ساعة) مستقبل حقوق الانسان والعولمة وحقوق الانسان (٢ساعة) تعريف وتاريخ وأنواع الديمقراطية (دراسة تعريف ونشأة وتطور الديمقراطية مبادئها

	وانواعها كالديمقراطية المباشرة وغير المباشرة والنظام الرئاسي والبرلماني) (٦ساعات) تعريف الانتخاب وشروطه وأنواع النظم الانتخابية وتعريف المجلس النيابي (٦ساعات) العلاقة بين الديمقراطية وحقوق الانسان (٢ساعة)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	١-زيادة وعي الطالب بأهمية معرفه حقوقه وواجباته اتجاه المجتمع وعلاقة حقوق الانسان بالنظام الديمقراطي ٢-ثقافة عامة في مجموعة من المجالات ومنها المجال القانوني و السياسي والاجتماعي ورفع ثقة الطالب بنفسه من خلال ربط المادة النظرية بالواقع العملي

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**50**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	15% (15)	5 , 7 and 10	LO #1, #2 #,3,and #6 #7#8
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.				
	Report	1	15% (١٥)	13	LO #5, #8 and #9
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	محاضرة تعريفية عن المادة واهميتها ..
Week 2	تعريف الحق والانسان وحقوق الانسان واهمية حقوق الانسان ،حقوق الانسان في الدين الإسلامي والحضارات القديمة.
Week 3	مصادر حقوق الانسان الدولية والإقليمية والمحلية.
Week 4	ضمانات حقوق الانسان الدستورية والقانونية وضمانات حقوق الانسان على الصعيد الدولي.
Week5	ضمانات حقوق الانسان في الإسلام
Week 6	دور المنضمات الإقليمية في حماية حقوق الانسان.
Week 7	خصائص حقوق الانسان وتعريف الحريات العامة وانواعه والمقارنة بينها وبين الحقوق

	القانون الدولي لحقوق الانسان والقانون الدولي الإنساني ومنظمة الصليب الأحمر.
Week 8	مستقبل حقوق الانسان وسبل تطويرها .
Week 9	العولمة وحقوق الانسان .
Week 10	تعريف الديمقراطية وتطورها التاريخي ومبادئها . الديمقراطية بين العالمية والخصوصية . اشكال الديمقراطية / الديمقراطية المباشرة.
Week 11	الديمقراطية شبه المباشرة والديمقراطية التمثيلية / اركان النظام التمثيلي / اشكال النظام التمثيلي.
Week 12	المجلس النيابي وانواعه / الانتخاب وشروطه / هيئة الناخبين.
Week 13	تنظيم عملية الانتخاب / تحديد الدوائر الانتخابية / القوائم الانتخابية / المرشحون/ الحملة الانتخابية / التصويت .
Week 14	نظم الانتخابات.
Week 15	علاقة الديمقراطية بحقوق الانسان وكيفية التأثير والتأثر فيما بينها.
Week 16	الامتحان النهائي

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	حقوق الانسان والطفل والديمقراطية /تأليف ماهر صالح علاوي ورياض عزيز هادي وعلي عبد الرزاق محمد واخرون / العاتك / بيروت / ٢٠٠٩	نعم
Recommended Texts	عباس الدليمي / حقوق الانسان الفكر والممارسة فخري رشيد ،صلاح ياسين /المنظمات الدولية / العاتك لصناعة الكتاب / بغداد عصام العطية / القانون الدولي العام / المكتبة القانونية /بغداد/٢٠١٢	لا
Websites		

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

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Contact

Program Manager:

Name : Jafaar Fahad A.Rida / Ph.D. in Communication Engineering / Assistant Prof.

Email: j.fahad@uos.edu.iq

Mobile no.: +964 7819366700

Program Coordinator:

Name : Abduladheem Salman khudhair / Master. in Civil Engineering / Assistant Lect.

Email: a.salman@uos.edu.iq

Mobile no.: +964 7814536682

	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

ACADEMIC DESCRIPTION CURRICULUM FOR THE SECOND STAGE (3rd Semester)

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية				
Module Title	**APPLIED MATHEMATICS**		**Module Delivery**	
Module Type	BASIC		☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**COE 103**			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	UGI- 2	**Semester (s) offered**	3	
Administering Department	BSc – COMM	**College**	College of Engineering	
Module Leader		**e-mail**		
Module Leader's Acad. Title	Assist. Prof.	**Module Leader's Qualification**	Ph.D	
Module Tutor		**e-mail**		
Peer Reviewer Name		**e-mail**		
Review Committee Approval	10/9/2023	**Version Number**	1.0	

	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Mathematics I & Mathematics II	**Semester**	1 & 2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Develop problem-solving skills and understand partial differentiation. 2. Understand the chain rule and the total derivative 3. Understand vectors and units, space coordinates, and space vectors. 4. Understand gradient, divergence, and Curl in curved coordinates. 5. Solving linear differential equations of the first and second order with constant coefficients. 6. Understanding Fourier series. 7. To develop problem solving of Eigenvalues and eigenvectors. 8. To understand Fourier, transform and their applications in electrical engineering. 9. To understand Laplace Transforms. To understand the application of Laplace Transforms in the electronic circuits. 10. This course deals with the basic concept of DC electrical circuits.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	This course is intended for teaching the basic principle of Applied Mathematics for engineering students at the beginning graduate level. The course will have these important outcomes: (1) Recognize differential equations and Partial Differentiation. (2) Summarize the Vectors components. (3) Identify the Multiple Integrals and Double integral and their applications. (4) Identify the Fourier series and their applications. (5) Identify the application in Electrical Circuits. (6) Recognize Eigenvalues and eigenvectors. (7) Summarize series and series geometric. (8) Identify the Laplace Transforms. (9) Identify the Fourier transform their applications. (10) Identify the application in Electrical Circuits.

Indicative Contents المحتويات الإرشادية	**Part (A) :** Indicative content includes the following. Differential Equations: Introduction to Differential Equations, 1st and 2nd order linear differential equations with constant coefficients, solution via the auxiliary equation, nonhomogeneous equations, application to electrical systems. Coupled 1st order linear differential equations; transformation of higher order linear differential equations on to coupled differential equations. Homogenous differential of higher order. Vectors: Vectors component and Units, Space coordinate and Space Vector, Scalar Product and Vector Product, Units and plane equation, equations of lines and planes, Product of Three Vectors, Applications. Vector Functions and Their Derivatives Gradient of Scalar Reid; Divergence of Vector Field; Curl of Vector Field; Directional Derivatives; Gradient, Divergence and Curl in Curvilinear Coordinates. Fourier series: The need for Fourier series, Periodic functions, Fourier Series-Euler formulas. Even and odd functions, Half-Range expansions, Application in Electrical Eng. 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. **Part (B) :** Indicative content includes the following. Eigenvalues and eigenvectors; diagonalization. Sequence and series, sequence convergence, series geometric series, nth partial sum, test of convergence. Fourier transform for different functions (unit step function, unit impulse function, singularity function, applications in electrical engineering. Fourier transform for different functions (unit step function, unit impulse function, singularity function, applications in electrical engineering. Laplace Transforms: Introduction to transforms and operators, Laplace transforms of basic functions; unit step function, transforms of 1st and 2nd derivatives, Application to electric circuits; Transforms of piecewise continuous functions Inverse Laplace transforms, derivation using partial fractions. Direct (s-domain) analysis of electrical circuits, Interpretation of s-domain functions Initial & final value theorems.
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 type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.8
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**	2	10% (10)	3,6,11,14	LO #1, 5, 8 and 9
	Assignments	3	10% (10)	2 and 12	LO #1, 2, 4, 6 7, 8 and 9
	Projects / Lab.	3	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #1, #9 and #10,11
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Differential Equations, 1st and 2nd order linear differential equations with constant coefficients, homogeneous equations.
Week 2	Application to electrical systems. Coupled 1st order linear differential equations.
Week 3	Transformation of higher order linear differential equations on to coupled differential equations. Homogenous differential of higher. Solution via the auxiliary equation, nonhomogeneous equations.
Week 4	Vectors component and Units, Space coordinate and Space Vector, Scalar Product and Vector Product. Units and plane equation, equations of lines and planes.
Week 5	Product of Three Vectors, Applications, dot and cross product. Vector Functions and Their Derivatives Gradient of Scalar Reid. Divergence of Vector Field; Curl of Vector Field; Directional Derivatives. Gradient, Divergence and Curl in Curvilinear Coordinates
Week 6	**electronic ballistics, Hall effect electronic ballistics**, Hall effect: The effect of electric and magnetic fields on electron movement and the Hall effect
Week 7	Fourier series: The need for Fourier series, Periodic functions, Fourier Series-Euler formulas. Even and odd functions, Half-Range expansions, Application in Electrical Eng. Multiple Integrals: Double integral, Areas and volume, Double integral polar coordinates
Week 8	**Mid-term Exam**.
Week 9	Sequence and series, sequence convergence. Series geometric series, nth partial sum, test of convergence. Taylor and Mandarin series.
Week 10	Introduction to transforms and operators, Laplace Transforms. Laplace transforms of basic functions. unit step function, transforms of 1st and 2nd derivatives.
Week 11	Direct (s-domain) analysis of electrical circuits, Interpretation of s-domain functions Initial & final value theorems.
Week 12	Inverse Laplace transforms. Application to electric circuits.
Week 13	Derivation using partial fractions. Transforms of piecewise continuous functions
Week 14	Fourier transform: Introduction, Fourier transform equation, properties.
Week 15	Fourier transform for different functions (unit step function, unit impulse function, singularity function, applications in electrical engineering).

Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Engineering Circuit Analysis 7th Edition by William Hayt , Jack Kemmerly , Steven Durbin.	Yes
Recommended Texts	Schaum's Outline of Basic Circuit Analysis, Second Edition (Schaum's Outlines) 2nd Edition, by John O'Malley	No
Websites	DC Electrical Circuit Analysis: A Practical Approach Copyright Year: 2017 .	

Grading Scheme
مخطط الدرجات

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

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**ELECTROMAGNETIC FIELDS I**			**Module Delivery**	
Module Type	CORE			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**DOC 110**				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	UGI- 2		**Semester (s) offered**	3	
Administering Department	BSc – COMM		**College**	College of Engineering	
Module Leader			**e-mail**		
Module Leader's Acad. Title	Assist. Prof.		**Module Leader's Qualification**	Ph.D	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Review Committee Approval	10/9/2023		**Version Number**	1.0	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. To develop problem solving skills of coordinate systems through the understanding the rectangular coordinate system, cylindrical coordinate system, spherical coordinate system. 2. To understand the vector analysis (scalars and vectors). 3. This course deals with the basic concept of the Electric Field Intensity, Electric Flux Density, magnetic Field Intensity, and magnetic Flux Density. 4. To understand the Energy and Potential. 5. To understand the electric fields in material space. Conductors, dielectrics, and capacitance. 6. To perform the electric fields due to continuous charge distributions. 7. To understand the magnetic field due to different current distributions. 8. To understand different laws such as Coulomb's Law, Gauss's Law, Biot Savart's Law, Ampere's Law, and Faraday's Law.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	This course is intended for teaching the basic principle of Electromagnetic Fields I for engineering students at the beginning graduate level. The course will have these important outcomes: (1) To develop problem solving skills of coordinate systems through the understanding the rectangular coordinate system, cylindrical coordinate system, spherical coordinate system. (2) To understand the vector analysis (scalars and vectors). (3) This course deals with the basic concept of the Electric Field Intensity, Electric Flux Density, magnetic Field Intensity, and magnetic Flux Density. (4) To understand the Energy and Potential. (5) To understand the electric fields in material space. conductors, dielectrics, and capacitance. (6) To perform the electric fields due to continuous charge distributions. (7) To understand the magnetic field due to different current distributions. (8) To understand different laws such as Coulomb's Law, Gauss's Law, Biot Savart's Law, Ampere's Law, and Faraday's Law.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. **Part A -** Coordinate systems and Vector analysis coordinate systems: rectangular coordinate system, cylindrical coordinate system, spherical coordinate system. vector analysis: scalars and vectors, vector algebra, vector components and unit vectors, vector addition and subtraction, vector multiplication. coulomb's law and electric force: the experimental law of coulomb. Magneto-statics: the static magnetic fields, biot-savart law. Magneto-statics: magnetic field due to different current distributions,

	right-hand rule. Magneto-statics: solenoid, applications of solenoid, toroid. [12 hrs.] Revision problem and tutorial classes [4 hrs.]. Quizzes [1 hr.]. **Part B**- Electric field intensity and Charge distributions electric field intensity: electric field of a point charge, electric field of n point charges. Electric fields due to continuous charge distributions: electric field of a line charge. Electric fields due to continuous charge distributions: electric field of a sheet of charge. Electric fields due to continuous charge distributions: electric field of a volume of charge. Magneto-statics: ampere's circuital law, applications of ampere's law: infinite line current, infinite sheet of current, infinitely long coaxial transmission line. Magneto-statics: magnetic flux and magnetic flux density. Inductance: inductance of a conductor, inductance of toroid. [12 hrs.]. Revision problem and tutorial classes [4 hrs.] Quizzes [1 hr.] **Part C**- Electric flux density and Gauss's law application Electric flux density and gauss's law: gauss's law application on a point charge, gauss's law application on a line charge. Electric flux density and gauss's law: gauss's law application on a surface charge. Electric flux density and gauss's law: gauss's law application on a volume charge. Work, potential & potential difference: work done in moving a point charge. work, potential & potential difference: potential & potential difference. Force on a moving charge. Magnetic forces, work & power: work. Magnetic forces, work & power: power. Time varying fields: faraday's law. time varying fields: induced electromotive force. [9 hrs.] Revision problem and tutorial classes [3 hrs.]
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 type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	57	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.8

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**	2	10% (10)	4,8,14	LO #1, 4, 6 and 7
	Assignments	3	10% (10)	2 to 13	LO #1, 2, 3, 4, 5 and 7
	Projects.	3	10% (10)	Continuous	All
	Report	1	10% (10)	5 to 14	LO #1 to #8
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Coordinate systems: rectangular coordinate system, cylindrical coordinate system, spherical coordinate system.
Week 2	Vector analysis: scalars and vectors. Vector analysis: vector algebra, vector components and unit vectors, vector addition and subtraction.
Week 3	Vector multiplication. Coulomb's law and electric force: the experimental law of coulomb. Electric field intensity: electric field of a point charge, electric field of n point charges.
Week 4	Electric fields due to continuous charge distributions: electric field of a line charge. Electric field of a volume of charge.
Week 5	Electric flux density and gauss's law: gauss's law application on a surface charge.
Week 6	Electric flux density and gauss's law: gauss's law application on a volume charge. Work, potential & potential difference: work done in moving a point charge.
Week 7	Work, potential & potential difference: potential & potential difference. Conductors,

	dielectrics, and capacitance: electric fields in material space. Conductors, dielectrics, and capacitance.
Week 8	**Mid-term Exam**.
Week 9	Dielectric – dielectric boundary conditions, conductor – dielectric boundary conditions, conductor – free space boundary conditions.
Week 10	Conductors, dielectrics, and capacitance: capacitance and capacitors. Magneto-statics: magnetic flux and magnetic flux density. inductance: inductance of a conductor, inductance of toroid
Week 11	Magneto-statics: the static magnetic fields, biot-savart law. Magnetic field due to different current distributions. Right-hand rule.
Week 12	Solenoid, applications of solenoid, toroid. Ampere's circuital law, applications of ampere's law.
Week 13	Magnetic forces, work & power: force on a moving charge. Work and power.
Week 14	Magnetic forces, work & power: power. Time varying fields: faraday's law. Time varying fields: induced electromotive force.
Week 15	Applications of ampere's law: infinite line current, infinite sheet of current. infinitely long coaxial transmission line
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Johnk, Carl Theodore Adolf. "Engineering electromagnetic fields and waves." New York (1975).	Yes
Recommended Texts	Rojansky, Vladimir Borisovich, and Vladimir Rojansky. Electromagnetic fields and Waves. Courier Corporation, 1979. (can be downloaded from the Course web page/classroom).	No
Websites	Nefyodov, Eugene I., and Sergey Smolskiy. Electromagnetic fields and waves. Springer, 2019	

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

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Ministry of Higher Education and Scientific Research - Iraq
University of Sumer
College of Engineering
Department of Communications Engineering

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**ELECTRONICS I**			**Module Delivery**	
Module Type	CORE			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**DOC 108**				
ECTS Credits	8				
SWL (hr/sem)	200				
Module Level	UGI- 2		**Semester (s) offered**	3	
Administering Department	BSc – COMM		**College**	College of Engineering	
Module Leader			**e-mail**		
Module Leader's Acad. Title	Assist. Prof.		**Module Leader's Qualification**	Ph.D	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Review Committee Approval	10/9/2023		**Version Number**	1.0	

	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. To develop problem solving skills of electronic circuit through the understanding solid state for each electronic passive and active elements such as RLC, diodes, transistors, and integrated circuits. 2. To understand the Basic Transistor Construction through graphical analysis of transistors Connections and biasing. 3. This course deals with the basic concept of the small-signal analysis of the transistors such as D.C. and A.C. Equivalent Circuits. 4. To understand the Load Line Analysis, Operating Point Transistor Parameters, and Rating Amplification Stabilization. 5. To understand the H-parameters, Hybrid Equivalent Circuit. Z-parameters, R parameters Equivalent Circuit. 6. To perform current-voltage characteristics, charge control description for all types of both the diode and transistors. 7. To Describe and operation of the Multistage Transistor Amplifiers. 8. To develop problem solving skills of electronic circuit through the understanding solid state for each electronic passive and active elements such as operational amplifiers and its types. 9. To understand Basic Differential Amplifier and its applications. 10. This course deals with the basic concept of the Frequency Response of the amplifier as a single stage and multistage Amplifiers. 11. To understand the application of the amplifiers such as integrator, summer. 12. To understand the A/D convertor and D/A convertor circuits. 13. To perform frequency Response of the Amplifiers using BJT and FET transistor. 14 . To Describe and operation of Logarithmic amplifier Analog computer circuit
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	This course is intended for teaching the basic principle of Electronics I for engineering students at the beginning graduate level. The course will have these important outcomes: (1) Recognize the regions of operation, graphical analysis of BJT, regions of operation stability. (2) List the various terms associated with bias configuration of the transistors. (3) Summarize what is meant of the practical circuit of transistor amplifier. (4) Describe the types of multistage amplifiers.

	(5) Discuss the various properties of transistors used as an amplifier (6) Explain the transistor construction and operation such as amplifier and switching. (7) Explain the operation of the linear amplifier through the a.c. load line and DC load line analysis. (8) Recognize the types of the operational amplifiers and frequency response of the amplifiers. (9) List the various terms associated with all active electronics devices. (10) Summarize what is meant by an active electronic device such as operational amplifiers, Differential Amplifier, and Logarithmic amplifier. (11) Describe the types of the Amplifier (integrator, summer, differentiator …). (12) Discuss the various properties of Differential Amplifier and its applications. (13) Explain the analog computer circuits. (14) Explain the operation of the A/D convertor and D/A convertor circuits.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: **Part A -** Transistor Construction, Operation, and Stabilization Transistor Construction. Transistor Symbols. Transistor Operation. Transistor Connections: Common Base CB Connection, Common Emitter CE Connection, Transistor Curves, Cutoff and Saturation. Transistor as a switch. Common Collector Connection. Transistor Load Line Analysis, Operating Point, Transistor Parameters and Rating Amplification. [15 hrs.] Revision problem and tutorial classes [5 hrs.] Quizzes [1 hr.]. **Part B**- D.C and A.C Equivalent Circuits of the transistors Practical Circuit of Transistor Amplifier, D.C. and A.C. Equivalent Circuits. Transistor ac Equivalent Circuits h-parameters, Hybrid Equivalent Circuit. The Linear Amplifier. [15 hrs.] Revision problem and tutorial classes [5 hrs.]. Quizzes [1 hr.] **Part C-** Transistor Bias Configuration and Multistage Transistor Amplifiers. The a.c. Load Line, A.C. Analysis Using re Model for Transistor Common Emitter Fixed Bias Configuration, Common-Emitter Emitter Bias Configuration, Common – Emitter Collector Feedback Configuration, Common – Emitter Voltage Divider Configuration. The Common – Collector Amplifier, the Common – Base Amplifier. Multistage Transistor Amplifiers. [15 hrs.] Revision problem and tutorial classes [5 hrs.]. Quizzes [1 hr.]. **Part D- Frequency Response of the Amplifiers** Frequency Response of single stage and Multistage Amplifiers used as a BJT transistors and FET. Differential Amplifier, and Differential Amplifier Applications. [15 hrs.] Revision problem and tutorial classes [5 hrs.] Quizzes [1 hr.] **Part E-** Operational amplifiers and its types Operational amplifiers and its types, Operation amplifier internal circuits, Inverting amplifiers non-inverting amplifiers, Differentiator and integrator circuits. [15 hrs.] Revision problem and tutorial classes [5 hrs.] Quizzes [1 hr.]

	Part F- A/D and D/A convertor circuit and active filter design A/D convertor and D/A convertor. Logarithmic amplifier. Analog computer circuit. Passive filter design. Active filter design and its applications. [15 hrs.] Revision problem and tutorial classes [5 hrs.] Quizzes [1 hr.]
Learning and Teaching Strategies استراتيجيات التعلم والتعلم	
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 type of simple experiments involving some sampling activities that are interesting to the students

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	124	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	8
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	76	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) 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)	4,8,14	LO #1, 4, 6 and 13
	Assignments	3	10% (10)	2 to 13	LO #1, 2, 3, 4, 5 and 14
	Projects.	3	10% (10)	Continuous	All
	Report/ Lab	5 - 1	10% (10)	5 to 14	LO #1 to #8
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #8
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Transistor Construction. Transistor Symbols. Transistor Operation. Transistor Connections: Common Base CB Connection, Common Emitter CE Connection.
Week 2	Transistor Curves, Cutoff and Saturation. Transistor as a switch. Common Collector Connection. Transistor Load Line Analysis, Operating Point.
Week 3	Transistor Parameters and Rating Amplification. Practical Circuit of Transistor Amplifier.
Week 4	D.C. and A.C. Equivalent Circuits. Transistor ac Equivalent Circuits. Transistor ac Equivalent Circuits h-parameters, Hybrid Equivalent Circuit. Transistor ac Equivalent Circuits.
Week 5	The Linear Amplifier. The a.c. Load Line, A.C. Analysis Using re Model for Transistor Common Emitter Fixed Bias Configuration. The a.c. Load Line, A.C. Analysis Using re Model for Transistor Common – Emitter.
Week 6	Emitter – Bias Configuration, Common – Emitter Collector Feedback Configuration. The a.c. Load Line, A.C. Analysis Using re Model for Transistor Common – Emitter Voltage Divider Configuration.
Week 7	The Common – Collector Amplifier, the Common – Base Amplifier. Multistage Transistor Amplifiers

Week 8	**Mid-term Exam**.
Week 9	Frequency Response of the single stage amplifier using BJT transistors. Frequency Response of the single stage amplifier using FET transistors.
Week 10	Frequency Response of Multistage Amplifiers using BJT transistors. Frequency Response of Multistage Amplifiers using FET transistors.
Week 11	Basics of Operational amplifiers. Operational amplifiers and its types. Operational amplifiers and its applications.
Week 12	Characteristics of the Operational amplifiers. Basics of the Differential Amplifier. Differential Amplifier Applications.
Week 13	A/D convertor circuit and its types and applications. D/A convertor circuit and its types and applications. Passive filter and active filter design.
Week 14	Passive filter and active filter design.
Week 15	Logarithmic amplifiers. Analog computer circuits.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to lab. components
Week 2	Lab 2: Study of I-V characteristics of normal diode & Zener diode
Week 3	Lab 3: Diode application I: Rectifier filters
Week 4	Lab 4: Diode application II: Clipping circuits
Week 5	Lab 5: Diode application III: clamping circuits
Week 6	Lab 6: Transistor Connections: Common Base CB Connection, Common Emitter CE Connection
Week 7	Lab 7: Transistor Curves, Cutoff and Saturation. Transistor as a switch. Common Collector Connection
Week 8	Lab 8: D.C. and A.C. Equivalent Circuits. Transistor ac Equivalent Circuits. The a.c. Load Line, A.C. Analysis Using re Model for Transistor Common – Emitter Voltage Divider Configuration
Week 9	Lab 9: The Common – Collector Amplifier, the Common – Base Amplifier.

Week 10	Lab 10: Frequency Response of the single stage amplifier using BJT transistors
Week 11	Lab 11: Basics of Operational amplifiers. Operational amplifiers and its types. Characteristics of the Operational amplifiers.
Week 12	Lab 12: Basics of the Differential Amplifier. Differential Amplifier Applications
Week 13	Lab 13: A/D convertor circuit and its types and applications. D/A convertor circuit and its types and applications.
Week 14	Lab 14: Passive filter and active filter design. Logarithmic amplifiers. Analog computer circuits.
Week 15	**Final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Floyd, Thomas L. Electronics Fundamentals: Circuits, Devices and Applications (Floyd Electronics Fundamentals Series). Prentice-Hall, Inc., 2006.	Yes
Recommended Texts	Donald A. Neamen. (2003). "SEMICONDUCTOR PHYSICS AND DEVICES". 3rd Edition, ISBN 0-07-232107-05, USA. (can be downloaded from the Course web page/classroom).	No
Websites	Nashelsky, L., & Boylestad, R. L. (2021). Electronic Devices and Circuit Theory Eleventh Edition	

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

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Ministry of Higher Education and Scientific Research - Iraq
University of Sumer
College of Engineering
Department of Communications Engineering

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**PROBABILITY AND RANDOM PROCESSES**			**Module Delivery**	
Module Type	BASIC			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**DOC 112**				
ECTS Credits	4				
SWL (hr/sem)	100				
Module Level	UGI- 2		**Semester (s) offered**	3	
Administering Department	BSc – COMM		**College**	College of Engineering	
Module Leader			**e-mail**		
Module Leader's Acad. Title	Assist. Prof.		**Module Leader's Qualification**	Ph.D	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Review Committee Approval	10/9/2023		**Version Number**	1.0	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1) To teach you the fundamentals of probability theory (probabilistic models, discrete and continuous random variables, multiple random variables, etc). 2) To develop your ability to apply probability theory to real life problems, especially in the field of computer engineering. 3) To teach you some advanced topics (transforms, sums of random variables, random processes, etc). 4) To introduce you to simulation models. 5) Knowledge of basic concept of set theory, probability, and random variables with main distribution functions. 6) Distinguish between single and multiple random variables and to deal with their density and distribution functions 7) Deal with the statistical properties of the random processes or signals. 8) Develop a strong foundation in probability theory and stochastic processes. Understand the role of random variables and their distributions in communication systems. 9) Apply probabilistic models to solve practical problems in communication engineering. Analyze and interpret the performance of communication systems using probabilistic techniques. 10) Equip students with the skills necessary to model and simulate random processes in communication systems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	This course is intended for teaching Probability and Random Operations for engineering students at the beginning graduate level. The course will have these important outcomes: **By the end of this module, students will be able to:** 1) Define and Explain key concepts of probability theory, including random variables, probability distributions, expectation, and variance. 2) Apply probabilistic models to analyze the behavior of communication systems under uncertainty. 3) Interpret the performance metrics of communication systems using probability and stochastic process theories. 4) Model random processes and noise in communication systems and assess their impact on system performance.

	4) Simulate random processes and communication systems using appropriate software tools. 5) Evaluate the reliability and efficiency of communication systems using probabilistic methods.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: **Part A:** Introduction to Probability Theory: Basic concepts: sample space, events, and probability axioms. Conditional probability and independence. Bayes' theorem and its applications. Random Variables and Distributions: Definition and types of random variables: discrete and continuous. Probability mass function (PMF) and probability density function (PDF). Cumulative distribution function (CDF). Expectation and Moments: Expected value, variance, and higher-order moments. Moment generating functions. Applications in communication systems. Multiple Random Variables: Joint, marginal, and conditional distributions. Covariance and correlation. Central limit theorem and its implications. Stochastic Processes: Definition and classification of stochastic processes. Stationarity and ergodicity. Markov processes and their properties. [15 hrs.] Revision problem and tutorial classes [5 hrs.] Quizzes [1 hr.] **Part B:** Noise Models in Communication Systems: Gaussian processes and white noise. Signal-to-noise ratio (SNR) and its importance. Modeling and simulation of noise in communication systems. Random Processes in Communication Engineering: Random processes in time and frequency domains. Spectral density and its estimation. Applications in modulation and demodulation techniques. Performance Analysis of Communication Systems: Error probability and bit error rate (BER) analysis. Channel capacity and information theory basics. Impact of fading and multipath on communication systems. Simulation Techniques: Monte Carlo simulations. Use of software tools such as MATLAB or Python for simulating random processes and communication systems. Case studies and practical examples. Introduction to queueing theory and its applications. Detection and estimation theory. Applications of probability theory in modern communication technologies (e.g., wireless communications, networks). Revision problem and tutorial classes [5 hrs.] Quizzes [1 hr.] **Part C-** Elementary concepts in probability: Introduction to Probability and Counting, Joint and Conditional Probability, Bayes' theorem Statistical Independence; Bernoulli Trials. Discrete and continues random variables: Cumulative distribution, probability mass, and probability density functions; families of discrete and continuous random variables, expectation; moments, functions of a random variables. Random vectors and variables: Joint, marginal and conditional distributions and densities; correlation, covariance and higher moments; independent, uncorrelated and orthogonal random variables; sum of random variables (and other functions); jointly Gaussian random variables; application to estimation. Random and Stationary Processes. Renewal processes. Queues. The Wiener process. Existence of processes. Stationary processes.

	Linear prediction. Auto covariances and spectra. Stochastic integration and the spectral representation. The ergodic theorem. Gaussian processes [15 hrs.] Revision problem and tutorial classes [5 hrs.] Quizzes [1 hr.]

Learning and Teaching Strategies
استراتيجيات التعلم والتعلم

Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, The module "Probability and Random Operations in Communication Engineering" aims to provide students with a comprehensive understanding of probability theory and its application in the field of communication engineering. The course will cover fundamental concepts and methods used in analyzing and designing communication systems that operate in the presence of uncertainty and noise.

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

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	37	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.46
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Probability: (Introduction, Set definitions and operations), Joint and conditional Probability, Bayes' Theorem, Independent events). Introduction to Statistics and role of probability. Sampling Procedures and Collection of data. Data Analysis. Permutation and combination
Week 2	Discreet and Continues Sample Space. Probability Theory and Experiments, Permutation and Combination. The Random Variable :(The Random variable concept, Discrete and continuous random variables).
Week 3	Probability distribution; Raw Data, Frequency Distribution Histogram, Frequency Polygons, Relative Frequency Distribution. Cumulative Frequency Distribution, O gives , Frequency Curve. The mean, median, mode, geometric mean, harmonic mean, RMS, mean square value.
Week 4	Measures of dispersion; the mean deviation, the standard deviation and variance. Relations between frequency distribution and mean, media, medium.
Week 5	Elementary prob. Theory, axioms of probability joint prob. Random Experiment independent and mutually exclusive events. Conditional probability. The binary symmetric channel example. Total probability, repeated (Bernoulli) trials.

Week 6	Random variables. Discrete and Continuous Random variable. Prob. density function (pdf) and cumulative distribution function (cdf). Mixed random variables, Probability density function. Discrete Distributions & Continuous Distributions.
Week 7	The expectations of discrete and continuous random variables. Some important distributions; the uniform distribution, the binomial and Poisson distributions.
Week 8	**Mid-term Exam**.
Week 9	Normal (Gaussian) distribution; Q Function and its applications. Statistics of Random Variables: (Expectation, Moments, Transformations of a random variable). Multiple Random Variables & Operations on Multiple Random Variables:
Week 10	Random Processes:(Deterministic and nondeterministic processes Correlation functions), Operation, Characteristics,
Week 11	Functions of random variables and their expectations. Summation of random variables, Transformation of random variables
Week 12	Spectral Characteristics of Random Processes: (Power spectral density)
Week 13	Autocorrelation function, (White and colored noise), Joint random variables; joint pdf, joint cdf, joint moments and expectations.
Week 14	(Vector random variables, Joint density and distribution functions, Statistical independence, Central limit theorem, multiple random variables)
Week 15	Mixed random variables, Probability density function. Discrete Distributions & Continuous Distributions.
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Probability & Statistics for Engineers and Scientists Author : Walpole & Myers Edition & Year public: 8th , 2007 , Pearson Prentice Hall H. Pishro-Nik, "Introduction to probability, statistics, and random processes". Leon-Garcia, A. (2008). Probability, Statistics, and Random Processes For Electrical Engineering. Pearson/Prentice Hall.	Yes

	Papoulis, A., & Pillai, S. U. (2002). Probability, Random Variables, and Stochastic Processes. McGraw-Hill.	
Recommended Texts	"Probability, Random Variables, and Random Signal Principles", Peyton Z. Peebles, 4th edition, McGraw-Hill, Inc, 2001. Stark, H., & Woods, J. W. (2012). Probability and Random Processes with Applications to Signal Processing. Pearson. Proakis, J. G., & Salehi, M. (2007). Digital Communications. McGraw-Hill.	No
Websites	https://www.probabilitycourse.com, Kappa Research LLC, 2014	

Grading Scheme
مخطط الدرجات

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

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Ministry of Higher Education and Scientific Research - Iraq
University of Sumer
College of Engineering
Department of Communications Engineering

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**SIGNALS AND SYSTEMS**	**Module Delivery**	
Module Type	CORE	☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**DOC 113**		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	UGI- 2	**Semester (s) offered**	3
Administering Department	BSc – COMM	**College**	College of Engineering
Module Leader		**e-mail**	
Module Leader's Acad. Title	Assist. Prof.	**Module Leader's Qualification**	Ph.D
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Review Committee Approval	10/9/2023	**Version Number**	1.0

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1) The aim of this module is to provide students with a solid foundation in the principles and techniques of signals and systems, which are fundamental to the field of communication engineering. 2) Students will learn to analyze and process signals, understand system behavior, and apply these concepts to real-world communication systems. 3) This course aims to introduce the basic concepts and techniques used in signal processing domain which plays an important role in a wide variety of engineering systems. 4) The study of Linear Time-Invariant systems (LTI) in the continuous-time domain as well as in the discrete-time domain. 5) The students understand the transition between the continuous-time domain and the discrete-time domain through the sampling theory. 6) The students use the basic tools used in signal processing such as Fourier Transform, Laplace Transform, and Z-Transform. Although these tools have mathematical nature, they use MATLAB in practice Lab for simulation.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	This course is intended for Signals and Systems in Communication Engineering for engineering students at the beginning graduate level. The course will have these important outcomes: **By the end of this module, students will be able to:** 1) Understand Basic Concepts: Define and classify different types of signals (continuous and discrete) and systems (linear, time-invariant, etc.), including their properties and representations. 2) Analyze Time-Domain Systems: Perform convolution and analyze systems using impulse response and differential/difference equations. 3) Frequency-Domain Analysis: Understand and apply Fourier series, Fourier transform, Laplace transform, and Z-transform to analyze signals and systems. 4) Filter Design and Applications: Design and analyze different types of filters (low-pass, high-pass, band-pass, and band-stop) and understand their applications in communication systems. 5) Sampling and Reconstruction: Understand the sampling theorem, aliasing, and methods for reconstructing signals from samples. 6) Modulation and Demodulation: Comprehend the principles of various modulation schemes and their role in communication systems. 7) Random Processes: Analyze random processes and understand their significance in communication systems.

	8) Develop students' proficiency in using MATLAB for numerical computations, data analysis, and visualization. Enable students to apply MATLAB skills to solve real-world problems in various disciplines.
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following:** **Part A:** Understand Basic Concepts: Define and classify different types of signals and systems, including their properties and representations. Analyze Time-Domain Systems: Perform convolution and analyze systems using impulse response and exponential response. Understand the representation of signals and systems and their classifications. Describe the linear time-invariant systems and their properties and the input-output relation. [15 hrs.] Revision problem and tutorial classes [5 hrs.] Quizzes [1 hr.] **Part B:** Apply Fourier Transform for continuous signals and its properties. Apply Laplace transform and its use in the study of continuous LTI systems. Understand the concepts of Sampling and related theorem, and continuous signal recovery from sampled signal. Describe discrete-time signals and systems and the input-output relation. Identify Fourier Transform for discrete and its relation to continuous Fourier Transform. Apply Z-Transform for discrete time LTI systems. Understand the Discrete Fourier Transform and its relation to Fourier Transform of discrete signals. Describe some practical filters using Fourier and Laplace Transforms. [15 hrs.] Revision problem and tutorial classes [5 hrs.] Quizzes [1 hr.] **Part C:** Demonstrate a solid understanding of the MATLAB environment and its basic Functionalities. Perform simple calculations, create arrays and matrices, and apply elementwise operations. Generate 2D and 3D plots, including multiple plots in a single figure and plots with error bars. Apply sorting algorithms and effectively work with files, strings, and cell arrays in MATLAB. Design and implement functions, including handling multiple return values and variable arguments. Apply model-based design principles using Simulink to develop and validate systems. [15 hrs.] Revision problem and tutorial classes [5 hrs.] Quizzes [1 hr.]

Learning and Teaching Strategies استراتيجيات التعلم والتعلم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, This module covers the fundamentals of signal and system analysis, focusing on representations of discrete-time and continuous-time signals (singularity functions, complex exponentials and geometrics, Fourier representations, Laplace and Z transforms, sampling) and representations of linear, time-invariant systems (difference and differential equations, block diagrams, system functions, poles and zeros, convolution, impulse and step responses, frequency responses). Applications are drawn broadly from engineering and physics, including feedback and control, communications, and signal processing. Also to make them familiar with different types of transforms of systems. Also to make them have an experience with solving different problems and examples. he learning and teaching strategies employed in this course are designed to facilitate effective comprehension and practical application of MATLAB concepts. The course adopts a blended approach, combining lectures, demonstrations, and hands on exercises to engage participants actively. Lectures provide theoretical knowledge and explanations, while demonstrations illustrate MATLAB functionalities and techniques.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	36	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Signals and Systems. Classification of signals: Continuous-time, discrete-time, periodic, aperiodic, energy, and power signals.
Week 2	Basic operations on signals: Scaling, shifting, and inversion. Classification of systems: Linear vs. nonlinear, time-invariant vs. time-varying, causal vs. non-causal, stable vs. unstable.
Week 3	Time-Domain Analysis of Systems. Impulse response and convolution for continuous and discrete systems.
Week 4	Differential and difference equations. Block diagram representation of systems.
Week 5	Fourier Series and Fourier Transform. Representation of periodic signals using Fourier series. Continuous-time Fourier transforms (CTFT) and its properties.
Week 6	Discrete-time Fourier transform (DTFT) and its properties. Applications of Fourier transform in communication systems.
Week 7	Laplace Transform and Z-Transform. Laplace transform: Definition, properties, inverse Laplace transform, and applications. Z-transform: Definition, properties, inverse Z-transform, and applications.

Week 8	**Mid-term Exam**.
Week 9	Analysis of systems using Laplace and Z-transform. Frequency-Domain Analysis. Frequency response of systems. Bode plots and Nyquist plots. Introduction to filter design: Low-pass, high-pass, band-pass, and band-stop filters.
Week 10	Filter specifications and design techniques. Sampling and Reconstruction. Sampling theorem and Nyquist rate. Aliasing and anti-aliasing filters.
Week 11	Reconstruction of continuous-time signals from discrete-time samples. Practical aspects of sampling and reconstruction.
Week 12	Modulation and Demodulation Techniques. Introduction to amplitude modulation (AM), frequency modulation (FM), and phase modulation (PM). Demodulation techniques and their applications in communication systems.
Week 13	Random Processes in Communication Systems. Introduction to random processes. Characterization of random processes: Mean, autocorrelation, and power spectral density.
Week 14	Applications of random processes in noise analysis and signal processing.
Week 15	Introduction to advanced topics such as digital signal processing (DSP), adaptive filters, and modern communication systems.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to MATLAB. Arrays and Matrices. M-files and Loop Statements
Week 2	Lab 2: 2D and 3D Plots. Sorting. Working with Files.
Week 3	Lab 3: Functions. Modeling and Simulation with Simulink.
Week 4	Lab 4: Introduction to Signals and Systems.
Week 5	Lab 5: Classification of signals: Continuous-time, discrete-time, periodic, aperiodic, energy, and power signals.
Week 6	Lab 6: Basic operations on signals: Scaling, shifting, and inversion.
Week 7	Lab 7: Classification of systems: Linear vs. nonlinear, time-invariant vs. time-varying,
Week 8	Lab 8: Time-Domain Analysis of Systems. Impulse response and convolution for continuous and

	discrete systems.
Week 9	Lab 9: Fourier Series and Fourier Transform. Discrete-time Fourier transform (DTFT) and its properties.
Week 10	Lab 10: Laplace Transform and Z-Transform. Laplace transform.
Week 11	Lab 11: Frequency-Domain Analysis. Frequency response of systems.
Week 12	Lab 12: Introduction to filter design: Low-pass, high-pass, band-pass, and band-stop filters.
Week 13	Lab 13: Sampling and Reconstruction. Sampling theorem and Nyquist rate. Aliasing and anti-aliasing filters.
Week 14	Lab 14: Random Processes in Communication Systems. Introduction to random processes. Characterization of random processes: Mean, autocorrelation, and power spectral density.
Week 15	**Final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Signals and Systems by Alan V. Oppenheim, Alan S. Willsky, and S. Hamid Nawab. Signals and Systems. Simon S. Haykin Matlab for Beginners – A gentle approach By Peter I. Kattan.	Yes
Recommended Texts	Digital Signal Processing by John G. Proakis and Dimitris K. Manolakis. Attaway, Dorothy C. MATLAB: A practical introduction to programming and problem solving. Butterworth Heinemann, 2018	Yes
Websites	https://matlabacademy.mathworks.com/details/matlab-fundamentals/mlbe	

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

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**ARABIC LANGUAGE**			**Module Delivery**	
Module Type	BASIC			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UOS 102**				
ECTS Credits	2				
SWL (hr/sem)	50				
Module Level	UGI- 2		**Semester (s) offered**	3	
Administering Department	BSc – COMM		**College**	College of Engineering	
Module Leader			**e-mail**		
Module Leader's Acad. Title	Assist. Prof.		**Module Leader's Qualification**	Ph.D	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Review Committee Approval	10/9/2023		**Version Number**	1.0	

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

Module Objectives أهداف المادة الدراسية	**. تدريس اللغة العربية يهدف إلى تحقيق الأهداف التالية:** 1- تعليم اللغة العربية كلغة أساسية للتواصل والتفاعل بين أفراد المجتمع. 2- تطوير مهارات الاستماع والتحدث والقراءة والكتابة في اللغة العربية. 3- تنمية قدرات التفكير والتحليل والابتكار عن طريق دراسة الأدب والشعر والنثر. 4- توسيع المعرفة بثقافات المجتمعات الناطقة باللغة العربية، وزيادة فهم الموروثات التاريخية والثقافية لهذه المجتمعات. 5- تطوير مهارات التواصل بين أفراد المجتمعات المختلفة من خلال تحسين فهم لغات أخرى، مثل التحدث بالإنجليزية. 6- إبراز دور اللغة العربية في نشر قيم التسامح والانفتاح على ثقافات جديدة، مما يؤدي إلى تعزيز العلاقات الاجتماعية والتعاون بين الأفراد. 7 - الهدف من هذا الفصل الدراس هو تعريف الطلاب بالموضوعات الرئيسية لمادة اللغة العربية. سيغط الفصل الدراس المتطلبات الأساسية لتعاريف اللغة العربية، قواعد نحوية للأزمنة، تنمية القدرات النحوية لصيغ المفرد والجمع والممنوع من الجرد، بالإضافة الى البلاغة والتطبيق. وف نهاية الفصل، سيكون لدى الطلاب معرفة واسعة بالمفاهيم وسيتم تحقيق ذلك من خلال المحاضرات النظرية والدروس والواجبات البتية والتقارير ذات الصلة بالمواضيع المطروقة
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	١. تعريف الطالب بألفاظ اللغة العربية الصحيحة وتراكيبها وأساليبها السليمة بطريقة مشوقة وجذابة. ٢. أن يستغل الطالب وقت فراغه بالقراءة والاطلاع والرجوع إلى المكتبة. ٣. تمكي الطالب من القراءة الصحيحة، وأن يكتسب القدرة عل استعمال اللغة استعماً لا صحيحً ا ف الا ّتصال مع الآخرين. ٤. تنمية الذوق الأدرن لدى الطالب ح رت يدرك النواح الجمالية ف أساليب الكلام ومعانيه وصورة. ٥. تنمية قدرة ومهارة الطالب الإملائية والخطية بحيث يستطيع الكتابة الصحيحة للكتب والمخاطبات الرسمية. ٦. تمكي الطالب عل كتابة التقارير العملية والنظرية والعروض التقديمية بلغة عربية واضحة وصحيحة. ٧. القدرة عل اكتساب وتطبيق المعرفة الجديدة واستخدام اس رباتيجيات تعليم مناسبة. ٨. القدرة عل المشاركة والعمل بمهنية واخلاقية للعمل ف فرق متعددة التخصصات.
Indicative Contents المحتويات الإرشادية	الجزء الأول: مقدمة عن اللغة العربية (٤ساعات) ، مقدمة عن اللغة العربية ، تعريف اللغة العربية ومميزتها. الجزء الثاني : قواعد نحوية وتشمل: (٦ساعات) ، الفعل الماضي ، الفعل المضارع ، الافعال الخمسة. الجزء الثالث: تنمية القواعد النحوية وتشمل: (٦ساعات) ، المثنى والجمع (المذكر السالم والمؤنث السالم)، التعجب، الممنوع من الصرف ، المجرد والمزي.

	: الجزء الرابع: البلاغة والتطبيق (٨ساعات) ، الاستعارة ، الجناس ، الطباق ، التشبيه. الجزء الخامس: قواعد املائية: (٣ساعات) ، سوف يتم تعريف الطالب عن الأخطاء الاملائية الشائعة وطرق تجنبها بالإضافة الى كتابة المخاطبات الادارية. الجزء السادس: قواعد العد والمعدود: (٣ساعات) ، تعريف الطالب بقواعد واحكام العد والمعدود ف اللغة العربية.

Learning and Teaching Strategies

استراتيجيات التعلم والتعلم

Strategies	توسيع مدارك الطلاب لمادة اللغة العربية، والإلمام بالمفاهيم الأساسية للغية العربية والبلاغة، والقدرة عل التميب بي الأزمنة. يحتوي هذه الفصل عل العديد من المكونات التي تشمل دراسةالمحاضرات و البرامج التعليمية والمناقشة والواجبات المنزلية ومنصات التعلم الالكتروني . سيتم تدريس الدورة باللغة العربية، ويجب تقديم جميع المهام الإلزامية في غضون المواعيد النهائية للقبول في الامتحان . استخدام المواد التعليمية المناسبة: يجب على المعلم اختيار المواد التعليمية التي تناسب مستوى الطلاب وتحقق أهداف التعلم. تشجيع الطلاب على المشاركة: يجب على المعلم تشجيع الطلاب على المشاركة في الحصص والتحدث باللغة العربية. استخدام التكنولوجيا: يمكن استخدام التكنولوجيا في تدريس اللغة العربية، مثل استخدام برامج التعلم عبر الإنترنت والأفلام والأغاني. إظهار أهمية الثقافة: يجب على المعلم إظهار أهمية الثقافة العربية وتعريف الطلاب بالتقاليد والعادات العربية. استخدام المناهج المناسبة: يجب على المدارس اختيار المناهج التي تناسب مستوى الطلاب وتحقق أهداف التعلم في تدريس اللغة العربية

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.13
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**50**		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	تعريف الطلاب بأهمية اللغة العربية وتعريف الطلاب بالفروق بين علم النحو والصرف والصوت.
Week 2	تعريف الطلاب بالجملة الفعلية والجملة الاسميةبيان عناصر كل جملة بدأ بالفعل من حيث اللزوم والتعدي.
Week 3	الفعل من حيث الزمن ماضي ومضارع وأمر، حالات بناء الفعل الماضي.
Week 4	حالات الفعل المضارع من حيث :رفع ونصب الفعل المضارع وعلاماته.
Week 5	حالات الفعل المضارع من حيث : جزم الفعل المضارع وعلاماته
Week 6	حالات الفعل المضارع من حيث : بناء الفعل المضارع وعلاماته
Week 7	حالات بناء فعل الأمر، الفاعل وأنواعه وعلاماته ، المفعول به وانواعه وعلاماته،
Week 8	**Mid-term Exam.**
Week 9	المبتدأ وانواعه، الخبر وانواعه وتقديم الخبر على المبتدأ، الأسماء الخمسة ، العدد
Week 10	قواعد نحوية: الفعل الماضي ، قواعد نحوية: الفعل المضارع، قواعد نحوية: الأفعال الخمسة،
Week 11	تنمية القواعد النحوية: المثنى والجمع (المذكر السالم والمؤنث السالم) ، تنمية القواعد النحوية: التعجب، الممنوع من

	الصرف والمجرد والمزيد،
Week 12	البلاغة والتطبيق: الاستعارة ، البلاغة والتطبيق: الجناس ، البلاغة والتطبيق: الطباق، البلاغة والتطبيق: التشبيه
Week 13	**الأخطاء الاملائية ، المخاطبات الإدارية**
Week 14	قواعد واحكام العد والمعدود
Week 15	قواعد واحكام العد والمعدود
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	جامع الدروس العربية / مصطف الغلاييت .	Yes
Recommended Texts	النحوالوافي / عباس حسن	Yes
Websites	https://uomosul.edu.iq/en/engineering/environmental-engineering-dept/	

Grading Scheme
مخطط الدرجات

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

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

ACADEMIC DESCRIPTION CURRICULUM FOR THE FIRST STAGE (4th Semester)

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**ELECTRONICS II**			**Module Delivery**	
Module Type	CORE			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**DOC 109**				
ECTS Credits	8				
SWL (hr/sem)	200				
Module Level	UGI- 2		**Semester (s) offered**	4	
Administering Department	BSc – COMM		**College**	College of Engineering	
Module Leader			**e-mail**		
Module Leader's Acad. Title	Assist. Prof.		**Module Leader's Qualification**	Ph.D	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Review Committee Approval	10/9/2023		**Version Number**	1.0	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. To develop problem solving skills of electronic circuit through the understanding solid state for each electronic passive and active elements such as amplifiers, oscillators, and integrated circuits. 2. To understand Basic power amplifiers through graphical analysis and Frequency Response. 3. This course deals with the basic concept of Power Amplifier and its Classes. 4. To understand the Feedback Amplifier circuits. 5. To understand the RF amplifiers circuits. 6. To Describe the oscillators circuits types. 7. To Describe and operation of several integrated circuit such as timer IC555, VCO IC566, and PLL IC655. 8. To understand the basic construction and characteristics of FETs, Depletion Type MOSFET, and Enhancement-Type MOSFET, VMOS, CMOS. 9. To understand the operation of FET- Biasing for JFETs, Depletion-Type MOSFET, and Enhancement-Type MOSFET configurations. 10. To design D.C. biasing FETs networks. 11. To describe the scientific basis for FET, D-MOSFET, E-MOSFET transistor models. Analyze the negative feedback types with their circuits such as voltage-series, voltage-shunt, current series and current-shunt. 12. Calculate all negative feedback parameters such as open and feedback gains, input and output impendences. 13. Describe the basic operational amplifier, modes, and its characteristics. 14. Analyze the overall op-amps circuits and applications. 15. Understand the integrated circuit of the logic family.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	This course is intended for teaching the basic principle of Electronics II for engineering students at the beginning graduate level. The course will have these important outcomes: 1. Recognize the classes of the Power Amplifiers and Frequency Response of Multistage Amplifiers. 2. List the various terms associated with all active electronics devices. 3. Summarize what is meant by an active electronic device such as operational amplifiers, IC555, VCO, and PLL integrated circuit. 4. Describe the types of Oscillator (Radio Frequency) and filters.

	5. Discuss the various properties of Differential Amplifier and its applications. 6. Explain the Power Supply Circuits and voltage regulators. 7. Explain the operation of timer integrated circuits. 8. Describe and analyses the gain-versus-frequency responses of basic types of filters such as LPF, HPF, BPF and BSF (BRF). 9. Identify the operating principles of an oscillator. 10. Analyze the operation of all types of oscillators like RC feedback, LC feedback, relaxation oscillators and special oscillator circuits. 11. Identify the timing circuits based on the Astable, Monostable and Bistable timing modes of operations. 12. Design the suitable circuit of power amplifiers such as class A, class B, class AB and class C power amplifiers. 13. Gain knowledge of the operation of some Integrated Circuit Technologies including the TTL, NMOS, PMOS, and CMOS technologies .
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: **Part A –** Frequency Response and Active Filters. Explore the frequency response characteristics of electronic active filters. Focusing on the gain-versus-frequency responses of basic filter types such as low-pass filters (LPF), high-pass filters (HPF), band-pass filters (BPF), and band-stop filters (BSF or BRF). Butterworth, Chebyshev, and Bessel filter responses. The relevant parameters such as gain, cut-off frequency, bandwidth, quality and damping factors. [20 hrs] **Part B-** Oscillators and Timing Circuits. Operating principles and conditions of positive feedback oscillators. Oscillator's types including RC-oscillators (Phase Shift, Wien Bridge, and Twin-T Oscillators), LC oscillators (Colpitts, Hartley and Clapp oscillators) and relaxation oscillators (Astable multivibrator, square and triangle wave generators). Examine timing circuits based on various modes of operation, including Astable, Monostable, and Bistable modes. [20] **Part C-** Power Amplifiers and Integrated Circuit Technologies Power amplifier characteristics, operating points, DC & AC-load lines, dc-input power, ac-output power, and efficiency. Class A power amplifier simple and Darlington expanded types. Class B power amplifier with push-Pull, and complementary symmetry. Class AB power amplifier with handling cross over distortion, and Class C power amplifier. Delve and Gain insights into different integrated circuit technologies, such as TTL, NMOS, PMOS, and CMOS. [20 hrs] **Part D-** Power Amplifier Class (A), Power Amplifier Class (B, AB), Power Amplifier Class (C). Power Amplifier Class (D). [15 hrs.] Revision problem and tutorial classes [5 hrs.] Quizzes [1 hr.]. Amplifiers Circuit and timer integrated circuit Negative and Positive Amplifier

	Circuit. Oscillator (Radio Frequency) and its types. Timer integrated circuit design IC555. [15 hrs.] Revision problem and tutorial classes [5 hrs.]Quizzes [1 hr.] The voltage controlled oscillators VCO IC566. The phase locked loop PLL IC655. Frequency Synthesizer. Power Supply Circuit. Types of Voltage Regulator Power Supply Circuit. [15 hrs.] Revision problem and tutorial classes [5 hrs.] Quizzes [1 hr.].
Learning and Teaching Strategies استراتيجيات التعلم والتعلم	
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 type of simple experiments involving some sampling activities that are interesting to the students. The main strategy that will be adopted in delivering this module is: Interactive Discussions: Engage students in interactive discussions to encourage active learning. Encourage students to ask questions, participate in class discussions, and share their perspectives and experiences related to the topics being taught. Problem-Solving Sessions: Allocate dedicated time for hands-on practical and problem-solving sessions where students can apply the concepts learned to solve exercises. Assessment and Feedback:

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	124	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	8
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	76	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) 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)	4,8,14	LO #1, 4, 6 and 13
	Assignments	3	10% (10)	2 to 13	LO #1, 2, 3, 4, 5 and 13
	Projects.	3	10% (10)	Continuous	All
	Report/ Lab	5 - 1	10% (10)	5 to 14	LO #1 to #8
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #8
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Basics of the power amplifiers and its classes with applications. Power Amplifier Class (A). Power Amplifier Class (B).
Week 2	Power Amplifier Class (AB). Power Amplifier Class (C, D). Negative Amplifier Circuit. Positive Amplifier Circuit.
Week 3	Active filter response characteristics, types. Active low and high-pass filters. Active band pass and band stop (reject) filters. Special types of active filter circuits.
Week 4	Oscillator (Radio Frequency) circuit and its types 1. Oscillator (Radio Frequency) circuit and its types 2. Special types of active filter circuits.
Week 5	Feedback oscillator conditions and oscillators with RC feedback circuits
Week 6	Oscillators with LC feedback circuits. Timer integrated circuits IC555. The voltage controlled oscillators VCO IC566. The phase locked loop PLL IC655.
Week 7	Multivibrator circuits (Astable types). Multivibrator circuits (Monostable and Bistable types).
Week 8	**Mid-term Exam**.
Week 9	Frequency Synthesizer. Power Supply Circuit. Types of Voltage Regulator

Week 10	Inverting and non inverting closed loop amplifier. Integration and differentiation active circuits. Summation and subtraction op-amp circuits.
Week 11	Feedback effect on amplifier gain, bandwidth, and on input-output resistances operational amplifier construction and operation , ideal and practical op-amp equivalent circuit
Week 12	Thyristor equivalent circuit and characteristics. FET and MOS transistors operation
Week 13	Integrated Circuit Technologies (TTL).
Week 14	Integrated Circuit Technologies (NMOS and PMOS)
Week 15	Integrated Circuit Technologies (CMOS).
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Power Amplifier Class (A). Power Amplifier Class (B).
Week 2	Lab 2: Negative Amplifier Circuit. Positive Amplifier Circuit.
Week 3	Lab 3: Active low and high-pass filters.
Week 4	Lab 4: Active band pass and band stop (reject) filters. Special types of active filter circuits.
Week 5	Lab 5: Oscillator (Radio Frequency) circuit and its types 2,
Week 6	Lab 6: Feedback oscillator conditions and oscillators with RC feedback circuits.
Week 7	Lab 7: Timer integrated circuits IC555. The voltage controlled oscillators VCO IC566.
Week 8	Lab 8: Multivibrator circuits (Astable types). Multivibrator circuits (Monostable and Bistable types).
Week 9	Lab 9: Frequency Synthesizer. Power Supply Circuit. Types of Voltage Regulator
Week 10	Lab 10: Inverting and non inverting closed loop amplifier.
Week 11	Lab 11: Integration and differentiation active circuits..
Week 12	Lab 12: Thyristor equivalent circuit and characteristics.
Week 13	Lab 13: FET and MOS transistors operation
Week 14	Lab 14: Integrated Circuit Technologies (TTL). Integrated Circuit Technologies (CMOS).
Week 15	**Final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Floyd, Thomas L. Electronics Fundamentals: Circuits, Devices and Applications (Floyd Electronics Fundamentals Series). Prentice-Hall, Inc., 2006. ROBERT BOYLESTAD and LOUIS NASHELSKY. "Electronic Devices and Circuit Theory". 7th ed. Prentice Hal	Yes
Recommended Texts	Donald A. Neamen. (2003). "SEMICONDUCTOR PHYSICS AND DEVICES". 3rd Edition, ISBN 0-07-232107-05, USA. (can be downloaded from the Course web page/classroom).	Yes
Websites		

Grading Scheme
مخطط الدرجات

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

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Ministry of Higher Education and Scientific Research - Iraq
University of Sumer
College of Engineering
Department of Communications Engineering

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**ELECTROMAGNETIC FIELDS II**			**Module Delivery**	
Module Type	CORE			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**DOC 111**				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	UGI- 2		**Semester (s) offered**	4	
Administering Department	BSc – COMM		**College**	College of Engineering	
Module Leader			**e-mail**		
Module Leader's Acad. Title	Assist. Prof.		**Module Leader's Qualification**	Ph.D	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Review Committee Approval	10/9/2023		**Version Number**	1.0	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Electromagnetic principles are fundamental to the study of electrical engineering and physics. 2. To understand Electromagnetic theory is also indispensable to the understanding, analysis and design of various electrical, electromechanical and electronic systems. 3. The primary aim of this module is to deepen the understanding of electromagnetic field theory and its applications in advanced engineering problems 4. Understand and apply Maxwell's Equations: Comprehend the fundamental laws governing electromagnetism and solve problems using Maxwell's equations. 5. The course focuses on the mathematical foundations and physical principles underlying electromagnetic phenomena and equips students with the skills to analyze complex systems. 7. To understand the magnetic field due to different current distributions. 8. To understand different laws such as Coulomb's Law, Gauss's Law, Biot Savart's Law, Ampere's Law, and Faraday's Law. 9. Design basic antennas and analyze their radiation patterns and efficiency.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	This course is intended for teaching the basic principle of Electromagnetic Fields I for engineering students at the beginning graduate level. The course will have these important outcomes: (1) Understand and apply Maxwell's Equations: Comprehend the fundamental laws governing electromagnetism and solve problems using Maxwell's equations. (2) Analyze Electromagnetic Waves: Analyze the propagation of electromagnetic waves in various media, including free space, conductors, and dielectric materials. (3) Solve Boundary Value Problems: Apply boundary conditions to solve problems involving electromagnetic fields in different configurations and geometries. (4) Understand Waveguides and Resonators: Analyze the behavior of electromagnetic waves in waveguides and resonators and understand their applications in communication systems. (5) Utilize Numerical Methods: Employ numerical methods such as Finite Element Method (FEM) and Finite Difference Time Domain (FDTD) for solving complex electromagnetic field problems.

	(6) Design Antennas and Study Radiation Patterns: Design basic antennas and analyze their radiation patterns and efficiency. (7) Investigate Advanced Topics: Explore advanced topics such as metamaterials, plasmonics, and photonic crystals.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. **Part D-** conductors, dielectrics, and capacitance conductors, dielectrics and capacitance: electric fields in material space. Conductors, dielectrics, and capacitance: dielectric – dielectric boundary conditions, conductor – dielectric boundary conditions, conductor – free space boundary conditions. Conductors, dielectrics, and capacitance: capacitance and capacitors. Maxwell's equations: the vector operator (del) and the divergence theorem. Maxwell's equations: derivation of Maxwell's equations and applications. Maxwell's equations: the uniform plane wave. Maxwell's equations: wave propagation in free space. [12 hrs.]. Revision problem and tutorial classes [4 hrs.] Quizzes [1 hr.] **Part B**- Electromagnetic Wave Propagation. Plane wave solutions. Polarization of waves. Wave propagation in free space and various media (dielectrics, conductors, plasmas) . Reflection and refraction at boundaries. Boundary Value Problems Methods for solving boundary value problems in electromagnetics Examples involving parallel plates, coaxial cables, and spherical coordinate. Waveguides and Resonators Theory of waveguides: rectangular, circular, and planar waveguides Mode theory and cutoff frequencies. **Part C:** Antenna Theory and Design. Fundamentals of antenna theory. Types of antennas: dipole, monopole, array antennas, patch antennas. Radiation patterns and gain. Practical design considerations. Metamaterials and their electromagnetic properties. Plasmonics and applications in nano-optics. Photonic crystals and bandgap materials. Recent research trends in electromagnetics
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. he primary aim of this module is to deepen the understanding of electromagnetic field theory and its applications in advanced engineering problems. The course focuses on the mathematical foundations and physical principles underlying electromagnetic phenomena and equips students with the skills to analyze complex systems.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	57	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.8
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**	2	10% (10)	4,8,14	LO #1, 4 and 7
	Assignments	3	10% (10)	2 to 13	LO #1, 2, 3, 4, 5 and 7
	Projects.	3	10% (10)	Continuous	All
	Report	1	10% (10)	5 to 14	LO #1 to #7
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Magnetic forces, work & power: force on a moving charge. Work and power.
Week 2	Magnetic forces, work & power: power. Time varying fields: faraday's law. Time varying fields: induced electromotive force.
Week 3	Maxwell's equations: the uniform plane wave.
Week 4	Maxwell's equations: wave propagation in free space.
Week 5	Poisson and Laplace equations
Week 6	Inductance and Inductor. Energy stored in Magnetic Field
Week 7	Boundary Conditions for Electromagnetic fields. Time Harmonic Fields.
Week 8	**Mid-term Exam**.
Week 9	Plane waves in Lossless medium. Plane waves in a lossy medium
Week 10	Poynting Vector and Power Flow in Electromagnetic Fields.
Week 11	Polarization of plane wave. Behaviour of Plane waves at the interface of two media
Week 12	Fundamentals of Radiation. Radiated field of an Herzian dipole.
Week 13	Basic Antenna Parameters. Half Wave Dipole Antenna. Introduction to Antenna Arrays.
Week 14	Introduction to numerical techniques in electromagnetics. Basic Concepts of the Method of Moments.
Week 15	Method of Moment for Wire Antennas and Wire Scatterers. Electromagnetic principles find applications
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Electromagnetic Waves and Radiating Systems" by Edward C. Jordan and Keith G. Balmain. "Field and Wave Electromagnetics" by David K. Cheng	Yes
Recommended Texts	"Classical Electrodynamics" by John D. Jackson -ENGINEERING ELECTROMAGNETICES, Mc- Graw Hill, By WILLAIM H. HAYT. Electromagnetics (Schaum's Outlines), McGraw-Hill Education, By Edminister, Joseph_ Nahvi, Mahmood	Yes
Websites	ANSYS HFSS, COMSOL Multiphysics, CST Microwave Studio	

Grading Scheme
مخطط الدرجات

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

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Ministry of Higher Education and Scientific Research - Iraq
University of Sumer
College of Engineering
Department of Communications Engineering

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**ELECTRICAL CIRCUITS**			**Module Delivery**	
Module Type	CORE			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**DOC 115**				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	UGI- 2		**Semester (s) offered**	4	
Administering Department	BSc – COMM		**College**	College of Engineering	
Module Leader			**e-mail**		
Module Leader's Acad. Title	Assist. Prof.		**Module Leader's Qualification**	Ph.D	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Review Committee Approval	10/9/2023		**Version Number**	1.0	

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

Module Objectives أهداف المادة الدراسية	1. Ability to understand the AC Circuit Power Analysis and Poly-phase Circuits 2. Ability to determine the Transient Response of RL /RC Circuit and the Transient Response of RLC Circuit 3. Ability to analysis Magnetically Coupled Circuits and Ideal Transformers 4. Ability to solve the mathematical equations for Complex Frequency, Laplace Transform, Frequency Response and Fourier Circuit Analysis 5. Ability to synthesize the Circuit Analysis in the s-Domain and Two-Port Networks.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	This course is intended for teaching the basic principle of Electromagnetic Fields I for engineering students at the beginning graduate level. The course will have these important outcomes: (1) Use basic electrical DC concepts and theorems to analyze circuits (2) Build and simulate electrical DC circuits and perform measurements with electronic test equipment (3) Understand the fundamental concepts of electrical circuits, including voltage, current, resistance, and power. (4) Analyze and solve basic DC (direct current) circuits using Ohm's Law, Kirchhoff's Laws, and nodal/mesh analysis techniques. (5) Apply techniques to analyze and solve AC (alternating current) circuits, including complex impedance, phasor representation, and frequency response. (6) Demonstrate proficiency in analyzing circuits with passive elements such as resistors, capacitors, and inductors. (7) Use circuit simulation software and laboratory equipment to verify theoretical analysis and gain practical experience in circuit analysis. (8) Analyze and solve circuits with operational amplifiers (op-amps), including understanding their basic configurations and applications. (9) Understand the concepts of power in electrical circuits, including active power, reactive power, and power factor correction. (10) Develop critical thinking and problem-solving skills by applying circuit analysis techniques to real-world electrical engineering problems.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. **Part A-** Transient Circuits. The Transient Circuits: RC, RL, RLC circuit in series and parallel and their complete response in time and Frequency. Poly-phase Circuits: Single-phase and three phase wire system, 3-Phase balance and unbalance system star and delta connections. Power in 3-phase circuits. Magnetic coupling circuit: Coefficient of coupling, Linear and ideal transformers. 15 hrs.] Revision problem and tutorial classes [8 hrs.]

	Quizzes [1 hr.] **Part B-** Two-Port Networks: One-pot networks, y-z-h-g and ABCD parameters, Complex Frequency and Circuit Analysis in the s-Domain**,** Frequency Response**,** Filters: Constant k-filters, Low pass and high pass modern filter design, Butterworth and filters, Network transformations, and all pass filter, Active filter. 15 hrs.] Revision problem and tutorial classes [8 hrs.] Quizzes [1 hr.]

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 type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Electrical Engineering Fundamentals I and Electrical Engineering Fundamentals II.	**Semester**	1 & 2
Co-requisites module	None	**Semester**	

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Advantages and Disadvantages of Electrical Networks as different circuits.
Week 2	Transient Response of RL Circuit and Transient Response of RC Circuit. Unit step functions
Week 3	Complete response of RL and RC Circuits. Transient Response of RLC Circuit / Parallel connection.
Week 4	Transient Response of RLC Circuit / Series connection. Complete response of RLC Circuit / Parallel and Series connections.
Week 5	Poly-phase Circuits. Three phase circuit analysis / Balance load. Three phase circuit analysis / Un-Balance load
Week 6	Three phase wattmeter's. Magnetically Coupled Circuits.
Week 7	Linear and Ideal Transformers.
Week 8	**Mid-term Exam**.
Week 9	Two-Port Networks: One-pot networks. Two-Port Networks : y-z-h-g parameters

Week 10	Two-Port Networks: ABCD parameters.
Week 11	Complex Frequency. Circuit Analysis in the S-Domain.
Week 12	Frequency Response. Bode Diagrams
Week 13	Filters: Constant k-filters, Low pass and high pass. Filters: modern filter design, Butterworth and filters.
Week 14	Filters: Network transformations. All pass filter. Active filter
Week 15	Fourier circuit analysis.
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Engineering Circuit Analysis Eight Edition (William H. Hayt) 2012. Fundamentals of Electric Circuits (Charles K. Alexander)2009	Yes
Recommended Texts	Electric Circuits Tenth Edition (James W. Nilsson) 2015	Yes
Websites	https://www.pdfdrive.com/schaums-outline-of-electric-circuits-e185851170.html	

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

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**FUNDAMENTALS OF COMMUNICATION**			**Module Delivery**	
Module Type	CORE			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**DOC 113**				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	UGI- 2		**Semester (s) offered**	4	
Administering Department	BSc – COMM		**College**	College of Engineering	
Module Leader			**e-mail**		
Module Leader's Acad. Title	Assist. Prof.		**Module Leader's Qualification**	Ph.D	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Review Committee Approval	10/9/2023		**Version Number**	1.0	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. The aim of this module is to provide students with a comprehensive understanding of the fundamental principles of communication systems, with a focus on both theoretical and practical aspects. 2. This includes the study of transmission lines, signal propagation, modulation techniques, and an introduction to various communication systems. 3. The module aims to equip students with the knowledge and skills necessary to analyze, design, and evaluate basic communication systems. 4. To develop problem solving skills and understanding of the propagation methods of electrical signals across transmission lines. 5. To understand the reflection in transmission line. 6. This course deals with the mathematical calculations for the propagation of signals through transmission lines. 7. This is the basic subject for all A.C. Steady state transmission line. To understand crank method for the analysis of transmission lines. 8. To perform graphical solution of lossless transmission line using Smith chart. To perform transmission line matching using Quarter Wave Transformer (λ/4)
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	This course is intended for teaching Fundamentals of Communication for engineering students at the beginning graduate level. The course will have these important outcomes: (1) Understand Basic Concepts: Comprehend the fundamental concepts and terminologies used in communication engineering. (2) Analyze Transmission Lines: Analyze the behavior and characteristics of transmission lines and understand their role in communication systems. (3) Understand Modulation Techniques: Understand and apply various analog and digital modulation techniques. (4) Evaluate Communication Systems: Evaluate the performance of communication systems using appropriate metrics. (5) Design Simple Communication Systems: Design basic communication systems and assess their performance. (6) Understand Signal Propagation: Understand the principles of signal propagation and the impact of the transmission medium. (7) Use Practical Tools: Utilize modern tools and software for the simulation and analysis of communication systems.

	(8) Know the propagation methods of electrical signals across transmission lines. Conduct mathematical calculations for the propagation of signals through transmission lines. (9) Handling crank method in the analysis of transmission lines. Use the Smith chart and its applications. Identify types of electrical signals.
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **Part A-** Introduction to Communication Systems: Overview of communication systems, Historical development and significance, and Basic terminologies and concepts. Transmission Lines. Types of transmission lines (coaxial cables, twisted pairs, waveguides, etc.). Transmission line parameters (resistance, inductance, capacitance, conductance). Impedance matching and Smith Chart Reflection and transmission coefficients. Signal attenuation and dispersion. Signal Propagation Electromagnetic wave propagation. Free-space propagation. Reflection, refraction, diffraction, and scattering. Multipath propagation and fading. Link budget analysis. [15 hrs.]. Revision problem and tutorial classes [8 hrs.] Quizzes [1 hr.] **Part B-** Signal classifications. Fourier series. Fourier Transform. Signals and linear systems. Power spectral density and Correlation. Definition and classification of signals. Basic operations on signals. Time-Domain Analysis of Continuous-Time Systems. Convolution and impulse response. Frequency-Domain Analysis of Continuous-Time Systems. Discrete-Time Signals and Systems. Frequency-Domain Analysis of Discrete-Time Systems. Modulation and Demodulation Techniques. [15 hrs.]. Revision problem and tutorial classes [8 hrs.] Quizzes [1 hr.] **Part C:** Analog Modulation Techniques**.** Amplitude Modulation (AM) Frequency Modulation (FM) and Phase Modulation (PM)**.** Digital Modulation Techniques**.** Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK), Phase Shift Keying (PSK), and Quadrature Amplitude Modulation (QAM)**.** Noise in Communication Systems**.** Signal-to-Noise Ratio (SNR) and its impact on system performance**.** Shannon's theorem and its implications. Mutual information and channel capacity**.** Sampling and Quantization. Quantization and encoding**.** Channel Coding and Error Control. Linear block codes and convolutional codes. Spread Spectrum and Multiple Access Techniques. Direct sequence and frequency hopping spread spectrum. Code Division Multiple Access (CDMA). Time Division Multiple Access (TDMA) and Frequency Division Multiple Access (FDMA). Types of communication networks. Telephone communication networks. Public Switched Telephone Network (PSTN). Integrated Services Digital Network (ISDN). Voice over Internet Protocol (VoIP). Mobile Networks (Cellular Networks). Satellite Phones. Cellular Digital Packet Data (CDPD). Global System for Mobile Communications (GSM). Code Division Multiple Access (CDMA) [15 hrs.] Revision problem and tutorial classes [8 hrs.] Quizzes [1 hr.] .

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The aim of this module is to provide students with a comprehensive understanding of the fundamental principles of communication systems, with a focus on both theoretical and practical aspects. This includes the study of transmission lines, signal propagation, modulation techniques, and an introduction to various communication systems. The module aims to equip students with the knowledge and skills necessary to analyze, design, and evaluate basic communication systems. Transmission lines are fundamental components in communication engineering, serving as the medium through which signals are transmitted from one point to another. They play a critical role in the effective and efficient delivery of electrical signals, ensuring minimal loss and distortion over various distances. The primary aim of this module is to provide students with a comprehensive understanding of the principles and applications of signals and systems in communication engineering. This includes the analysis, design, and implementation of systems for processing and transmitting signals in both analog and digital forms.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	57	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

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

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Communication Systems. Overview of communication systems. Basic terminologies and concepts.
Week 2	Transmission Lines. Types of transmission lines (coaxial cables, twisted pairs, waveguides,..)
Week 3	Transmission line parameters (resistance, inductance, capacitance, conductance). Impedance matching and Smith Chart. Reflection and transmission coefficients. Signal attenuation and dispersion.
Week 4	Signal Propagation. Electromagnetic wave propagation, Free-space propagation, Reflection, refraction, diffraction, and scattering. Multipath propagation and fading
Week 5	Fourier series and Fourier transform, Laplace transform and its applications Frequency response and Bode plots. Discrete Fourier Transform (DFT) and Fast Fourier Transform (FFT)
Week 6	Analog Modulation Techniques, Amplitude Modulation (AM), Frequency Modulation (FM) and Phase Modulation (PM).
Week 7	Noise in Communication Systems. Types of noise: thermal noise, shot noise, and other sources of noise

Week 8	**Mid-term Exam**.
Week 9	Digital Modulation Techniques, Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK) Phase Shift Keying (PSK), and Quadrature Amplitude Modulation (QAM).
Week 10	Mutual information and channel capacity, Shannon's theorem and its implications, Sampling and Quantization. Channel Coding and Error Control,
Week 11	Direct sequence and frequency hopping spread spectrum. Code Division Multiple Access (CDMA). Time Division Multiple Access (TDMA) and Frequency Division Multiple Access (FDMA)
Week 12	Filter Design and Analysis
Week 13	Types of communication networks.
Week 14	Types of telephone communication networks
Week 15	Mobile Networks (Cellular Networks) and Satellite Phones.
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	"Communication Systems" by Simon Haykin "Digital and Analog Communication Systems" by Leon W. Couch	Yes
Recommended Texts	"Principles of Communication Systems" by Herbert Taub and Donald L. Schilling "Electromagnetic Waves and Transmission Lines" by Frank Olynyk	Yes
Websites	IEEE Xplore Digital Library (for scholarly articles on advanced topics in transmission lines).	

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

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Ministry of Higher Education and Scientific Research - Iraq
University of Sumer
College of Engineering
Department of Communications Engineering

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**ENGLISH LANGUAGE II**			**Module Delivery**	
Module Type	BASIC			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UOS 106**				
ECTS Credits	2				
SWL (hr/sem)	50				
Module Level	UGI- 2		**Semester (s) offered**	4	
Administering Department	BSc – COMM		**College**	College of Engineering	
Module Leader			**e-mail**		
Module Leader's Acad. Title	Assist. Prof.		**Module Leader's Qualification**	Ph.D	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Review Committee Approval	10/9/2023		**Version Number**	1.0	

	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The Students will be able to: 1. Distinguish between dependent, Independent, and Integrated essays. 2. Find the topic and the thesis statement of short essays. 3. Identify the main ideas from the introduction paragraph. 4. Identify the main ideas from the body paragraph. 5. Find the supporting details from the introduction paragraph. 6. Find the supporting details from the body paragraph. 7. Draw an outline to link the ideas, supporting details, and essay topic. 8. Make notes in response to an essay question to create main ideas, supporting details, and thesis statement. 9. Write the introduction paragraph on basis of the thesis statement and main ideas. 10. Build the body paragraphs based on main ideas and supporting details. 11. Write the introduction paragraph based on the main ideas. 12. Enhance the smoothness and fluency of an essay by employing transition words and sentence starters.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	This course is intended for teaching English Language II for engineering students at the beginning graduate level. The course will have these important outcomes: 1. The student has better reading, writing, listening, and speaking skills. 2. They have better grammar understanding. 3. The students Learn more everyday English. 4. They have more syllables at your disposal. 5. They have more confidence interacting with native English speakers. 6. Write the introduction paragraph on basis of the thesis statement and main ideas. 7. Build the body paragraphs based on main ideas and supporting details. 8. Write the introduction paragraph based on the main ideas. 9. Enhance the smoothness and fluency of an essay by employing transition words and sentence starters.
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **Classification of Essays: [2 hrs**], Independent essays based on personal thoughts. Dependent essays based on data, figures, diagrams. Integrated essays. Structure of academic essays: [6 hrs]. Analyzing academic essays according to the standard structure of academic essays. Idea Maps: [3 hrs]. Filling the idea maps from the major information extracted while reading an essay. Responding to an essay question: [4 hrs]. Building an outline using

	personal ideas in response to an essay question. Writing Paragraphs: [6 hrs]. Writing thesis statement. The Introduction Paragraph. The Body Paragraphs. Essay Conclusion: [3 hrs]. Writing the conclusion paragraph considering the main ideas stated in the introduction and body paragraphs. Transition words and connection phrases: [3 hrs]. Dependent essays: [3hrs]. Introduction to essays based on figures, tables, diagrams, and processes.
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 type of simple experiments involving some sampling activities that are interesting to the students. The approach to be followed here is to motivate students to analyze previously written model essays to understand the standard structure of academic essays then implement the same procedures to build their own essays.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.13
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**50**		

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	ENGLISH LANGUAGE I	**Semester**	1
Co-requisites module	None	**Semester**	

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Overview of Academic Essays Independent, Dependent, and Integrated essays Structure of academic essays
Week 2	Structure of academic essays
Week 3	Topic sentence and thesis statement Identifying topic sentence and thesis statement of academic essays.
Week 4	Main Ideas: Identifying the main Ideas of academic essays
Week 5	Supporting Details: Identifying the supporting details
Week 6	Essay outlines: Building Essay outlines using idea maps
Week 7	Essay Questions: Responding to essay questions by making personal notes.
Week 8	**Mid-term Exam**.
Week 9	Topic Sentence: Writing a thesis statement or topic sentence using personal thoughts. Idea Map Creation: Building an idea map of an essay question

Week 10	Personal Thoughts: Using personal thoughts to express main ideas and supporting details in response to an essay question.
Week 11	Transition words and sentence starters Increasing the fluency, coherence, and smooth transition of thoughts using sentence starters and transition words.
Week 12	Writing the Introduction: Combining the thesis statement and main ideas together to build the introduction paragraph.
Week 13	Writing the Conclusion
Week 14	Introduction to dependent writing tasks.
Week 15	Map Creation: Building an idea map of an essay question
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Sharpe, P. J. (2009). Barron's TOEFL iBT. Barron's Educational Series. John and Liz Soars New Headway Plus Pre-Intermediate Oxford University Press	Yes
Recommended Texts	Lougheed, L. (2016). Barron's Ielts with Mp3 Cd. Barron's. Supplemental materials will be provided by provided by the instructor.	Yes
Websites		

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

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

	Ministry of Higher Education and Scientific Research - Iraq **University of Sumer** **College of Engineering** Department of Communications Engineering	

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**CRIMES OF BAATH'S REGIME IN IRAQ**			**Module Delivery**	
Module Type	BASIC			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UOS 105**				
ECTS Credits	2				
SWL (hr/sem)	50				
Module Level	UGI- 2		**Semester (s) offered**	4	
Administering Department	BSc – COMM		**College**	College of Engineering	
Module Leader			**e-mail**		
Module Leader's Acad. Title	Assist. Prof.		**Module Leader's Qualification**	Ph.D	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Review Committee Approval	10/9/2023		**Version Number**	1.0	

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

Module Objectives أهداف المادة الدراسية	افهام الطالب باهمية :تقوم الدراسة عل رشح النظم والحقوق الدولية ، وتبيان الجرائم الدولية ، والمحلية المرتكبة بحق الشعوب المجاورة للعراق ، وبحق الشعب العراف نفسه، المادة تسلط الضوء عل حقبة مهمة في تاريخ العراق وما حصل فيها من انتهاكات للحقوق جميعها ، من قتل وتشريد وتهجير ومصادرة الأموال ، وجرائم. الإبادة ، والجرائم السياسية، وانتهاكات حرية الدين والرأي، عل يد حزب البعث إن الجرائم المرتكبة تبدأ من بدايات نشأة حزب البعث المجرم في الستينات ولغاية حقبة الالفينات ، ان هذه الفية المهمة وما حصل فيها والتبعات منها ، ما يزال العراق يعاني منها، من غرامات دولية ، والحالة النفسية التي يعاني منها كل من تعرض للاذى بافعال حزب البعث الظالم، وتكمن الاهمية في تبيان هذه المظالم ، للاجيال الت لم تكن موجودة ف تلك الفية، وك لا تتحرر تلك الحقبة من جديد ف العراق يجب ان .يفهم الجيل الغي معاصر اهمية التاريخ ،كي نتجنب اخطاء الماض لوقتنا الحالي. التوعية بأهمية النظام والحقوق الدولية: تهدف المادة إلى زيادة وعي الطلاب بأهمية الأنظمة والقوانين الدولية التي تحمي حقوق الإنسان وتحدد الجرائم الدولية. فهم الجرائم الدولية والمحلية: مساعدة الطلاب على فهم الجرائم المرتكبة ضد الشعوب المجاورة للعراق وضد الشعب العراقي نفسه. تسليط الضوء على تاريخ العراق الحديث: التركيز على حقبة مهمة في تاريخ العراق تتضمن انتهاكات حقوق الإنسان على يد حزب البعث. تعزيز الوعي بالتبعات النفسية والاجتماعية: فهم التبعات النفسية والاجتماعية التي يعاني منها الشعب العراقي بسبب هذه الانتهاكات. تعليم الجيل الجديد أهمية التاريخ: تعزيز فهم الجيل الجديد لأهمية التاريخ لتجنب أخطاء الماضي. .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	١. تحليل وتقييم النظام الدولي للحقوق: سيتمكن الطلاب من تحليل وتقييم الأنظمة والقوانين الدولية المتعلقة بحقوق الإنسان. ٢. تحديد أنواع الجرائم الدولية: التعرف على مختلف أنواع الجرائم الدولية والمحلية التي ارتكبت خلال حقبة حكم حزب البعث. ٣. تقدير أهمية التوثيق التاريخي: إدراك أهمية التوثيق التاريخي في فهم الحاضر وتجنب تكرار أخطاء الماضي. ٤. تحليل التأثيرات النفسية والاجتماعية: تحليل التبعات النفسية والاجتماعية لانتهاكات حقوق الإنسان على المجتمعات والأفراد. ٥. تعزيز المهارات النقدية: تطوير المهارات النقدية لتحليل الأحداث التاريخية وربطها بالواقع الحالي.
Indicative Contents المحتويات الإرشادية	النظم والحقوق الدولية: مقدمة عن حقوق الإنسان والقوانين الدولية. تطور حقوق الإنسان عبر التاريخ. الجرائم الدولية والمحلية: تعريف الجرائم الدولية والمحلية. أمثلة على الجرائم المرتكبة بحق الشعوب المجاورة والعراق. حقبة حكم حزب البعث: نشأة حزب البعث وتاريخه. الانتهاكات والجرائم التي ارتكبها الحزب منذ الستينات حتى الألفينات. التبعات النفسية والاجتماعية: التبعات النفسية للجرائم والانتهاكات. التبعات الاجتماعية والاقتصادية على العراق. توثيق الجرائم والانتهاكات: أهمية توثيق الجرائم والانتهاكات. طرق وأساليب التوثيق التاريخي. التاريخ وأهميته للأجيال الجديدة: لماذا يجب علينا تعليم التاريخ للأجيال الجديدة. دور التعليم في منع تكرار أخطاء الماضي. تعتبر هذه المادة الدراسية ذات أهمية كبيرة لأنها تسلط الضوء على حقبة مهمة في تاريخ العراق تتسم بانتهاكات حقوق الإنسان والجرائم الدولية. من خلال دراسة هذه المادة، سيكون الطلاب قادرين على فهم الأنظمة الدولية لحماية حقوق الإنسان، التعرف على الجرائم الدولية والمحلية، وتقدير أهمية التوثيق التاريخي.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	تعتبر هذه المادة الدراسية ذات أهمية كبيرة لأنها تسلط الضوء على حقبة مهمة في تاريخ العراق تتسم بانتهاكات حقوق الإنسان والجرائم الدولية. من خلال دراسة هذه المادة، سيكون الطلاب قادرين على فهم الأنظمة الدولية لحماية حقوق الإنسان، التعرف على الجرائم الدولية والمحلية، وتقدير أهمية التوثيق التاريخي لتجنب تكرار أخطاء الماضي. يجهز التدريس محاصرات عن المادة عل شكل ورقي واالكتروني ويقدمها للطلبة يقوم التدريس بالقاءالمحاضرات بشكل تفصيل . يقوم التدريس بطلب تقارير دورية وواجبات بيتيه عن المواضيع الاساسية للمادة.

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

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

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	مفهوم الجرائم وأقسامها
Week 2	انواع الجرائم الدولية ، جرائم نظام البعث وفق قانون المحكمة الجنائية العراقية العليا عام ٢٠٠٥.
Week 3	القرارات الصادرة من المحكمة الجنائية العليا، جرائم نظام البعث وفق توثيق قانون المحكمة الجنائية العراقية العليا عام ٢٠٠٥
Week 4	ابرز قضايا جرائم حزب البعث. جريمة قمع الانتفاضة الشعبانية
Week 5	الجرائم النفسية والاجتماعية وآثارها، الجرائم النفسية والاجتماعية واثارها وابرز انتهاكات النظام البعثي في العراق
Week 6	انتهاكات القوانين العراقية ، تدمير دور العبادة كالمساجد والحسينيات والكنائس
Week 7	الجرائم البيئية لنظام البعث . حقبة حكم حزب البعث ، الاخفاء القسري للمواطنين ،
Week 8	**Mid-term Exam.**
Week 9	التلوث الحرن والاشعاعي ، تدمير الموارد البشرية و المادية و الاحصار الاقتصادي ، بعض قرارات الانتهاكات السياسية والعسكرية لنظام البعث
Week 10	تدمي القرى والمدن . النظم والحقوق الدولية: مدينة حلبجة ، الجرائم البيئية لنظام البعث في العراق.
Week 11	تجفيف الاهوار.. تجريف بساتين النخيل والاشجار والمزروعات

Week 12	جرائم المقابر الجماعية. سلب حقوق الإنسان عبر التاريخ حقبة البعث. الانتهاكات والجرائم التي ارتكبها الحزب منذ الستينات حتى الألفينات.
Week 13	**احداث مقابر الابادة الجماعية. التبعات الاجتماعية والاقتصادية على العراق.**
Week 14	التصنيف الزمت لمقابر الابادة الجماعية. التبعات النفسية للجرائم والانتهاكات.
Week 15	أهمية توثيق الجرائم والانتهاكات. طرق وأساليب التوثيق التاريخي.
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	ارشيف مؤسسة الشهداء	Yes
Recommended Texts	احسان هندي ،قوانين الاحتلال الحربي ، حقوق السكان المدنين في المناطق المحتلة وحمايتها الادارة السياسية دمشق ١٩٧٢ منهاج وزارة التغليم العالي والبحث العلمي / جرائم نظام البعث في العراق ٢٠٢٣_٢٠٢٤	Yes
Websites		

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

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Contact

Program Manager:

Name : Jafaar Fahad A.Rida / Ph.D. in Communication Engineering / Assistant Prof.

Email: j.fahad@uos.edu.iq

Mobile no.: +964 7819366700

Program Coordinator:

Name : Abduladheem Salman khudhair / Master. in Civil Engineering / Assistant Lect.

Email: a.salman@uos.edu.iq

Mobile no.: +964 7814536682

	**Ministry of Higher Education and Scientific Research - Iraq** **University of Sumer** **College of Engineering** Department of Communications Engineering	

ACADEMIC DESCRIPTION CURRICULUM FOR THE THIRD STAGE (5th Semester)

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Contact

Program Manager:

Name : Jafaar Fahad A.Rida / Ph.D. in Communication Engineering / Assistant Prof.

Email: j.fahad@uos.edu.iq

Mobile no.: +964 7819366700

Program Coordinator:

Name : Abduladheem Salman khudhair / Master. in Civil Engineering / Assistant Lect.

Email: a.salman@uos.edu.iq

Mobile no.: +964 7814536682