المرحلة: الاولى

الفصل الدراسي: الاول

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Computer I**			**Module Delivery**	
Module Type	B			**Theory** **Lecture** **Lab** **Tutorial** **Practical** **Seminar**	
Module Code	UOITC01				
ECTS Credits	3				
SWL (hr/sem)	75				
Module Level		1	**Semester of Delivery**		1
Administering Department		MTCE and MCCE	**College**	COE	
Module Leader	Zeena jamal Jabar		**e-mail**		
Module Leader's Acad. Title		Ass. Lecturer	**Module Leader's Qualification**		Ms.c.
Module Tutor	Zeena jamal Jabar		**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	Understanding the student of the fundamental principles of computer science, including MS Office, Equip students with the knowledge to analyze and solve computational problems efficiently.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• Word **Processing**: Develop the ability to create, edit, format, and save documents using Microsoft Word. This includes using styles, formatting text, inserting tables, images, and using advanced features like Mail Merge. • Spreadsheet **Management**: Gain proficiency in Microsoft Excel for managing data, performing calculations, creating formulas, generating charts, and using functions and tables. • **Presentation Skills**: Learn to design and deliver effective presentations using Microsoft PowerPoint, including adding text, images, transitions, animations, and multimedia elements.
Indicative Contents المحتويات الإرشادية	Introduction to computer concept of hardware and software with their components concept of Computing data and information connecting input/output devices and the peripherals to CPU. (3) Computer Components: Computer Portions Hardware Parts, I/O Units, Memory Types. Computer Components (Cont.): Basic CPU Components, Computer Ports, Personal Computer, Personal Computer (Features and Types) (6) Operating System and Graphical User Interface GUI: Operating System; Basics of Common Operating Systems; The User Interface, Using Mouse Techniques. Operating System and Graphical User Interface GUI(Cont.): Use of Common Icons, Status Bar, Using Menu and Menu-selection, Concept of Folders and Directories, Opening and closing of different Windows; Creating Short cuts. (6) Word Processing: Word Processing Basics; Basic Features of Word Processors, Opening and Closing of documents, Text creation and Manipulation; Formatting Text and Paragraphs, Using Templates for Document Creation.Word Processing (Cont.): Creating and Managing Tables, Utilizing Styles and Themes, Spell Check and Grammar Tools, Using Headers and Footers. (6) Spread Sheet: Introduction to Spreadsheet Software, Creating and Formatting Worksheets. Sorting and Filtering Data, Using Formulas and Functions. Spread Sheet (Cont.): Using Formulas and Functions, Using Pivot Tables for Data Analysis, Data Validation and Error Checking, Data Visualization: Creating Charts and Graphs. (6) Presentation Software: Introduction to Presentation Software, Overview of Popular Presentation Tools, creating a New Presentation, Using Templates and Themes, Inserting and Formatting Text and Images, Transition and Animation Effects. Presentation Software (Cont.): Using Speaker Notes and Timers,, Advanced Features:

	Hyperlinks and Action Buttons, Troubleshooting Common Presentation Issues, Future Trends in Presentation Technology. (6) Introduction to Internet and Web Browsers: Computer networks Basic; LAN, WAN; Concept of Internet and its Applications; connecting to internet. Introduction to Internet and Web Browsers (Cont.): World Wide Web; Web Browsing software's, Search Engines; Understanding URL; Domain name; IP Address. Communications and Emails: Basics of electronic mail; Getting an email account; Sending and receiving emails; Accessing sent emails; Using Emails; Document collaboration. (18) Introduction to Cloud Computing and Services: Definition of Cloud Computing and its concept, Cloud-Based Office Suites (Office 365 and Google Workspace), Google Docs, Google Sheets, Google Drive, Google Meet.(3)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	it's important to adopt effective strategies to help students master the core tools (Word, Excel, PowerPoint,etc.) and gain practical skills that they can apply in both academic and professional settings.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	47	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	28	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**75**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	15% (5)	Continuous	3-1
	Online Assignments	3	9% (3)	Continuous	3-1
	Lab.	10	10% (1)	Continuous	3-1
	report	2	6% (3)	Continuous	3-1
Summative assessment	Midterm Exam	1hr	10% (10)	9	3-1
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week 1	Introduction to computer concept of hardware and software with their components concept of Computing data and information connecting input/output devices and the peripherals to CPU.
Week 2	Computer Components: Computer Portions Hardware Parts, I/O Units, Memory Types.
Week 3	Computer Components (Cont.): Basic CPU Components, Computer Ports, Personal Computer, Personal Computer (Features and Types)
Week 4	Operating System and Graphical User Interface GUI: Operating System; Basics of Common Operating Systems; The User Interface, Using Mouse Techniques.
Week 5	Operating System and Graphical User Interface GUI(Cont.): Use of Common Icons, Status Bar, Using Menu and Menu-selection, Concept of Folders and Directories, Opening and closing of different Windows; Creating Short cuts.
Week 6	Word Processing: Word Processing Basics; Basic Features of Word Processors, Opening and Closing of documents, Text creation and Manipulation; Formatting Text and Paragraphs, Using Templates for Document Creation.
Week 7	Word Processing (Cont.): Creating and Managing Tables, Utilizing Styles and Themes, Spell Check and Grammar Tools, Using Headers and Footers.
Week 8	Spread Sheet: Introduction to Spreadsheet Software, Creating and Formatting Worksheets. Sorting and Filtering Data, Using Formulas and Functions.

Week 9	Spread Sheet (Cont.): Using Formulas and Functions, Using Pivot Tables for Data Analysis, Data Validation and Error Checking, Data Visualization: Creating Charts and Graphs+mid term exam
Week 10	Presentation Software: Introduction to Presentation Software, Overview of Popular Presentation Tools, creating a New Presentation, Using Templates and Themes, Inserting and Formatting Text and Images, Transition and Animation Effects.
Week 11	Presentation Software (Cont.): Using Speaker Notes and Timers,, Advanced Features: Hyperlinks and Action Buttons, Troubleshooting Common Presentation Issues, Future Trends in Presentation Technology.
Week 12	Introduction to Internet and Web Browsers: Computer networks Basic; LAN, WAN; Concept of Internet and its Applications; connecting to internet.
Week 13	Introduction to Internet and Web Browsers (Cont.): World Wide Web; Web Browsing software's, Search Engines; Understanding URL; Domain name; IP Address.
Week 14	Communications and Emails: Basics of electronic mail; Getting an email account; Sending and receiving emails; Accessing sent emails; Using Emails; Document collaboration.
Week 15	Introduction to Cloud Computing and Services: Definition of Cloud Computing and its concept, Cloud-Based Office Suites (Office 365 and Google Workspace), Google Docs, Google Sheets, Google Drive, Google Meet..
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to computer concept of hardware and software with their components concept of Computing data and information connecting input/output devices and the peripherals to CPU.
Week 2	Computer Components: Computer Portions Hardware Parts, I/O Units, Memory Types.
Week 3	Computer Components (Cont.): Basic CPU Components, Computer Ports, Personal Computer, Personal Computer (Features and Types)
Week 4	Operating System and Graphical User Interface GUI: Operating System; Basics of Common Operating Systems; The User Interface, Using Mouse Techniques.
Week 5	Operating System and Graphical User Interface GUI(Cont.): Use of Common Icons, Status Bar, Using Menu and Menu-selection, Concept of Folders and Directories, Opening and closing of different Windows; Creating Short cuts.
Week 6	Word Processing: Word Processing Basics; Basic Features of Word Processors, Opening and Closing of documents, Text creation and Manipulation; Formatting Text and Paragraphs, Using Templates for Document Creation.
Week 7	Word Processing (Cont.): Creating and Managing Tables, Utilizing Styles and Themes, Spell Check and Grammar Tools, Using Headers and Footers.
Week 8	Spread Sheet: Introduction to Spreadsheet Software, Creating and Formatting Worksheets. Sorting and Filtering Data, Using Formulas and Functions.

Week 9	Spread Sheet (Cont.): Using Formulas and Functions, Using Pivot Tables for Data Analysis, Data Validation and Error Checking, Data Visualization: Creating Charts and Graphs+mid term exam
Week 10	Presentation Software: Introduction to Presentation Software, Overview of Popular Presentation Tools, creating a New Presentation, Using Templates and Themes, Inserting and Formatting Text and Images, Transition and Animation Effects.
Week 11	Presentation Software (Cont.): Using Speaker Notes and Timers,, Advanced Features: Hyperlinks and Action Buttons, Troubleshooting Common Presentation Issues, Future Trends in Presentation Technology.
Week 12	Introduction to Internet and Web Browsers: Computer networks Basic; LAN, WAN; Concept of Internet and its Applications; connecting to internet.
Week 13	Introduction to Internet and Web Browsers (Cont.): World Wide Web; Web Browsing software's, Search Engines; Understanding URL; Domain name; IP Address.
Week 14	Communications and Emails: Basics of electronic mail; Getting an email account; Sending and receiving emails; Accessing sent emails; Using Emails; Document collaboration.
Week 15	Introduction to Cloud Computing and Services: Definition of Cloud Computing and its concept, Cloud-Based Office Suites (Office 365 and Google Workspace), Google Docs, Google Sheets, Google Drive, Google Meet..

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1- Graham Brown, David Watson, "Cambridge IGCSE Information and Con Technology", 3rd Edition (2020) 2. Alan Evans, Kendall Martin, Mary Anne Poatsy, "Technology In Action 16th Edition (2020). 3. Ahmed Banafa, ""Introduction to Artificial Intelligence (AI)", 1st Edition 4. Microsoft Office 2019 Step by Step 1st Edition by Curtis Frye & Joan Lambert MITTEE	No
Recommended Texts	الخضر علي الخضر بحاث " أساسيات الحاسوب" MM 2016 الدكتور عادل عبدالنور، "مدخل إلى عالم الذكاء الاصطناعي " 2005	No
Websites		

Grading Scheme

مخطط الدرجات

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

(50 - 100)	**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	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0 – 49)	**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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Electrical Circuits I			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**ECT1**				
ECTS Credits	**6.00**				
SWL (hr/sem)	**150**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	1. Media Technology and Communications Engineering Department 2. Mobile Communications and Computing Engineering Department		**College**	College of Engineering	
Module Leader	Dr.Ihsan Jabbar Hasan		**e-mail**	ihsan.hasan@uoitc.edu.iq	
Module Leader's Acad. Title	Assistant Prof.		**Module Leader's Qualification**	PhD	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**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. Knowing the module objectives. 2. Understanding the electrical circuits structure and their applications. 3. Analyzing the electrical circuits mathematically to find the required parameters. 4. Simulating the electrical circuits and implementing them using the components that available in the electrical circuits lab of the department. 5. To understand Kirchhoff's current and voltage Laws problems. 6. To perform mesh and Nodal analysis.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Grasp foundational electrical circuit concepts and apply them in practical lab exercises. 2. Explore power and energy dynamics in circuits, understanding components and conventions. Apply concepts in lab experiments. 3. Analyze series, parallel, and series-parallel DC circuits, applying rules for voltage, current, and power distribution. Implement configurations in lab settings. 4. Examine sources and Kirchhoff's laws, differentiating between types and applying them in practical circuit analysis in the lab. 5. Master source transformations for flexible circuit analysis and implement them in lab scenarios. 6. Understanding various DC circuit analysis methods, such as node-voltage and mesh loop analysis, superposition, Thevenin, and Norton methods, and apply these methods in lab exercises for hands-on skill development.
Indicative Contents المحتويات الإرشادية	Introduction to electrical circuits and the related physic materials • Definition of electric circuit • Basic physical concept of an electric circuit • Conductor, semiconductor and isolated • Definitions of voltage, current and resistance • Ohm’s law Power and Energy • A Classification of Circuit Components • Power concept • Passive sign convention Series and Parallel DC circuits • Series circuits • Voltage sources in series • Voltage divider rule • Power distribution in series circuit • Parallel circuits

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
	• Current divider rule • Power distribution in parallel circuit • Series-Parallel circuits • Short and open circuits Sources & Kirchhoff's Laws • Dependent and Independent voltage and current sources • Definition of node, branches and loops in a circuit • Kirchhoff's current law (KCL) • Kirchhoff's voltage law (KVL) Source transformations • Voltage source to current source transformation • Current source to voltage source transformation DC circuits analysis methods • Node-voltage method • Super-node • Mesh loop analysis • Superposition • Thevenin method • Norton method

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Active Learning: Encourage students to actively participate in the learning process through various activities such as problem-solving exercises, group discussions, and hands-on experiments. This approach helps students engage with the material and reinforces their understanding. 2. Visual Representations: Utilize visual aids such as circuit diagrams, flowcharts, and graphs to help students visualize and comprehend the concepts of DC electrical circuits. Visual representations can enhance understanding and facilitate effective communication of complex ideas. 3. Real-world Applications: Highlight the practical applications of DC electrical circuits in everyday life or specific industries. Relating the theoretical concepts to real-world examples helps students appreciate the relevance of their learning and motivates them to delve deeper into the subject.

	4. Conceptual Building Blocks: Break down complex concepts into smaller, manageable units or building blocks. Start with the fundamental principles of DC circuits and gradually build upon them, allowing students to develop a solid foundation before moving on to more advanced topics. 5. Problem-Solving Practice: Provide students with ample opportunities to practice solving problems related to DC electrical circuits. Assign regular problem sets and offer constructive feedback to help students identify and rectify any misconceptions or gaps in their understanding. 6. Technology Integration: Leverage technology tools such as simulation software, virtual labs, or interactive online resources to enhance the learning experience. These tools can enable students to simulate circuit behavior, conduct virtual experiments, and explore different scenarios, fostering a deeper understanding of DC electrical circuits. 7. Assessment Strategies: Employ a variety of assessment methods to evaluate students' comprehension and progress. Apart from traditional exams, consider incorporating practical demonstrations, project-based assessments, and presentations. This diversified approach allows students to showcase their knowledge and skills in different ways while promoting critical thinking and creativity.

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
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to the Electrical Basics
Week 2	Circuit Variables
Week 3	Circuit Variables
Week 4	Circuit Elements
Week 5	Circuit Elements
Week 6	Series DC Circuit
Week 7	Series DC Circuit
Week 8	Midterm Exam1
Week 9	Parallel DC Circuit
Week 10	Series-Parallel Circuits
Week 11	Series-Parallel Circuits
Week 12	Techniques of Circuit Analysis
Week 13	Techniques of Circuit Analysis
Week 14	Techniques of Circuit Analysis
Week 15	Reviewing Important Subjects
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: An introductory lecture about the Electrical Circuit LAB.
Weeks 2	Lab 2: An introductory lecture about resistors
Weeks 3	Lab 3: Ohm's Law and applying and measuring the voltage and current in the circuit
Weeks 4,5	Lab 4: Series resistors, voltage divider rule and Kirchhoff's voltage law
Week 6,7	Lab 5: Parallel resistors, current divider rule and Kirchhoff's current law
Weeks 8	Midterm Exam 1
Week 9	Lab 6: Series-Parallel Circuit
Week 10,11	Lab 7: Node-Voltage method
Weeks 12	Lab 8: Superposition method
Weeks 13	Lab 9: Superposition method
Weeks 14, 15	Lab 10: Thevenin and Norton's methods

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Robert L. Boylestad, "Introductory Circuits Analysis" Prentice Hall International	Yes
Recommended Texts	1. Nilsson and Riedel, “Electric Circuits” Prentice Hall	No
Websites	https://www.allaboutcircuits.com	

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Electronics Physics**			**Module Delivery**	
Module Type	**C**			☐vTheory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	**EPH1**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level		1	**Semester of Delivery**		1
Administering Department			**College**	COE	
Module Leader	Name: Fatma Nafaa Jaafer		**e-mail**	E-mail: fatma.nafaa @uoitc.edu.iq	
Module Leader's Acad. Title		Ass. prof.	**Module Leader's Qualification**		PhD
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		16/06/2023	**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. To demonstrate a comprehensive understanding of electronic physics principles in the context of communications engineering. 2. To analyze and design electronic circuits and components for communication systems. 3. Apply theoretical knowledge to the analysis and optimization of communication systems. 4. Develop skills in the measurement and characterization of electronic components
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Demonstrate a solid understanding of the fundamental principles and concepts of electronic physics. 2. Explain the characteristics and behavior of various electronic components, such as diodes, transistors, and operational amplifiers. 3. Describe the principles and operation of basic electronic circuits, including amplifiers, oscillators, and digital logic gates. 4. Explain the principles of semiconductor physics and its relevance to electronic devices and circuits. 5. Understand the importance of measurement and analysis techniques in electronic circuits.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1. Introduction to Electronics in Communications Engineering(6) • Overview of electronic physics and its significance in communication systems. • Essential electronic components used in communication systems and their characteristics. 2. Semiconductor Physics and Devices(6) • Crystal structure and energy bands in semiconductors. • Properties and characteristics of diodes and transistors. • Applications of semiconductor devices in communication systems. 3. Amplifiers and Signal Processing(6) • Analysis and design of analog amplifiers. • Amplifier configurations: common-emitter, common-base, and common-collector. • Signal processing techniques in communication systems. 4. Frequency Modulation (FM) and Amplitude Modulation (AM)(6) • Principles and analysis of FM and AM modulation techniques. • Modulation and demodulation circuits for FM and AM signals. • Design and optimization of FM and AM communication systems. 5. Digital Electronics and Communication(6) • Introduction to digital logic gates and Boolean algebra. • Digital modulation techniques: ASK, FSK, PSK, and QAM. • Error detection and correction techniques in digital communication. 6. RF and Microwave Electronics(5) • Introduction to radio frequency (RF) and microwave electronics.

	• Transmission lines, impedance matching, and Smith charts. • Analysis and design of RF amplifiers, mixers, and filters for communication systems. 7. Communication Circuits and Systems(5) • Design considerations for communication circuits and systems. • Analog and digital communication system components. • Design and analysis of communication system blocks. 8. Laboratory Sessions(5) • Hands-on experiments to reinforce theoretical concepts. • Measurement and characterization of communication system components. • Use of electronic instrumentation and simulation software specific to communications engineering.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The Electronic Physics module provides students with a comprehensive understanding of the principles and concepts of electronics. This module aims to introduce students to the fundamental theories and applications of electronic devices and circuits. Through theoretical lectures, practical demonstrations, and hands-on experiments, students will develop a strong foundation in electronic physics, enabling them to analyze and design basic electronic circuits.

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	77	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
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**	3	3% (9)	Continuous	All
	Assignments	5	4% (20)	Continuous	All
	Projects	1	5% (5)	Continuous	All
	Report	1	6% (6)	Continuous	All
Summative assessment	**Midterm Exam**	1hr	10% (10)	7	7
	Final Exam	3hr	50% (50)	16	16
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Electronics
Week 2	Semiconductor Physics
Week 3	Diodes and Rectifiers
Week 4	Bipolar Junction Transistors (BJTs)
Week 5	Field-Effect Transistors (FETs)
Week 6	Operational Amplifiers (Op-Amps)
Week 7	Digital Electronics
Week 8	Communication Systems
Week 9	RF and Microwave Electronics
Week 10	Analog and Digital Communication
Week 11	Communication Circuits and Systems
Week 12	Wireless Communication
Week 13	Optical Communication
Week 14	Digital Signal Processing (DSP)
Week 15	Integrated Circuits and System Design
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered

Week 1	Lab 1: لايوجد
Week 2	Lab 2:
Week 3	Lab 3:
Week 4	Lab 4:
Week 5	Lab 5:
Week 6	Lab 6:
Week 7	Lab 7:

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Lee, T. H. (2003). The Design of CMOS Radio-Frequency Integrated Circuits. Cambridge University Press.	No
Recommended Texts	Proakis, J. G., & Salehi, M. (2013). Communication Systems Engineering. Pearson.	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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Engineering Ethics**			**Module Delivery**	
Module Type	**Basic**			☒**Theory** ☐**Lecture** ☐ **Lab** ☐**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	**EET1**				
ECTS Credits	**2**				
SWL (hr/sem)	75				
Module Level		1	**Semester of Delivery**		1
Administering Department		MCCE	**College**	COE	
Module Leader	Dr. Mayahsa Mohammedali		**e-mail**	drmayali.uoitc@uoitc.edu.com	
Module Leader's Acad. Title		Lecturer	**Module Leader's Qualification**		PhD
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		16/03/2023	**Version Number**		2.0

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	**1.** To understand the importance of ethics in the engineering profession and its impact on society. **2.** To recognize and analyze ethical dilemmas and conflicts that arise in engineering practice. **3.** To develop a comprehensive understanding of professional codes of ethics and their relevance to engineering. **4.** To apply ethical theories and decision-making models to address moral challenges in engineering contexts. **5.** To explore the social, environmental, and global implications of engineering decisions and technologies. **6.** To enhance critical thinking and problem-solving skills in the context of ethical reasoning. **7.** To communicate effectively, both orally and in writing, on ethical issues in engineering. **8.** 8. To collaborate with peers to evaluate case studies, engage in ethical discussions, and develop ethical solutions.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**1.** Understand the importance of ethics in the engineering profession and recognize its impact on society. **2.** Identify and analyze ethical dilemmas and conflicts that commonly arise in engineering practice. **3.** Demonstrate a comprehensive understanding of professional codes of ethics and their relevance to engineering. **4.** Apply ethical theories and decision-making models to address moral challenges in engineering contexts. **5.** Enhance critical thinking and problem-solving skills in the context of ethical reasoning. **6.** Communicate effectively, both orally and in writing, on ethical issues in engineering. **7.** Demonstrate ethical leadership and professionalism in engineering practice. **8.** Recognize the importance of lifelong learning and ethical responsibilities in professional development.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: 1. Introduction to Engineering Ethics ● Importance of ethics in engineering ● Historical development of engineering ethics ● Ethical frameworks and theories. [3 hrs] 2. Professional Codes of Ethics ● Analysis of professional codes of ethics (e.g., IEEE, ASME) ● Responsibilities and obligations of engineers ● Ethical decision-making processes. [3 hrs] 3. Ethical Dilemmas in Engineering ● Identification and analysis of ethical dilemmas in engineering practice ● Balancing competing interests and stakeholders ● Ethical reasoning and justification. [4 hrs] 4. Social and Environmental Implications of Engineering ● Ethical considerations related to sustainable development ● Impact of engineering decisions on society and the environment

	● Technological risks and responsibilities. [4 hrs] 5. Engineering Ethics in Research and Development ● Ethical considerations in research, including data integrity andauthorship ● Responsible conduct of research ● Ethical issues in emerging technologies. [4 hrs] 6. Case Studies in Engineering Ethics ● Analysis and discussion of real-world ethical dilemmas in engineering ● Ethical implications of high-profile engineering failures and successes ● Lessons learned and best practices. [4 hrs] 7. Global Perspectives in Engineering Ethics ● Cross-cultural and international perspectives on engineering ethics ● Ethical challenges in global engineering projects ● Ethical responsibilities towards marginalized communities. [4 hrs] 8. Ethical Leadership and Professionalism ● Ethical leadership in engineering organizations ● Professional development and lifelong learning in an ethical context ● Ethical considerations in collaboration and teamwork. [4 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Engineering Ethics is a course designed for students in their 3th semester to develop an understanding of ethical principles and considerations specific to the field of engineering. The course aims to explore the ethical dimensions of engineering practice, emphasizing professional responsibility, social implications, and moral decision-making. Students will analyze case studies, engage in discussions, and develop ethical frameworks to address ethical challenges commonly encountered in engineering.

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

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Engineering Ethics
Week 2	Professional Codes of Ethics
Week 3	Ethical Dilemmas in Engineering
Week 4	Social and Environmental Implications of Engineering
Week 5	Engineering Ethics in Research and Development
Week 6	Case Studies in Engineering Ethics
Week 7	Mid-term Exam
Week 8	Engineering Ethics in Professional Practice
Week 9	Ethical Decision Making and Moral Reasoning
Week 10	Ethical Issues in Emerging Technologies
Week 11	Ethical Dimensions of Engineering Design
Week 12	Engineering Ethics and Public Policy
Week 13	Ethical Leadership and Professionalism
Week 14	Engineering Ethics in a Global Context
Week 15	Ethical Issues in Sustainable Engineering
Week 16	Preparation for Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	"Engineering Ethics: Concepts and Cases" by Charles E. Harris Jr., Michael S. Pritchard, and Michael J. Rabins	No
Recommended Texts	"Ethics in Engineering Practice and Research" by Caroline Whitbeck	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.

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	**EDW1**				
ECTS Credits	**3.00**				
SWL (hr/sem)	**75**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	MTCE and MCCE		**College**	COE	
Module Leader	Ola Adel Qasim		**e-mail**	ola.adel@uoitc.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	16/06/2023		**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	• To emphasize the importance of drawing as a language for engineers • To develop skills in engineering drawing and drafting. • To develop skills in interpretation of engineering drawings • To develop skills in computer aided drafting and design. To know about different types of projection • To know projection of points, straight lines, solids etc. • To know development of different types of surfaces. • To know about isometric projection. • Basics of dimensioning, Lettering and representation of lines • Different lines used for representation of different Engineering Sections. • To know different angle of projection.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On completion of this course students will be able to: 1. Prepare and understand drawings, providing general knowledge in engineering drawing, the ability to properly deal with engineering drawing programs, and draw many various geometric shapes. 2. Recognize engineering drawing tools and use the drawing principles for adequate representation of engineering drawing models. 3. Produce 2-D engineering drawing sketches using the given drawing models, apply the engineering drawing principles to draw 2-D sketches using AutoCAD drawing and editing tools. 4. Draw geometric sections from all aspects in a two-dimensional manner. Output and print a final form after saving files and printing in various sizes. 5. Use the principles of orthographic projections and Isometric drawing. 6. By studying about projections of solids students will be able to visualize three dimensional Objects and that will enable them to design new products.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. The working environment of the AutoCAD program and basic elements. Menus, toolbars, command prompt, create-copy-move-delete-rename a file, layout. Drawing basics, sheet layout and dimensioning, drawing (line and line types, rectangle, circle, ellipse, point, arc and lettering. Use modify commands-copy, move, rotate, expand the drawing, and many other uses. Editing commands: copy, cut, paste, erase, and move. Dimensioning, types of dimensions in AUTOCAD. Annotation commands, add texts and leader to the drawing, show the dimensions of the drawing, and insert tables. [12 hrs] Hatch, hatch scale, filet, chamfer, point, point type, divided. Drawing curves, geometrical construction, lettering, numbering, curves (polygons, arcs, ellipses, parabola, hyperbola, involutes, cycloids, trochoids, spirals). Sectioning, half-Sections and output and print and exam. [15 hrs] Introduction to orthographic drawings (part 1), Orthographic drawings using AutoCAD (part 2), Isometric drawing (part 1). Isometric drawing using AutoCAD (part 2). Assembly drawing using AutoCAD, 2D AutoCAD, Cross-Sectional Views using AutoCAD. [18 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	✔ The use of the explanation by the subject teacher, the white board and the digital display screen (data show) connected to the computer. Using engineering drawing programs (AutoCAD) and others. Using software, photo, video and audio presentation tools. Discussing scientific ideas and vocabulary with students. Theoretical subjects simulate the students' sense of familiarity with the cognitive aspects and how to apply them in practice. ✔ Raise the cognitive values of the academic subjects through practical application. Raising students' efficiency and teaching abilities in their lessons. Raising the emotional aspects of the students through the establishment of competitions, as well as a sense of responsibility towards others ✔ Evaluation will be through (daily exams, monthly exams, semester exams, oral exams, reports and research, extracurricular activities) ✔ Through theoretical teaching by the subject teacher, through the establishment of groups to perform homework, through the establishment of extra-curricular activities, through participation in lessons and software programs on the Internet ✔ By presenting intellectual products to students. Through theoretical and oral exams, evaluating students' performance through classroom and extra-curricular activities, evaluation by involving students in solving issues in front of others, during which the student's awareness of his moral and scientific responsibility is evaluated. ✔ Transferred general and qualifying skills (other skills related to employability and personal development), providing students with general knowledge with engineering drawing programs and various designs. Applying the knowledge acquired by students of the Autocad program in many areas of their specialization. The ability to work effectively within a team to accomplish a specific task.

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	27	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**75**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	
Week 13	
Week 14	
Week 15	
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to AutoCAD, review windows-create-copy-move-delete-rename a file. Introduction and description on drawing toolbars and menu bar. Use of CAD in engineering drawing.
Week 2	Lab 2: Drawing basics, sheet layout and planning, sheet dimensioning, drawing (line and line types, rectangle, circle, ellipse, point, arc, ---------- etc.. and lettering.
Week 3	Lab 3: Use modify commands-copy, move, rotate, expand the drawing, and many other uses. Editing commands: copy, cut, paste, erase, and move.
Week 4	Lab 4: Dimensioning, types of dimensions in AUTOCAD. Annotation commands, add texts and leader to the drawing, show the dimensions of the drawing, and insert tables.
Week 5	Lab 5: Hatch, hatch scale, filet, chamfer, point, point type, divided.
Week 6	Lab 6: Drawing curves, geometrical construction, lettering, numbering, curves (polygons, arcs, ellipses, parabola, hyperbola, involutes, cycloids, trochoids, spirals)
Week 7	Lab 7: Sectioning, half-Sections.
Week 8	Lab 8: Output and print.
Week 9	Midterm Exam (1)
Week 10	Lab 10: Introduction to orthographic drawings (part 1)
Week 11	Lab 11: Orthographic drawings using AutoCAD (part 2)
Week 12	Lab 12: Isometric drawing (part 1)
Week 13	Lab 13: Isometric drawing using AutoCAD (part 2)
Week 14	Lab 14: Assembly drawing using AutoCAD, 2D AutoCAD.
Week 15	Lab 15: Cross-Sectional Views using AutoCAD
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1-Venugopal K. “Engineering Graphics”, 9th Edition (Revised), New Age International Publishers, 2009. 2-Narayana K.L, Kannaiah. P, “Textbook on Engineering Drawing ", 2010.	NO
Recommended Texts	Basic lectures prepared by the teacher	Yes
Websites	https://www.coursera.org/ https://www.cadtutor.net/	

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**English Language I**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory CL** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Eng102**				
ECTS Credits	**2.0**				
SWL (hr/sem)	**50**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	MCCE		**College**	COE	
Module Leader	Mustafa Khalid Saleh		**e-mail**	Mustafa.khalid@uoitc.edu.iq	
Module Leader's Acad. Title	Assistant Lecturer		**Module Leader's Qualification**	master of arts	
Module Tutor	----------		**e-mail**	----------	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	16/06/2023		**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. To enhance students' listening, speaking, reading, and writing skills in English. Emphasize accuracy, fluency, and comprehension in various contexts. 2. To introduce and reinforce essential grammatical structures and vocabulary necessary for effective communication. Focus on building a solid foundation in English grammar and expanding students' vocabulary range. 3. To enhance students' oral communication skills through various activities such as discussions, presentations, debates, and role-plays. Focus on developing effective listening strategies and improving overall spoken fluency. 4. To encourage students to reflect on their language learning progress, identify areas for improvement, and develop strategies for ongoing language development beyond the course.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Demonstrate improved proficiency in the English language, including enhanced reading, writing, listening, and speaking skills. 2. Effectively communicate ideas and information in English, both orally and in writing, using appropriate grammar, vocabulary, and discourse markers. 3. Engage in oral communication with fluency and clarity, express opinions, participate in discussions, and deliver presentations effectively in English. 4. Understand and analyze a variety of texts, including academic articles, essays, reports, and literary works, demonstrating the ability to identify main ideas, supporting details, and author's purpose. 5. Produce coherent and well-organized written work, such as paragraphs and reports using appropriate academic writing conventions, including clarity, logical structure, and accurate referencing. 6. Develop self-assessment skills to monitor language progress, identify strengths and weaknesses, and implement strategies for ongoing language improvement beyond the course.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Topic 1- Grammar and Syntax: Grammar and syntax play a crucial role in effective communication. Understanding the different parts of speech, such as nouns, verbs, adjectives, and their functions, helps construct clear and accurate sentences. It is important to grasp verb tenses and forms to express actions accurately in time. Sentence structure and word order ensure coherence and convey intended meaning. Proper usage of articles, pronouns, and determiners helps clarify reference. Prepositions and phrasal verbs contribute to expressing relationships between words. Lastly, knowing modals and auxiliary verbs aids in expressing possibilities, obligations, and other nuances. **(10 hrs.)**

	Topic 2- Vocabulary Development: Developing a strong vocabulary is essential for effective communication. Reading and listening to a wide range of materials helps expand vocabulary. Learning synonyms, antonyms, and collocations enhances word choice and expression. Idioms and idiomatic expressions add depth and convey meaning figuratively. **(6 hrs.)** Topic 3- Reading Skills and Strategies: Reading skills and strategies facilitate comprehension and critical thinking. Skimming and scanning techniques enable efficient information retrieval. Understanding main ideas and supporting details helps grasp the overall meaning of a text. Identifying text structure and organization aids in navigating through the content. Interpreting vocabulary in context enhances comprehension. **(6 hrs.)** Topic 4- Writing Skills: Writing skills are essential for expressing ideas clearly and coherently. Paragraph writing involves structuring ideas with topic sentences and supporting details to convey a focused message. Coherence and cohesion in writing ensure logical flow and smooth transitions. An effective introduction engages the reader and sets the tone for the rest of the piece. Paraphrasing and summarizing help convey information in one's own words while maintaining accuracy. **(4 hrs.)** Topic 5- Listening and Speaking Skills: Listening and speaking skills are vital for effective communication in various contexts. Understanding spoken English, whether in lectures, conversations, or presentations, is crucial. Listening for main ideas, details, and specific information aids in comprehension. Participating in discussions and group activities develops conversational skills and fosters collaborative communication. **(4 hrs.)**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• Communicative Approach: Emphasize the use of English for real-life communication purposes. Encourage students to engage in meaningful interactions through pair work, group discussions, role-plays, and debates. • Task-Based Learning: Design learning activities that involve completing specific tasks or projects using English. This approach focuses on meaningful and authentic language use while addressing specific learning objectives. • Active Learning: Encourage active participation and engagement through hands-on activities, problem-solving tasks, and interactive exercises. This can include role-plays, and team work. • Technology Integration: Utilize technology tools and resources to enhance language learning. This can include multimedia presentations, online learning platforms, language learning apps, and virtual collaboration tools.
Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا	

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	18	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	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**	2	5% (10)	6,12	1, 3,4, 6
	Assignments	4	4% (16)	Continuous	All
	report	1	4% (4)	11	All
	seminar	1	10% (10)	12	3, 4
Summative assessment	**Midterm Exam**	2hr	10% (10)	10	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	General Introduction You and me, verb Be, possessive adjectives, Possessive ‘s
Week 2	A good job, Present simple, questions and negatives
Week 3	Work hard play hard, Present simple II, adverbs of frequency
Week 4	Somewhere to live, there is-are, demonstratives
Week 5	Super me, can - can’t, adverbs, was - were - could
Week 6	Life’s ups and downs, past simple, regular, irregular, time expressions
Week 7	Dates to remember, past simple II, questions and negatives
Week 8	Eat in or out, countable vs. uncountable – some any
Week 9	City living, comparative adjectives, superlative adjectives
Week 10	Mid-Exam
Week 11	Where on earth are you, in at on, present continuous, present simple (continuous)
Week 12	Going far, going to future, infinitives of purpose

Week 13	Future, it's uses, Conditionals
Week 14	Listening and speaking
Week 15	Reading and Writing (Focus on tenses)
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Liz and John Soars: New Headway, Elementary 4th Edition. Oxford University Press	Yes
Recommended Texts	"English Grammar in Use" by Raymond Murphy: A comprehensive grammar reference and practice book "English Vocabulary in Use" by Michael McCarthy and Felicity O'Dell: A vocabulary book with exercises to expand your word knowledge.	Yes
Websites	• Fun English Games (https://www.funenglishgames.com/) - Fun English Games offers a collection of interactive games and activities designed to help young learners practice vocabulary, grammar, reading, and listening skills. The games are engaging and can make learning English enjoyable. • ESL Games Plus (https://www.eslgamesplus.com/) - ESL Games Plus provides a variety of interactive games and activities designed to help elementary level learners practice English grammar, vocabulary, and reading comprehension. The site offers games for different topics and language areas. • Starfall (https://www.starfall.com/) - Starfall is a popular website that focuses on early reading and phonics skills. It offers interactive activities, songs, and stories that help young learners develop their English reading and pronunciation skills. • Dream reader (https://dreamreader.net/) - Dream reader offers a collection of simplified reading passages for English learners. The articles cover a variety of topics and are accompanied by comprehension questions and vocabulary exercises. • English Worksheets Land (https://englishworksheetsland.com/) - English Worksheets Land provides a vast collection of printable worksheets and activities for elementary level English learners. The worksheets cover grammar, vocabulary, reading, writing, and phonics.	

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Mathematics I**			**Module Delivery**	
Module Type	**C**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MAT1**				
ECTS Credits	**7**				
SWL (hr/sem)	**150**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	MCCE		**College**	COE	
Module Leader	Abdullah Sinan Ahmed		**e-mail**	abdullah.sinan@uoitc.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	16/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		**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	By the end of this course, students will: • The student's knowledge in the field of solving inequalities, drawing functions, how to find their field, as well as finding ends in several ways. Enable the student to know how to find continuity of functions. Study the most important basics of engineering by explaining derivations, integrals and their applications. The second part of this curriculum was to introduce the student to a field in mathematics, which is the important part in scientific and engineering life, which is differential equations of the first and second degree, and to explain several ways through which this type of differential equations can be solved. • Increasing the student's skills in understanding topics through the huge number of examples.

	• Giving students basic information in mathematics that helps them solve mathematical problems related to engineering, as the student is provided with information, ideas, and concepts related to the specialization, as well as the rationale related to it. • Enabling the student to employ the information, ideas and concepts obtained in an applied manner by building a flexible mentality of the student that enables him to absorb all the updates that the specialization is witnessing with the possibility of linking them to his previous practical knowledge.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Realizing the basic concepts, principles and mathematical theories underlying engineering with basic knowledge of general mathematics 2- Establishing a solid mathematical foundation on which to rely on in various mathematical subjects in the later educational stages. 3- Giving a general and comprehensive explanation of the topic of derivations and integrals. 4- Studying and explaining the types of functions, drawing them, how to find ends, and knowing the continuity of the function. 5- Learn how to solve differential equations of the first and second degree. 6- Learn how to solve a linear system. 7- Study of complex numbers. 8- Identify the polar coordinates.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A - **Matrix and Determinants** Introduction of matrix, Types of matrices , Matrix Addition and Subtraction, Equal two Matrix, Multiplication of Matrices , Existence of Additive Inverse of Matrix, Transpose of A Matrix, Determinant of A Matrix , Inverse of A Matrix **[3 hrs]** Part B – **Solution of Linear System** Solution of Linear Equations By Gaussin Jordan Elimination Method, The Gauss-Jordan elimination, Method of finding of Inverse Matrix **[3 hrs]** Part C – **Inequalities and Function** Definition of Inequalities, Function (Domain and Range),absolute value properties ,graph of functions., types of function **[6 hrs]** Part D – **Limit and Continuous** Definition of Limit , Definition of Continuous **[3 hrs]** Part E – **Differentiation and their Applications** Derivative Formulas , Derivatives of Trigonometric Functions, Derivative of the Natural Exponential Function, Chain Rule, Implicit Differentiation, Higher order derivatives , Rolle's Theorem, The Mean Value Theorem , Cauchy's Mean Value Theorem , Application of Differentiation. **[6 hrs]** Part F – **Integration and their Applications** Definition of integration, Properties of integration, integration of Trigonometric Functions, The Definite integration, ,Integration by parts, The integration of natural Logarithm, The integration of the fractional function where the derivative, denominator is not exist., Application of Definite Integral, Area under a curve, Area Between two curves **[6 hrs]** Part G - **Ordinary Differential Equations and their Applications** First Order and first degree differential equations, Homogenous differential equations, Linear differential equations, Equations reducible to linear differential equations: Bernoulli's equation, First order and Higher degree differential equation; Clairaut's equation, Second order and first degree linear differential equations with constant coefficient, Second order and first degree linear differential equations with variable coefficient; Cauchy's equations. , Applications in engineering field**[9 hrs]** Part H – **Polar Coordinates** Polar Coordinates, Graphs in polar coordinate ,Symmetric test, Area in polar coordinate, Area between two polar curves , Arc Length of polar curves**[6 hrs]** Part I - **Complex Numbers** Introduction of Complex Numbers , Properties, Roots of complex numbers **[3 hrs]**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in Developing self-potential through numerous tests of course topics. - Application of differential equations in engineering subjects - Applying the solution of linear systems in engineering subjects - Scientific and practical discussions of the content of the lecture

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	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	82	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	4 and 7	LO #1 and #5
	Onsite Assignments	1	5% (10)	10	LO #3, #7
	Seminar	1	5% (10)	14	LO #1, #2, #4, #5 & #8
	Online Assignments	4	20% (10)	6,8,12,14	LO #1, #2, #5 & #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	Matrix and Determinants
Week 2	Solution of Linear System
Week 3	Part 1: Inequalities and Function
Week 4	Part 2: Inequalities and Function
Week 5	**Mid-term Exam** Limit and Continuous
Week 6	Part 1: Differentiation and their Applications
Week 7	Part 2: Differentiation and their Applications
Week 8	Part 1: Integration and their Applications
Week 9	Part 2: Integration and their Applications
Week 10	Ordinary Differential Equations and their Applications I
Week 11	Ordinary Differential Equations and their Applications II
Week 12	**Mid-term Exam** Ordinary Differential Equations and their Applications III
Week 13	Polar Coordinates I
Week 14	Polar Coordinates II
Week 15	Complex Numbers
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	
Week 13	
Week 14	
Week 15	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	A binding prepared by me, which contains a full explanation of the course.	No
Recommended Texts	- Erwin Kreyszig, Advance Engineering Mathematics, John Wiley and Sons Inc - Thomas, Finney, Calculus and Analytical geometry Addison-Wesley	No
Websites	Websites specialized in the study of the article.	

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.

المرحلة: الاولى

الفصل الدراسي: الثاني

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Computer Programming**			**Module Delivery**	
Module Type	**Core**			☒**Theory** ☐**Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**ITC200100**				
ECTS Credits	**5.00**				
SWL (hr/sem)	**125**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	MCCE/MTCE		**College**	College of Engineering	
Module Leader	Noor Kamil		**e-mail**	noor.kamil@uoitc.edu.iq	
Module Leader's Acad. Title	Assistant Lecturer		**Module Leader's Qualification**	Master	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	01/03/2025		**Vers 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. Input and Output (I/O): Understand how to take user input and display output in a program using basic I/O functions to ensure seamless interaction between the user and the program. 2. Conditional Statements: Write programs that make decisions using if, else, elif, and logical operators (and, or, not), and implement nested conditional statements for complex decision-making, ensuring programs respond dynamically to different inputs. 3. Loops: Use (for and while) loops to repeat tasks efficiently, and apply loop control statements like (break and continue) to manage iterative processes, optimizing execution flow. 4. Arrays and Lists: Create, manipulate, and perform operations on arrays and lists, including accessing, updating, and iterating over elements, while utilizing basic list methods to solve problems involving collections of data. 5. Strings and String Manipulation: Work with strings, including slicing, concatenation, formatting, and built-in string methods, and solve problems involving text processing and manipulation to handle different string-based operations. 6. Functions: Define, call, and reuse functions to modularize code, while understanding parameters, return values, and scope to write efficient and reusable programs that enhance code structure and maintainability. 7. Object-Oriented Programming (OOP): Encapsulation: Implement classes and objects to model real-world entities while using encapsulation to protect data and enforce modularity. Inheritance: Create subclasses, reuse code, and understand relationships between parent and child classes using method overriding and super(), ensuring code reusability and hierarchy implementation. Polymorphism: Implement polymorphism to allow objects to take multiple forms, enabling flexible and scalable code through method overriding and dynamic method dispatch.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. **Demonstrate Proficiency in Input and Output (I/O):** Use basic I/O functions to take user input and display output effectively. 2. **Apply Conditional Logic in Programming:** Write programs using if, else, elif, and logical operators (and, or, not) for decision-making, including the implementation of nested conditions for complex logic. 3. **Utilize Loops for Efficient Problem Solving:** Implement for and while loops to automate repetitive tasks while using break and continue statements to manage loop control effectively. 4. **Manipulate Arrays and Lists:** Create, access, update, and iterate over arrays and lists while applying basic list methods to organize and manage data efficiently. 5. **Perform String Operations and Manipulation:** Use slicing, concatenation, formatting, and built-in string methods to process and manipulate textual data.

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
	6. **Design and Implement Functions:** Define, call, and reuse functions with parameters and return values while maintaining proper variable scope to ensure modular and efficient code. 7. **Implement Object-Oriented Programming (OOP) Concepts:** Apply encapsulation to design well-structured classes and objects, utilize inheritance to create subclasses and promote code reusability, and implement polymorphism through method overriding and dynamic dispatch for flexible and scalable programming.
Indicative Contents المحتويات الإرشادية	- Indicative content includes the following. - <u>Part A: Programming Fundamentals</u> [50 hr.] - Input and Output (I/O) [5 hr.] - Conditional Statements [10 hr.] - Loops [10 hr.] - Arrays and Lists [5 hr.] - Strings and String Manipulation [10 hr.] - Functions [10 hr.] <u>Part B: Object Oriented Programming</u> [25 hr.] - Encapsulation [5 hr.] - Inheritance [10 hr.] - Polymorphism [10 hr.]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies استراتيجيات التعليم	1. **Lectures and Demonstrations:** Programming concepts will be delivered through interactive lectures, live coding demonstrations, and real-world examples to enhance understanding. This approach helps students bridge the gap between theory and practical applications. 2. **Hands-On Coding Exercises:** Students will actively participate in coding exercises designed to reinforce theoretical concepts and improve problem-solving abilities. These exercises provide direct experience with programming tools and techniques. 3. **Step-by-Step Problem Solving:** Structured programming problems will be introduced progressively, starting with basic tasks and increasing in complexity. This method builds confidence and equips students with the skills to tackle more advanced challenges over time. 4. **Pair and Group Programming:** Collaboration will be encouraged through pair programming and group discussions, enhancing teamwork and peer learning. This fosters a supportive learning environment where students can share knowledge and approaches. 5. **Interactive Quizzes and Assessments:** Formative assessments, including quizzes and coding challenges, will be used to evaluate comprehension and provide

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
	immediate feedback. These activities allow students to track their progress and address areas needing improvement. 6. **Code Reviews and Debugging Sessions:** Dedicated sessions will be conducted where students analyze and debug code, helping them develop critical thinking and troubleshooting skills essential for writing efficient and error-free programs. 7. **Class Discussions and Q&A Sessions:** Open discussions will be facilitated, encouraging students to ask questions, engage with the material, and clarify doubts. This interactive approach promotes active participation and deeper understanding.

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
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	9% (9)	Continuous	All
	Online Assignments	1	5% (5)	Continuous	All
	Lab.	7	21% (21)	Continuous	All
	Project	1	5% (5)	Continuous	All
Summative assessment	**Midterm Exam**	1hr	10% (10)	7	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Input and Output (I/O)
Week 2	Conditional Statements
Week 3	Conditional Statements
Week 4	Loops
Week 5	Loops
Week 6	Arrays and Lists
Week 7	Strings and String Manipulation, Mid Exam
Week 8	Strings and String Manipulation
Week 9	Functions
Week 10	Functions
Week 11	OOP - Encapsulation
Week 12	OOP - Inheritance
Week 13	OOP - Inheritance
Week 14	OOP - Polymorphism
Week 15	OOP - Polymorphism
Week 16	**Final exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Input and Output (I/O)
Week 2	Conditional Statements
Week 3	Conditional Statements
Week 4	Loops
Week 5	Loops
Week 6	Arrays and Lists
Week 7	Strings and String Manipulation
Week 8	Strings and String Manipulation
Week 9	Functions
Week 10	Functions
Week 11	OOP - Encapsulation
Week 12	OOP - Inheritance
Week 13	OOP - Inheritance
Week 14	OOP - Polymorphism
Week 15	OOP - Polymorphism
Week 16	**Final exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Dive into Python by Mark Pilgrim	No
Recommended Texts	Python Crash Course by Eric Matthes	No
Websites	https://www.codecademy.com/catalog/language/python	

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Computer Programming I**			**Module Delivery**	
Module Type	**Core**			☒**Theory** ☐**Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CPR2**				
ECTS Credits	**5.00**				
SWL (hr/sem)	**125**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	MCCE		**College**	COE	
Module Leader	Noor Kamil		**e-mail**	noor.kamil@uoitc.edu.iq	
Module Leader's Acad. Title	Assistant Lecturer		**Module Leader's Qualification**	Master Degree	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	16/06/2023		**Vers Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	CPR I	**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. Providing students with basic skills in programming methods and algorithms and their applications through various high-level programming languages such as C++ 2. Knowing the basic structure of the program, basic concepts and expressions for all types of data, variables, gates, input/extraction operations, arithmetic, and logical operations, assembly structure Selection, conditional statements, recursion clauses, functions, operand exchange between functions, arrays and some of their applications
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. 1. Knowledge of the basics of programming in the C++ language and its basic scientific and mathematical libraries 2. Know the basic concepts and phrases of the language and deal with its commands and tools 3. Mastering the methods of verifying the validity of the program and that it is free from errors 4. Analyze mathematical problems and formulate solutions 5. Identifying and correcting errors in previously written programs 6. The possibility of determining the type of errors
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A: Overview and Principles of Programming</u> - Overview of computer and introduction to programming languages. [12 hrs] - Variables type, arithmetic operations, and Input/output stream. [12 hrs] <u>Part B: Statements in programming</u> - Conditional statement [6 hrs] - Option statement [6 hrs] - Loop statement [6 hrs] Clarification and explanation of how conditional and repetitive sentences are formulated, and clarification of ways to use them <u>Part C: fixed data structure type and Recursion</u> - Clarification and explanation of what the array is and how to deal with it [12 hrs] - Multi-dimensionally array definition [12 hrs] - Recursion [9 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Relying on peer thinking, teamwork, and cooperation among students and dividing them into groups so that a leader for the group is chosen in each assignment or report required responsible for the group and the distribution of tasks among its members.

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	47	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
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% (5)	Continuous	All
	Assignments	2	4% (2)	Continuous	All
	Lab.	7	21% (3)	Continuous	All
	Report	1	5% (5)	Continuous	All
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	All
	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 Programming Languages
Week 2	Introduction of Programming Language
Week 3	Variables Types and Arithmetic
Week 4	Input/output Stream
Week 5	Condition Statement
Week 6	Options Statement

Week 7	For Loop and Control Statements
Week 8	Midterm Exam-1
Week 9	While, Do-While statement
Week 10	string
Week 11	Functions
Week 12	Arrays
Week 13	Multi-dimensional array
Week 14	Recursion
Week 15	**The preparatory week before the Final Exam**
Week 16	**Final exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Simple introductory programs
Week 2	Lab 2: Write a program to define variables and applied the basic arithmetic and mathematic operations on them.
Week 3	Lab 3: Write a simple program to read and print variables on the screen.
Week 4	Lab 4: Write a program to compare two variables and print the larger number.
Week 5	Lab 5: Write a simple multi-choices program to ask the user to input the correct answer to a question
Week 6	Lab 6: Write a program to define a string then apply the string library function on it.
Week 7	Lab 7: Write a program to initialize an array then fill the array with user input and print the array element on screen.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Lectures prepared by the teacher	
Recommended Texts	- How To Program: With An Introduction To C++, 8 Edition - Programming Fundamentals A Modular Structured Approach, 2nd Edition	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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Digital Systems Design**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**DSD**				
ECTS Credits	**6.00**				
SWL (hr/sem)	**150**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	MCCE		**College**	COE	
Module Leader	TAMARA ZUHAIR FADHIL		**e-mail**	tamara.zuhair@uoitc.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	PHD	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	16/06/2023		**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	The objectives of this course are: 1. Introduce the fundamentals of digital and binary systems, including arithmetic operations in various number systems. 2. Enable students to design and analyze combinational logic circuits using Boolean algebra, Karnaugh Maps, and logic gates. 3. Develop the ability to simplify and implement Boolean functions for digital circuit design. 4. Provide practical knowledge of digital logic systems, covering logic families, sequential circuits, and memory devices. 5. Explain the design of synchronous sequential circuits using state diagrams, flip-flops, and timing analysis. 6. Strengthen theoretical concepts through hands-on laboratory experiments and digital system design projects. 7. Prepare students to implement and analyze complex digital systems, such as video drivers or communication modules, using schematic entry and simulation tools.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	At the end of the course the student will be able to: 1. Understand the fundamentals of digital logic, number systems, and Boolean algebra. 2. Perform logic simplifications using Boolean algebra and Karnaugh Maps (K-Maps). 3. Design and implement combinational logic circuits, including arithmetic units, multiplexers, and code converters. 4. Analyze the characteristics and applications of different logic gate families and universal gates. 5. Construct sequential circuits using latches, flip-flops, shift registers, and counters. 6. Design and implement state machines and sequence detectors using Moore and Mealy models. 7. Apply clocking techniques and understand pulse-based sequential circuit behavior. 8. Explore practical digital system designs, integrating combinational and sequential circuits for real-world applications. 9. Utilize memory elements such as RAM, ROM, and EEPROM in digital design. 10. Work on mini projects to develop practical skills in digital circuit implementation.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Weeks 1-5: Fundamentals of Digital Logic 1. Introduction to Digital Logic & Number Systems • Logic levels, pulse waveforms, and digital electronics basics • Number systems and conversions (Binary, Gray, Octal, Hexadecimal) • Lab: Basic logic gates and truth tables 2. Boolean Algebra & Logic Simplification • Boolean theorems and properties

- Karnaugh Map (K-Map) simplifications (SOP, POS)
- Lab: Boolean simplifications and logic gate implementation

3. Combinational Logic & Arithmetic Circuits
   - Half Adder, Full Adder, and Subtractors
   - Parallel Adders and Arithmetic Logic Units (ALUs)
   - Lab: Arithmetic circuits implementation
4. Logic Gate Families & Universal Gates
   - NAND, NOR as universal gates
   - Logic families (TTL, CMOS) and their characteristics
   - Lab: Universal gate applications
5. Combinational Logic Design & Code Converters
   - Design of Binary-to-Gray, Gray-to-Binary, BCD-to-7-segment decoder
   - Implementation using logic gates
   - Lab: Code converters & BCD systems

Weeks 6-10: Advanced Combinational Circuits & Decoders/Encoders

6. Decoders, Encoders, and Multiplexers (MUX)
   - 2x4, 3x8, 4x16 decoders and priority encoders
   - MUX and DeMUX circuits (2x1, 4x1, 8x1, 16x1)
   - Lab: Implementation of Boolean functions using MUX/DeMUX
7. Comparator Design & Midterm Exam 1
   - 1-bit and multi-bit comparators
   - Design methodologies
   - Lab: Comparator circuit design
8. Sequential Circuits: Latches & Flip-Flops
   - Latches: SR, Gated SR, Gated D-Latch
   - Flip-Flops: D, JK, T, Master-Slave
   - Lab: Flip-Flop implementations
9. Flip-Flops in Sequential Circuit Design
   - Flip-Flop timing and characteristic equations
   - State diagrams and transition tables
   - Lab: Design and testing of Flip-Flop circuits
10. Shift Registers & Counters
    - Synchronous and asynchronous counters
    - Up/down counters, ring counters, Johnson counters
    - Lab: Counter and shift register experiments

Weeks 11-15: Advanced Sequential Circuits & Applications

11. State Machines & Sequence Detectors
    - Moore and Mealy state machines
    - Sequence detector design
    - Lab: State machine design using Flip-Flops
12. Clocked & Pulse-Based Sequential Circuits
    - Edge-triggered and level-triggered circuits
    - Clock dividers and frequency counters
    - Lab: Implementation of clocked circuits
13. Multivibrators & Memory Elements
    - Monostable, Bistable, Astable multivibrators

	• Memory basics: RAM, ROM, EEPROM • Lab: Multivibrator circuits 14. Practical Digital System Design & Review • Combination of combinational and sequential circuits • Mini project implementation • Lab: Practical design projects 15. Final Exam & Course Wrap-up

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. lectures are prepared on the subject in the form of pdf, powerpoint and electronic and presents them to the students and gives lectures in detail. 2. Active Learning: Encourage students to actively participate in the learning process through various activities such as problem-solving exercises, group discussions, and hands-on experiments. This approach helps students engage with the material and reinforces their understanding. 3. periodic reports and homework on the basic topics of the subject are requested. Daily discussion to find out the extent of students. Daily exams with a variety of short scientific questions to understand the extent of their understanding. Giving part of the grade for each chapter for homework. Daily exams and monthly exams for the curriculum and the final exam. 4. Problem-Solving Practice: Provide students with ample opportunities to practice solving problems related to logic circuits. Assign regular problem sets and offer constructive feedback to help students identify and rectify any misconceptions or gaps in their understanding. 5. Conceptual Building Blocks: Break down complex concepts into smaller, manageable units or building blocks. Start with the fundamental principles of logic gates and gradually build upon them, allowing students to develop a solid foundation before moving on to more advanced topics. 6. Real-world Applications: Highlight the practical applications of logic circuits in everyday life and digital instruments. Relating the theoretical concepts to real-world examples helps students appreciate the relevance of their learning and motivates them to delve deeper into the subject.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem)	78	**Structured SWL (h/w)**	5

الحمل الدراسي المنتظم للطالب خلال الفصل		الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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	15% (5)	Continuous	All
	Online Assignments	2	6% (3)	Continuous	All
	Lab.	8	16% (2)	Continuous	All
	Onsite Assignments	1	3% (3)	Continuous	All
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Fundamentals of Digital Logic 1. Introduction to Digital Logic & Number Systems • Logic levels, pulse waveforms, and digital electronics basics • Number systems and conversions (Binary, Gray, Octal, Hexadecimal) • Lab: Basic logic gates and truth tables
Week 2	Boolean Algebra & Logic Simplification • Boolean theorems and properties • Karnaugh Map (K-Map) simplifications (SOP, POS) • Lab: Boolean simplifications and logic gate implementation
Week 3	Combinational Logic & Arithmetic Circuits • Half Adder, Full Adder, and Subtractors • Parallel Adders and Arithmetic Logic Units (ALUs)

	• Lab: Arithmetic circuits implementation
Week 4	Logic Gate Families & Universal Gates • NAND, NOR as universal gates • Logic families (TTL, CMOS) and their characteristics • Lab: Universal gate applications
Week 5	Combinational Logic Design & Code Converters • Design of Binary-to-Gray, Gray-to-Binary, BCD-to-7-segment decoder • Implementation using logic gates • Lab: Code converters & BCD systems
Week 6	Decoders, Encoders, and Multiplexers (MUX) • 2x4, 3x8, 4x16 decoders and priority encoders • MUX and DeMUX circuits (2x1, 4x1, 8x1, 16x1) • Lab: Implementation of Boolean functions using MUX/DeMUX
Week 7	Midterm Exam I
Week 8	Comparator Design • 1-bit and multi-bit comparators • Design methodologies • Lab: Comparator circuit design
Week 9	Sequential Circuits: Latches & Flip-Flops • Latches: SR, Gated SR, Gated D-Latch • Flip-Flops: D, JK, T, Master-Slave • Lab: Flip-Flop implementations
Week 10	Shift Registers & Counters • Synchronous and asynchronous counters • Up/down counters, ring counters, Johnson counters • Lab: Counter and shift register experiments
Week 11	State Machines & Sequence Detectors • Moore and Mealy state machines • Sequence detector design • Lab: State machine design using Flip-Flops
Week 12	Clocked & Pulse-Based Sequential Circuits • Edge-triggered and level-triggered circuits • Clock dividers and frequency counters • Lab: Implementation of clocked circuits
Week 13	Multivibrators & Memory Elements • Monostable, Bistable, Astable multivibrators • Memory basics: RAM, ROM, EEPROM • Lab: Multivibrator circuits
Week 14	Practical Digital System Design & Review • Combination of combinational and sequential circuits • Mini project implementation • Lab: Practical design projects
Week 15	Memory and Programmable Logic (part I). An Introduction to memory and Programmable Logic, Random – Access Memory, Write and Read Operation, Timing Waveforms, Memory Decoding.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to Digital Electronics Lab – nomenclature of digital ICs, specifications, data sheet study, concept of VCC and ground, verification of the truth tables of basic logic gates (Part 1)
Week 2	Basic logic gates experiment (Part 2)
Week 3	Binary-to-Gray and Gray-to-Binary code conversions
Week 4	Boolean Algebra simplifications and logic implementation (Part 1)
Week 5	Basic arithmetic operations – Half Adder and Full Adder
Week 6	Basic arithmetic operations – Half Subtractor and Full Subtractor
Week 7	Midterm Exam 1
Week 8	Boolean Algebra simplifications and combinational logic circuits (Part 2)
Week 9	Universal Gates – NAND and NOR as universal gates
Week 10	Latches (SR, Gated SR, and D-Latch)
Week 11	Flip-Flops (D, JK, T, Master-Slave)
Week 12	Counters – Asynchronous and Synchronous Counters
Week 13	Shift Registers – Serial and Parallel Data Transfer
Week 14	Analog to Digital Conversion (A/D)
Week 15	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	• Digital Design , 5th_Edition, M. MORRIS MANO, Michael D. Ciletti, 2012	Yes
	• Digital Fundamentals, 11th Edition , Thomas L. Floyd.	
Recommended Texts	• Introduction to Logic Design, 4th_Edition, Sajjan G. Shiva, Alabama in Huntsville University, 2010 Logic Circuit Design, Shimon P. Vingron , springer, 2012. • Logic Functions and Equations Examples and Exercises, Bernd Steinbach · Christian Posthoff, springer , 2011 • ntroduction to Logic Design, 4th_Edition , Florida Atlantic University ,Alan B. Marcovitz,2010	No
Websites	https://www.coursera.org/learn/digital-systems	

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Electrical Circuits II			**Module Delivery**	
Module Type	Basic			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	ECT2				
ECTS Credits	6.00				
SWL (hr/sem)	150				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Mobile Communications and Computing Engineering		**College**	College of Engineering	
Module Leader	Dr.Ihsan Jabbar Hasan		**e-mail**	ihsan.hasan@uoitc.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Electrical Circuits I	**Semester**	1
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. Knowing the module objectives. 2. Understanding the AC electrical circuits and their applications. 3. Analyzing the AC electrical circuits mathematically to find the required parameters. 4. Simulating the AC electrical circuits and implementing them using the components that available in the electrical circuits lab of the department.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Gain a comprehensive understanding of AC circuits, their comparison with DC circuits, and the representation of sinusoidal waveforms, and practice these concepts in a laboratory setting. 2. Develop a deep understanding of inductors and capacitors, their configurations in series and parallel, and the concept of mutual inductance and its applications, and apply this knowledge in the laboratory. 3. Understand the concept of phase shift in AC circuits, including the calculation and interpretation of phase angles and phase relationships in series and parallel circuits, and reinforce these concepts through laboratory work. 4. Learn to calculate the impedance of resistors, inductors, and capacitors, and understand the phasor diagrams for these elements, and apply these concepts in a laboratory setting. 5. Develop a solid understanding of average, reactive, and apparent power in AC circuits, power factor, and power factor correction techniques, and demonstrate these power concepts in the laboratory. 6. Comprehend the resonance phenomenon and its significance in series AC circuits, including series resonance frequency, bandwidth, impedance characteristics at resonance, quality factor (Q-factor) and its implications, power considerations in resonant circuits, and applications of series resonance in filters and tuning circuits, and explore these phenomena in the laboratory. 7. Learn and apply various techniques of circuit analysis in AC circuits, including the nodal method, and Thevenin and Norton equivalents in AC circuits, and practice these techniques in the laboratory.
Indicative Contents المحتويات الإرشادية	Introduction to AC Electrical Circuits • Overview of AC circuits • Comparison with DC circuits • Basic concepts and definitions • Sinusoidal waveform representation Sinusoidal Alternating Waveforms • Sinusoidal waveforms and their characteristics • Phasor representation of AC quantities • RMS value and peak value of AC signals • Frequency, period, and phase of sinusoidal waveforms Inductance, Capacitance, and Mutual Inductance • Introduction to inductors and capacitors • Inductor in series and parallel configurations

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
	• Capacitor in series and parallel configurations • Mutual inductance and its applications Phase Shift • Introduction to phase shift in AC circuits • Phasor representation of phase shift • Calculation and interpretation of phase angles • Phase relationships in series and parallel circuits Response of Basic R, L, and C Elements to a Sinusoidal Voltage or Current • Impedance of resistors, inductors, and capacitors • Phasor diagrams for R, L, and C elements • Impedance in series and parallel configurations • Calculation of current and voltage in AC circuits Average, Reactance, and Apparent Power and Power Factor • Average power in AC circuits • Reactive power and power factor • Apparent power and its relationship with real and reactive power • Power factor correction techniques Series and Parallel AC Circuits • Analysis of series RL, RC, and RLC circuits • Voltage and current relationships in series circuits • Power calculations in series circuits • Analysis of parallel RL, RC, and RLC circuits • Voltage and current relationships in parallel circuits • Power calculations in parallel circuits Resonance in Series AC Circuits • Resonance phenomenon and its significance • Series resonance frequency and bandwidth • Impedance characteristics at resonance • Quality factor (Q-factor) and its implications • Power considerations in resonant circuits • Applications of series resonance in filters and tuning circuits Techniques of Circuit Analysis in AC Circuit • Nodal method in AC circuit • Thevenin and Norton in AC Circuit

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Lecture-Based Teaching: Deliver comprehensive lectures to introduce and explain key concepts, principles, and theories of AC electrical circuits using visual aids and engaging presentations. 2. Interactive Discussions: Facilitate interactive discussions to encourage student participation, critical thinking, and deeper understanding of AC circuits. Encourage students to ask questions, share their thoughts, and engage in class discussions. 3. Problem-Solving Sessions: Provide opportunities for students to solve problems related to AC circuits. Assign problem sets and conduct problem-solving sessions to reinforce understanding and improve students' problem-solving skills. 4. Laboratory Experiments: Organize hands-on laboratory sessions where students can perform experiments related to AC circuits. This allows students to observe real-world phenomena, validate theoretical concepts, and develop practical skills. 5. Simulations and Virtual Labs: Utilize simulation software or virtual lab platforms to allow students to simulate and analyze AC circuits. This provides a virtual hands-on experience, enabling students to manipulate circuit parameters and observe the effects in a controlled environment. 6. Real-World Applications and Case Studies: Incorporate real-world applications and case studies to demonstrate the practical implications of AC circuits. Discuss examples from various fields, highlighting how AC circuits are used in power systems, electronics, and telecommunications. 7. Assessments and Feedback: Regularly assess students' understanding and progress through quizzes, tests, assignments, and projects. Provide timely feedback to help students identify areas of improvement and reinforce their learning. Offer one-on-one consultations or office hours to address individual questions and concerns.

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
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to AC Electrical Circuits
Week 2	Sinusoidal Alternating Waveforms
Week 3	Average, RMS and Resistive AC Circuits
Week 4	Inductance, Inductors, Capacitance, and Capacitors
Week 5	Inductor in Series and Parallel Circuits
Week 6	Capacitor in Series and Parallel Circuits
Week 7	Active power, Reactance power and Apparent Power and Power Factor
Week 8	Midterm Exam1
Week 9	RL and RC Series and Parallel Circuits
Week 10	RLC Series and Parallel Circuits
Week 11	Resonance in the Series AC Circuit
Week 12	Techniques of Circuit Analysis in AC Circuit
Week 13	Techniques of Circuit Analysis in AC Circuit
Week 14	Techniques of Circuit Analysis in AC Circuit
Week 15	Reviewing Important Subjects
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: An introductory lecture about the AC related equipment in Electrical Circuit LAB.
Weeks 2	Lab 2: Use of Oscilloscope and Function generator
Weeks 3	Lab 3: Use of Inductor and Capacitor in a circuit
Weeks 4,5	Lab 4: RL and RC Circuits
Week 6,7	Lab 5: Phase Shift
Weeks 8	Midterm Exam 1
Week 9	Lab 6: RLC Series AC Circuits
Week 10	Lab 7: RLC Parallel AC Circuits
Weeks 11, 12	Lab 8: Resonance in Series RLC Circuits
Weeks 13,14	Lab 9: AC Circuit Analysis Methods
Weeks 15	Review

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Robert L. Boylestad, "Introductory Circuits Analysis" Prentice Hall International	Yes
Recommended Texts	1. Nilsson and Riedel, “Electric Circuits” Prentice Hall	No
Websites	https://www.allaboutcircuits.com	

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Mathematics II**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MAT2**				
ECTS Credits	**5.00**				
SWL (hr/sem)	**125**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	MCCE		**College**	COE	
Module Leader	Israa Abdulameer Resen		**e-mail**	Israa.resen@uoitc.edu.iq	
Module Leader's Acad. Title	Assistant Lecturer		**Module Leader's Qualification**	M.Sc.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	24/02/2025		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Mathematics I (MAT1)	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	By the end of this course, students will: ● The student's knowledge in the field of knowledge of functions with two or more variables, how to find their field, as well as finding goals in several ways. Enable the student to know how to find the continuity of functions with two or more variables. Study the most important basics of engineering by explaining derivations, partial derivations, double and triple integrals and their applications. The second part of this curriculum was to introduce the student to a field in mathematics, which is the important part in scientific and engineering life, which is series and sequences, and how to solve differential equations by series. The third part of the subject is an explanation of algebraic vectors, their calculation and their

	applications in the plane and space, and the fourth part is an explanation of three-dimensional stereoscopic geometry. ● Increasing the student's skills in understanding topics through the huge number of examples. ● Giving students basic information in mathematics that helps them solve mathematical problems related to engineering, as the student is provided with information, ideas, and concepts related to the specialization, as well as the rationale related to it. ● Enabling the student to employ the information, ideas and concepts obtained in an applied manner by building a flexible mentality of the student that enables him to absorb all the updates that the specialization is witnessing with the possibility of linking them to his previous practical knowledge.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1-Understand the basic concepts, principles and mathematical theories underlying engineering with basic knowledge of general mathematics 2- Establishing a solid mathematical foundation on which to rely on in various mathematical subjects in the later educational stages. 3- Giving a general and comprehensive explanation of the topic of derivations and integrals. 4-Studying functions with two variables and more, and how to find goals and their continuity. 5- Learn about derivations for two or more variables, double and triple integrals and their applications. 6. Explanation of series, sequences, and L'Hôpital's law. 7 -Learn how to solve differential equations using series method. 8 - Study vectors in the plane. 9 - Studying stereoscopic geometry with three dimensions.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A - **Calculus of two or more variables** Limits and continuity in Higher Dimensions, properties of limits of functions of two variables ,Continuity ,Partial Derivatives of a function of two variables, implicit partial differenti equation., second order partial derivatives, the mixed derivative theorem, partial derivatives o higher order ,the Chain Rule for functions of two variables ,functions of three variables, functior defined on Surfaces and implicit differentiation. **[6 hrs]** Part B - **Multiple Integrals** Double integral over a bounded nonrectangular region, double Integral as volumes, properties of double Integrals, Fubini's Theorem, triple Integral and properties of triple integrals. **[6 hrs]** Part C – **Sequences and Infinite Series** Geometric and arithmetic Sequence, convergence and divergence, calculating limits of sequences, L'Hopital's rule , Geometric Series, convergence and divergence, repeating decimals. **[9 hrs]** Part D – **Solution of Differential Equations in Series and Special Functions** Solution of differential equation by power series method, idea and technique of the Power Series method, recurrence relation, Legendre's equation, Legendre polynomial function, properties and applications, Bessel's equation, Bessel's function of first and second kind and properties and applications **[6 hrs]** Part E – **Vector Algebra and Calculus** Two and three dimensional vectors, unit vectors, midpoint of a Line segment, scalar products and vector products, Application of vectors: Lines and planes, scalar and vector fields , derivatives , Velocity and acceleration and directional derivatives. **[9 hrs]** Part F – **Three Dimensional Solid Geometry**

	The straight line; Symmetric and general form, coplanar lines ,shortest distance, sphere, plane section of a sphere by planes, tangent planes and lines to the spheres, right circular cone ,right circular cylinder **[9 hrs]**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students for developing self-potential through numerous tests at the following addresses:- - Application of differential equations in engineering subjects. - Applying the solution of linear systems in engineering subjects. - Scientific and practical discussions of the content of the lecture.

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	77	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
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**	3	15% (15)	3 and 10	LO #1, #2, #3 and #10, #11,#12
	Assignments	2	10% (10)	4 and 12	LO #3, #4 and #10, #11
	In-College Assignments	1	5% (5)	8	LO #6 , #8 and #12
	Report	1	10% (10)	13	LO #8, #10 and #13
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	Part 1: Calculus of two or more variables
Week 2	Part 2: Calculus of two or more variables
Week 3	Part 1: Multiple Integrals I
Week 4	part 2: Multiple Integrals II
Week 5	**Mid-term Exam**
Week 6	Sequences
Week 7	Infinite Series
Week 8	Part 1: Solution of Differential Equations in Series and Special Functions I
Week 9	Part 2: Solution of Differential Equations in Series and Special Functions II
Week 10	Part 1: Vector Algebra and Calculus
Week 11	Part 2: Vector Algebra and Calculus
Week 12	Part 3: Vector Algebra and Calculus
Week 13	Part 1: Three-Dimensional Solid Geometry
Week 14	Part 2: Three-Dimensional Solid Geometry
Week 15	Part 3: Three-Dimensional Solid Geometry
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	A binding prepared by me, which contains a full explanation of the course.	No
Recommended Texts	- Erwin Kreyszig, Advance Engineering Mathematics, John Wiley and Sons Inc - Thomas,Finney,Calculus and Analytical geometry Addison-Wesley	No
Websites	Websites specialized in the study of the article.	

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Mathematic for Computing**			**Module Delivery**	
Module Type	**Elective**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MTC2**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	MCCE		**College**	COE	
Module Leader	Ansam Ali Abdulhussein		**e-mail**	Ansam.abdulhussein@uoitc.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	2024		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Mathematics I (MAT1)	**Semester**	1
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. Introduce Foundational Mathematical Concepts Provide students with a solid foundation in discrete mathematics, focusing on the basics of numbers, propositional logic, and their role in computer science. 2. Develop Logical Reasoning Skills Enable students to construct and evaluate truth tables, understand logical equivalence, and apply these principles to problem-solving in computational contexts. 3. Explore the Basics of Set Theory Introduce the concept of sets, set operations, and set manipulation to build a foundation for understanding data organization and manipulation. 4. Introduce Functions and Relations Familiarize students with the concepts of functions (including types such as one-to-one and onto) and relations, highlighting their importance in computational theory and applications. 5. Analyze and Solve Problems Using Graph Theory Teach students the fundamentals of graph theory, including graph types, trees, and networks, and how to analyze their properties for computational problem-solving. 6. Understand the Basics of Program Correctness Introduce methodologies for verifying and ensuring program correctness, emphasizing the reliability and accuracy of algorithms. 7. Introduce Concepts of Formal Languages and Automata Provide a clear understanding of finite-state machines, formal languages, grammars, and their role in language recognition and automata theory. 8. Encourage Application of Theoretical Concepts to Practical Problems Guide students to connect theoretical knowledge in discrete mathematics, logic, and computation to practical scenarios in computer science.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. **Understand Fundamental Concepts of Discrete Mathematics** Demonstrate a thorough understanding of foundational mathematical concepts, including propositional logic, set theory, and the basics of functions and relations. 2. **Analyze Logical and Mathematical Structures** Evaluate truth tables, logical equivalences, and manipulate sets and their operations for problem-solving in computer science. 3. **Apply Mathematical Theories to Graphs and Networks** Explore graph theory concepts, including graph types, trees, and networks, and apply them to solve computational problems. 4. **Understand Functions and Relations in Computational Contexts** Identify and classify functions (e.g., one-to-one, onto), and analyze binary relations.

	5. **Explore Concepts of Computation and Automata Theory** Demonstrate an understanding of finite-state machines, and automata, and explain their significance in language recognition and computation. 6. **Verify and Ensure Program Correctness** Understand and apply principles of program correctness, including techniques for validating and verifying algorithms to ensure their reliability and accuracy. 7. **Understand the Role of Languages and Grammars in Computation** Explain the relevance of formal languages and grammars in the context of automata theory and computational linguistics.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1. **Introduction to Discrete Mathematics and Logical Foundations (6 hours)** o **Content**: ▪ Numbers from a computer's perspective: preliminaries. ▪ Fundamentals of propositional logic: truth tables, logical equivalence, and basic logical reasoning. o **Learning Focus**: Students will develop a foundational understanding of discrete mathematics concepts, including the role of numbers and logic in computation. o **Weeks Covered**: Weeks 1–2. 2. **Set Theory and Operations (3 hours)** o **Content**: ▪ Introduction to sets, set operators, and set manipulation. ▪ Practical applications of set theory in computational contexts. o **Learning Focus**: Students will learn to manipulate sets, understand set operations, and apply these concepts to solve problems in computing. o **Weeks Covered**: Week 3. 3. **Functions, Relations, and Their Applications (6 hours)** o **Content**: ▪ Introduction to functions and relations. ▪ Types of functions (one-to-one, onto) and binary relations. o **Learning Focus**: Students will explore the mathematical and computational importance of functions and relations, analyzing their applications in algorithms. o **Weeks Covered**: Weeks 4–5.

	4. **Graph Theory and Computational Structures (10 hours)** o **Content**: ▪ Introduction to graph theory: basic graph types and properties. ▪ Trees, networks, and their applications in algorithms (e.g., shortest path, spanning trees). o **Learning Focus**: Students will understand graph representations and use graph theory for solving real-world computational problems. o **Weeks Covered**: Weeks 6–9. 5. **Program Correctness and Validation (6 hours)** o **Content**: ▪ Principles and methodologies of program correctness. ▪ Techniques for validating and verifying algorithms. o **Learning Focus**: Students will gain the skills to validate algorithms and ensure program correctness through logical proofs and testing. o **Weeks Covered**: Weeks 10–11. 6. **Languages, Automata, and Computation (9 hours)** o **Content**: ▪ Introduction to formal languages, grammars, finite-state machines, and automata. ▪ Concepts of language recognition and computation, including Turing machines. o **Learning Focus**: Students will learn the foundational theories of computation, automata, and their applications in language processing. o **Weeks Covered**: Weeks 12–15.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	✔ **Lecture-Based Learning:** Traditional teacher-centered instruction where key concepts are presented through lectures, often complemented by visual aids like slides or videos. **Purpose**: To deliver theoretical knowledge efficiently to a large group. ✔ **Interactive Learning:** Activities like discussions, Q&A sessions, and collaborative problem-solving that engage students actively. **Purpose**: To encourage critical thinking and active participation.

	✔ **Problem-Based Learning (PBL):** Students learn through solving complex, real-world problems. **Purpose**: To develop analytical, research, and teamwork skills. ✔ **Group Work and Collaboration:** Students work in teams to complete tasks, projects, or assignments. **Purpose**: To enhance communication, collaboration, and interpersonal skills. ✔ **Flipped Classroom:** Students review lecture materials at home (e.g., videos, readings) and use class time for interactive activities or problem-solving. **Purpose**: To maximize classroom interaction and support personalized learning. ✔ **Use of Technology and Digital Tools:** Incorporating e-learning platforms, simulations, or software into teaching. **Purpose**: To enhance learning experiences through technology and provide flexible access to resources. ✔ **Assessment as Learning (Formative Assessments):** Activities like quizzes, peer reviews, and draft submissions that provide ongoing feedback. **Purpose**: To monitor progress and adjust teaching based on students' needs.

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
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**	6	24 (24%)	Continuous	1,2,3,4,5,7
	Assignments	2	6 (6%)	Continuous	3-4,5
	Seminars	1	6 (6%)	Continuous	2-7
	Report	1	4 (6%)	Continuous	1-7
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #4
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction numbers Numbers from a computer's perspective: preliminaries1
Week 2	Initial steps in propositional logic Truth tables and logical equivalence
Week 3	Introduction to the concept of sets Set operators a Set Theory and Set manipulation
Week 4	Functions and Relations: Introduction to the concept of relations Introduction to the concept of functions
Week 5	Types of functions (one-to-one, onto, etc.) Binary relations, equivalent relations
Week 6	Introduction to the concepts of graphs Basic graph types
Week 7	Midterm Exam. (1) Finding properties of graphs
Week 8	Graph Theory: Graphs, trees, and networks
Week 9	Applications in algorithms
Week 10	Program Correctness
Week 11	Program Correctness
Week 12	Languages and Grammars
Week 13	Finite-State Machines
Week 14	Automata and Language Recognition
Week 15	Turing Machines
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1-The textbook for the course is Discrete Mathematics and its Applications (6th Edition) by Kenneth H. Rosen (McGraw-Hill, Inc., New York, 2007) 2-Discrete Mathematics with Applications (3rd edition) by Susanna S. Epp (December 22, 2003) 3- Guide to discrete mathematics. (2nd Edition) by O'Regan, Gerard. Springer International Publishing, 2021.	No
Recommended Texts	Diestel, R. (2017). Graph Theory. Graduate Texts in Mathematics. doi:10.1007/978-3-662-53622-3 Introduction to the theory of computation third edition by - Michael Sipser	Yes
Websites	https://www.coursera.org/learn/mathematics-for-computer-science	

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	اللغة العربية			**Module Delivery**	
Module Type	S			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	ARB1				
ECTS Credits	2.00				
SWL (hr/sem)	50				
Module Level	1		**Semester of Delivery**	الثاني	
Administering Department	Type Dept. Code		**College**	Type Dept. Code	
Module Leader	مأمون يوسف رجب		**e-mail**	mamoun.yousef@uoitc.edu.iq	
Module Leader's Acad. Title	مدرس مساعد		**Module Leader's Qualification**	ماجستير	
Module Tutor	مأمون يوسف رجب		**e-mail**	mamoun.yousef@uoitc.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	15/6/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	*التعرف على أساسيات النحو العربي. * إكساب الطالب المهارة في الكتابة العربية من تصحيح الأخطاء الإملائية، ومعرفة القواعد النحوية والإملائية التي تصون اللسان عن الخطأ، ويفهم الطالب مدى أهمية اللغة العربية وقواعدها في الدراسات الإنسانية وفي كتابة البحوث والتقارير *التعريف بالأدب العربي وفنونه وعصوره القديمة .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	- إكساب الطالب المزيد من الثقافة بلغته وهويته العربية وهي لغة القرآن الكريم وإكسابه المزيد من الثقافة الدينية -أن يُميز الطالب بين أقسام الكلام وما يتبع ذلك من ضوابط إملائية ونحوية. -أن يُفرق الطالب بين همزتي القطع والوصل في اللفظ والكتابة. -أن يعرف الطالب القواعد الصحيحة لكتابة الهمزة بالشكل الصحيح. -تعريف الطالب بأهم الأخطاء اللغوية الشائعة. -تعريف الطالب بالضوابط الإملائية الصحيحة. - تعريف الطالب بأحكام العدد من حيث التذكير والتأنيث والإعراب والبناء، تمييز الأعداد . -تعريف الطالب بالأدب العربي، وإكسابه ثقافة موجزة بتراث أدبه العربي.
Indicative Contents المحتويات الإرشادية	1 القرآن الكريم- ودوره في ترسيخ اللغة العربية 2-المبتدأ والخبر 3_ الفعل وأنواعه 4-طرق كتابة الهمزة 5 -تصويبات لغوية 6 -التفريق بين التاء المربوطة والتاء المفتوحة والهاء في نهاية الكلمة 7 -التفريق بين الياء وحركة الكسرة في مُخاطبة المؤنث 8 -جمع المؤنث السالم 9- جمع المذكر السالم 10 -الأفعال الناقصة 11 -كتابة الألف اللينة 12 -الأدب العربي

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• إستراتيجية التعلم التعاوني. • إستراتيجية التعلم وجهاً لوجه. • إستراتيجية التعلم عبر الإنترنت. • إستراتيجية التعلم الهجين • تقسيم الطلبة على مجموعات صغيرة لعمل التقارير. • المحاضرات التقليدية.

	• استخدام منصات التعليم الإلكتروني (Google class room). • دمج بين التعليم التقليدي والتعليم عبر الإنترنت.

Student Workload (SWL) الحمل الدراسي للطالب موزع على (15) أسبوع			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2.2
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% (5)	4, 10	LO #1-4 , LO #5-9
	Assignments	2	10% (5)	4, 11	LO # 1-3 , LO # 4- 10
	Activities	2	10% (5)	4, 12	
	Report	1	10%(10)	16,12	LO #1-5, LO # 9-11
Summative assessment	**Midterm Exam**	2 hr	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	لقرآن الكريم ودوره في ترسيخ قواعد اللغة العربية
Week 2	المبتدأ والخبر
Week 3	الفعل وأنواعه
Week 4	طرق كتابة الهمزة
Week 5	التفريق بين التاء المربوطة والتاء المفتوحة والهاء في نهاية الكلمة
Week 6	الامتحان النصفي
Week 7	جمع المذكر السالم
Week 8	جمع المؤنث السالم
Week 9	الأفعال الناقصة
Week 10	تصويبات لغوية

Week 11	كتابة الألف اللينة
Week 12	المضاف و المضاف إليه
Week 13	التفريق بين الضاد و الظاء
Week 14	الأدب العربي
Week 15	الامتحان النهائي

Delivery Plan (Weekly Tutorial)

المنهاج الاسبوعي الإضافي

	Material Covered
Each week, a question sheet related to the material presented in the theoretical lecture will be solved and debated.	

Learning and Teaching Resources

مصادر التعلم و التدريس

	Text	**Available in the Library?**
Required Texts		
Recommended Texts	1-الوجيز في اللغة العربية/ د.محي هلال السرحان 2- جامع الدروس الاملائية / د. فاضل عباس فاضل. 3_ العربية الجامعية لغير المتخصصين/ د. عبده الراجحي	
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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Human Rights and Democracy**			**Module Delivery**	
Module Type	**Base**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**ITC000000**				
ECTS Credits	**2.00**				
SWL (hr/sem)	**50**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	MCCE		**College**	COE	
Module Leader	Rouaa Mohammed Saab		**e-mail**	rouaa.saab@uoitc.edu.iq	
Module Leader's Acad. Title	assistant Lecturer		**Module Leader's Qualification**	MS.C	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	21/01/2025		**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- تعزيز الوعي الديمقراطي: تهدف المادة إلى تعزيز الفهم العام للمبادئ الأساسية للديمقراطية وحقوق الانسان، مثل حقوق الإنسان، وحرية التعبير، والمساواة، وحوكمة القانون. 2- تعليم المشاركة الفعّالة: تسعى المادة إلى تعليم الطلاب كيفية المشاركة الفعّالة في العمليات الديمقراطية، سواء على المستوى الجامعي أو في المجتمع بشكل عام. وذلك من خلال تعلم مهارات التفاوض، واتخاذ القرارات المشتركة، وحل المشكلات بشكل ديمقراطي. 3-تعزيز الحوار والاحترام المتبادل: تسعى المادة إلى تعزيز الحوار المفتوح والبناء بين الطلاب وتشجيعهم على احترام وتقدير وجهات نظر الآخرين، حتى في حالة اختلاف الرأي. وتهدف أيضًا إلى تعزيز التفاهم المتبادل وقدرة الطلاب على التفاعل مع الآراء المتنوعة. 4-تطوير المهارات الحياتية: تساهم مادة الديمقراطية وحقوق الانسان في تطوير مهارات حيوية للطلاب، مثل التفكير النقدي، والقراءة والكتابة، والبحث، وحل المشكلات، واتخاذ القرارات المستنيرة، والتواصل الفعّال. 5-تعزيز المواطنة النشطة: تهدف المادة إلى تعزيز المواطنة النشطة لدى الطلاب، وتشجيعهم على المشاركة في العمل الجماعي.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	من المتوقع أن تحقق مادة الديمقراطية وحقوق الانسان في الجامعات مجموعة من المخرجات التعلمية للطلاب. وفيما يلي بعض المخرجات المحتملة لهذه المادة: 1. الفهم العميق للمفاهيم الديمقراطية وحقوق الانسان: يمكن للطلاب أن يكتسبوا فهمًا شاملاً لمفاهيم الديمقراطية ومبادئها الأساسية، بما في ذلك حقوق الإنسان، وحرية التعبير، والمساواة، وحوكمة القانون. 2. تطوير مهارات المشاركة الديمقراطية: يمكن للطلاب أن يتعلموا مهارات المشاركة الفاعلة في العمليات الديمقراطية، بما في ذلك القدرة على التفاوض واتخاذ القرارات المشتركة وحل المشكلات بشكل ديمقراطي. 3. تعزيز الحوار والاحترام المتبادل: يمكن للطلاب أن يتعلموا كيفية المشاركة في حوارات بنّاءة ومتعاونة، وتقدير واحترام وجهات نظر الآخرين، حتى في حالة اختلاف الرأي. 4. تطوير المهارات الحياتية: يمكن للطلاب أن يحسنوا مهاراتهم الحياتية المرتبطة بالديمقراطية، مثل التفكير النقدي، والقراءة والكتابة، والبحث، وحل المشكلات، واتخاذ القرارات المستنيرة، والتواصل الفعّال. 5. تعزيز الوعي المواطن: يمكن للطلاب أن يكتسبوا وعيًا أكبر بمسؤولياتهم كمواطنين ودورهم في المجتمع، وتعزيز المواطنة النشطة والمشاركة الاجتماعية.
Indicative Contents المحتويات الإرشادية	يتضمن المقرر التعريف بحقوق الانسان وخصائصها والتعريف بالديمقراطية ومزاياها (6ساعات) كما يتضمن تطبيقات عن حقوق الانسان في الاديان السماوية كالديانة المسيحية واليهودية والشريعة الاسلامية واهم الحقوق التي وردت في القرآن الكريم، فضلا عن بيان ابرز الحقوق التي تضمنها الدستور العراقي لسنة 2005، وما الضمانات التي ضمن تطبيقها وفقا للمواثيق الدولية، كما يجب بيان تطبيقات الديمقراطية من خلال التعريف بأنواع الديمقراطية المطبقة في العالم (10ساعات) اما الجانب العملي لمقرر حقوق الانسان والديمقراطية فيتضمن بيان دور المنظمات الدولية لحماية حقوق الانسان كمنظمات الصليب والهلال الاحمر ومنظمة العفو الدولية وغيرهما، اما الجانب التطبيقي للديمقراطية فيقضي بيان كيفية تطبيق الديمقراطية عن طريق العملية الانتخابية (8ساعات) كما يقضي المقرر التعريف بأبرز المصادر التي تعد المرجع الاساس لحقوق الانسان، كما لابد من التعريف بأنواع الانظمة الانتخابية المطبقة في العالم (6ساعات)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	هناك العديد من الاستراتيجيات التي يمكن استخدامها في تدريس وتعلم مادة حقوق الانسان والديمقراطية في الجامعات. وفيما يلي بعض الاستراتيجيات التعليمية المشتركة التي يمكن تطبيقها: 1. المناقشات الجماعية: يمكن تنظيم مناقشات جماعية حول مواضيع حقوق الانسان والديمقراطية مهمة. يتم توجيه الطلاب لتبادل وجهات النظر والمناقشة النقدية بشأن قضايا مثل حقوق الإنسان والتحكم الديمقراطي. ينبغي تشجيع المشاركة الفعّالة واحترام وجهات النظر المختلفة. 2. دراسات الحالة: يمكن استخدام دراسات الحالة لتعريف الطلاب بتجارب حقيقية للديمقراطية في العالم الحقيقي. يتم تحليل حالات مثل الانتخابات، أو تحركات المجتمع المدني، أو حالات انتهاكات حقوق الإنسان، ومناقشة التحديات والمشكلات التي تواجهها. 3. لعروض التقديمية والمنشورات: يمكن للطلاب إعداد عروض تقديمية ومنشورات حول مفاهيم حقوق الانسان والديمقراطية وتطبيقاتها. يمكنهم استخدام الصور والرسوم التوضيحية والأمثلة الواقعية لتوضيح المفاهيم بشكل أكثر وضوحًا وإلقاء الضوء على أمثلة إيجابية للديمقراطية.

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	2
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% (5)	Continuous	LO #1, #2 and #4, #5
	Assignments	2	10% (5)	2 and 12	LO #2, #4 and , #5
	Onsite assignments	2	10%(5)	CONTINUOS	LO#2,#4,#5
	Report	1	10% (10)	8	LO #3, #4 and #5

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	التعريف بحقوق الانسان وحقوق الانسان في الاديان السماوية
Week 2	حقوق الانسان في الاسلام (حق الانسان في الحياة-حق الانسان في الامن والطمأنينة-الحق في السكن واحترام الحياة الخاصة)
Week 3	حقوق الانسان في الاسلام (الحق في كفالة حرية العقيدة-الحق في حرية الرأي والتعبير-الحق في التعليم-الحق في تولي الوظائف العامة-الحق في العمل-الحق في حرية التنقل والسفر-الحق في اللجوء)
Week 4	خصائص حقوق الانسان
Week 5	مصادر حقوق الانسان
Week 6	ضمانات حقوق الانسان (ضمانات حقوق الانسان في دستور العراق لسنة 2005)
Week 7	الامتحان الشهري 1
Week 8	ضمانات حقوق الانسان وفقا للمواثيق الدولية
Week 9	دور المنظمات الدولية في حماية حقوق الانسان
Week 10	تعريف الديمقراطية ومزاياها
Week 11	انواع الديمقراطية
Week 12	الانتخاب (هيئة الناخبين-المرشحون-تحديد الدوائر الانتخابية)
Week 13	الانتخاب (القوائم الانتخابية –الحملة الانتخابية-التصويت)
Week 14	نظم الانتخاب (الانتخاب المباشر وغير المباشر-الانتخاب الفردي والانتخاب بالقائمة-نظام التصويت الاختياري والاجباري-نظام التصويت السري والعلني)
Week 15	نظم الانتخاب (نظام الاغلبية ونظام التمثيل النسبي-نظام تمثيل المصالح)
Week 16	مراجعة للمنهج قبل الامتحان النهائي

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**

Required Texts	حقوق الانسان والطفل والديمقراطية تأليف: د.ماهر صالح علاوي الجبوري، د.رعد ناجي الجدة، د.رياض عزيز هاي، د.كامل عبد العنكود، د.علي عبدالرزاق محمد، د.حسان محمد شفيق	No
Recommended Texts	المحاضرات المعدة من قبل التدريسي	نعم
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.

المرحلة: الثانية

الفصل الدراسي: الثالث

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Crimes of the Baath regime in iraq**			**Module Delivery**	
Module Type	**S**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CBRI**				
ECTS Credits	**2.00**				
SWL (hr/sem)	**50**				
Module Level		1	**Semester of Delivery**		1
Administering Department		MCCE	**College**	جامعة تكنلوجيا المعلومات والاتصالات/كلية الهندسة	
Module Leader	Rouaa Mohammed Saab		**e-mail**	Rouaa.saab@uoitc.edu.iq	
Module Leader's Acad. Title		assistant Lecturer	**Module Leader's Qualification**		MS.C
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		16/06/2023	**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	الأهداف المعرفية 1-فهم تأثير الجريمة على الضحايا واحتياجات الضحايا. 2-فهم العنف القائم على أساس العرق والدين والقومية باعتباره انتهاكا لحقوق الانسان الأهداف المهاراتية الخاصة بالمقرر 1-تمكين الطالب اكتساب مهارات النقاش والحوار والاستماع وتقبل اراء الاخرين 2-تعزيز الوعي للمواطن المهارات العامة والتأهيلية 1-اكتساب المعرفة التاريخية للاحداث والوقائع التي حدثت في زمن النظام السابق والتي تعمل على زيادة الواعز الإنساني للطلبة .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	من المتوقع أن تحقق مادة جرائم نظام البعث : 1-التعرف على القوانين الوطنية والدولية المتعلقة بجرائم الأنظمة الشمولية والانتهاكات التي ارتكبها نظام البعث 2-معرفة كيفية تصنيف الجرائم مثل (جرائم حرب ،جرائم ضد الإنسانية ،الإبادة الجماعية). 3-تحليل السياقات التاريخية والسياسية التي أدت الى وقوع هذه الجرائم . 4-فهم اليات المحاسبة القانونية للافراد المتورطين في الجرائم 5-مناقشة دور المصالحة والعدالة الانتقالية في بناء مجتمعات مستقرة بعد سقوط الأنظمة الشمولية 6-القدرة على تطبيق المفاهيم القانونية في حالات مشابهة 7-التفكير في كيفية منع وقوع مثل هذه الجرائم في المستقبل .
Indicative Contents المحتويات الإرشادية	يتضمن المقرر التعريف بمفهوم الجرائم واقسامها /جرائم نظام البعث وفق قانون المحكمة الجنائية العراقية العليا عام 2005(2ساعات) كما يتضمن أنواع الجرائم الدولية /القرارات الصادرة من المحكمة الجنائية العليا (2ساعات)، والجرائم النفسية والاجتماعية واثارها ، وابرز انتهاكات النظام البعثي في العراق (2ساعات) الجرائم البيئية لنظام البعث في العراق /التلوث الحربي والاشعاعي وانفجار الألغام (2ساعات) تدمير المدن والقرى (سياسة الأرض المحروقة)(2ساعات) تجفيف الاهوار(2ساعات) تجريف بساتين النخيل والأشجار والمزروعات (2ساعات) جرائم المقابر الجماعية /احداث مقابر الإبادة الجماعية المرتكبة من النظام البعثي في العراق (2ساعات) التصنيف الزمني لمقابر الإبادة الجماعية في العراق للمدة 1963-2023 (2 ساعات)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	هناك العديد من الاستراتيجيات التي يمكن استخدامها في تدريس وتعلم مادة جرائم نظام البعث في الجامعات. وفيما يلي بعض الاستراتيجيات التعليمية المشتركة التي يمكن تطبيقها: 1. المناقشات الجماعية: من الممكن تنظيم مناقشات مفتوحة حول سياسات النظام وتأثيرها على حقوق الانسان ،يمكن للطلاب ان يناقشوا أسباب وتبعات الجرائم التي ارتكبها النظام . 2. لعروض التقديمية والمنشورات: يمكن عرض أفلام وثائقية عن فترة الحكم والجرائم التي ارتكبها ،ممايساعد الطلاب على الارتباط بالواقع التاريخي .

	3. دراسة حالات :عرض حالات محددة من الجرائم التي ارتكبها النظام وتحليلها من جميع الزوايا القانونية والسياسية والإنسانية 4. محاضرات حضورية.	

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	**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	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**40**		

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
	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	جرائم نظام البعث وفق قانون المحكمة الجنائية العراقية العليا عام ٢٠٠٥/مفهوم الجرائم وأقسامها
Week 2	انواع الجرائم الدولية/القرارات الصادرة من المحكمة الجنائية العليا
Week 3	الجرائم النفسية والاجتماعية
Week 4	اليات الجرائم النفسية
Week 5	أثار الجرائم النفسية، وأبرز انتهاكات النظام البعثي في العراق
Week 6	الجرائم الاجتماعية
Week 7	عسكرة المجتمع و بعض قرارات الانتهاكات السياسية والعسكرية لنظام البعث
Week 8	الامتحان الفصلي
Week 9	الجرائم البيئية لنظام البعث في العراق/التلوث الحربي والإشعاعي وانفجار الألغام
Week 10	تدمير المدن والقرى (سياسة الأرض المحروقة) -
Week 11	تجفيف الأهوار
Week 12	تجريف بساتين النخيل والأشجار والمزروعات
Week 13	جرائم المقابر الجماعية
Week 14	احداث مقابر الإبادة الجماعية المرتكبة من النظام البعثي في العراق
Week 15	التصنيف الزمني لمقابر الإبادة الجماعية في العراق للمدة 1963-2023
Week 16	مراجعة للمنهج قبل الامتحان النهائي

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	جرائم نظام البعث في العراق/مقرر دراسي للجامعات الحكومية والأهلية صادر عن وزارة التعليم والبحث العلمي	No
Recommended Texts		
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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Electromagnetic Fields**			**Module Delivery**	
Module Type	**Core**			☒**Theory** ☐**Lecture** ☐**Lab** ☐**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	**EMF3**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	2		**Semester of Delivery**	3	
Administering Department	MCCE & MTCE		**College**	College of Engineering	
Module Leader	Samir M. Hameed		**e-mail**	samirmhameed@uoitc.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	MAT2	**Semester**	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. Introduces and develops knowledge in fundamental electromagnetics by using the basic concepts of electromagnetic theory from a physical and application point of view. 2. Students will learn scientific, mathematical, and engineering principles that enable them to understand fields and waves, in addition to knowing how to use those principles and phenomena. 3. Provide the students with the fundamental principles of electrical energy (electromagnetism). 4. Develop a strong background in electromagnetic theory and understand how to use various mathematical tools to solve Maxwell equations in problems. State several laws and principles of electric, magnetic, and electromagnetic fields.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	This course presents 1-a study of electromagnetic fields and their relationship to problem solving in engineering. 2-Understanding the physical meaning as well as being able to use Maxwell's equations to find field waves, potential waves, energy conservation conditions, and charge conservation conditions. 3-The course of study begins with the development of an understanding of the basics, moves to the integration of the basic knowledge, and proceeds to the ability to use that knowledge to solve electromagnetic field problems.
Indicative Contents المحتويات الإرشادية	Vector analysis, Coulombs law and electric field,(10) Gauss law and divergence, energy and potential(6) Poisson's and Laplace's equations, (6) study magnetic field, magnetic flux, magnetic intensity and Maxwell's Equations.(8)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The primary approach of teaching for this module will be to promote student participation in the exercises while honing and extending their critical thinking abilities. Classes, interactive tutorials, and the consideration of various sorts of straightforward experiments incorporating some sample activities that are appealing to the students will all help to achieve this.

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	67	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	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% (5)	Continuous	1-3
	Online Assignments	4	20% (5)	Continuous	1-3
	report	1	5% (5)	Continuous	1-3
	seminar	1	5% (5)	Continuous	1-3
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	1-3
	Final Exam	3hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	• Vector Analysis. • Scalars and Vectors. • Vector Algebra. • Vector Component and Unit Vectors. • The Vector field. • The Dot Product. • The Cross Product.
Week 2	• Cartesian Coordinates • Cylindrical Coordinates

Week 3	• Spherical Coordinates • Transformation between coordinates systems
Week 4	• Coulomb's Law and Field Intensity (Part I) • The Experimental Law of Coulomb**.**
Week 5	• Electric Field Intensity. • Field Arising from A Continuous Volume • Charge Distribution.
Week 6	• Coulomb's Law and Field Intensity (Part II) • Field of line charge. • Field of a sheet of charge.
Week 7	• Electric Flux density. • Gauss's Law. • Application of Gauss's Law (Some Symmetrical Charge Distributions).
Week 8	Mid-term Exam
Week 9	• Divergence and Maxwell first equation. • The vector operator and the Divergence Theorem
Week 10	• Energy and Potential. • Potential Field in Moving A point • Potential Gradient.
Week 11	• Electrical Dipole. • Electric Filed of a Dipole. • Energy Density in the Electrostatic Field.
Week 12	• Conductors and Dielectrics Density. • Current and Current Density. • Continuity of Current.
Week 13	Poisson's and Laplace's Equations
Week 14	• The steady Magnetic Field • Biot-Savart Law • Ampere's Circuital Law. • Ampere's Law Applied to a Long Wire • Curl of Vector Field.
Week 15	• Magnetic Flux and Flux Density. • Maxwell's Equations in Point Form. • Maxwell's Equations in Integral Form.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	

Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	
Week 13	
Week 14	
Week 15	

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Engineering Electromagnetics, Eighth edition by William Hayt and John Buck	
Recommended Texts	Elements of Electromagnetics by Matthew N. O. Sadiku	
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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Electronics			**Module Delivery**	
Module Type	Core			☒Theory ☐Lecture ☒Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code	ELC3				
ECTS Credits	6.00				
SWL (hr/sem)	150				
Module Level	2		**Semester of Delivery**	3	
Administering Department	MCCE,MTCE		**College**	COE	
Module Leader	Taif Ali		**e-mail**	taif.alobaidi@uoitc.edu.iq	
Module Leader's Acad. Title	Lecturer Dr.		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	15/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Electrical Circuits I (ECT1)	**Semester**	1
Co-requisites module	None	**Semester**	None

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. To provide a comprehensive understanding of diodes and their applications in electronics. 2. To develop students' theoretical and practical skills in analyzing and designing diode circuits. 3. To enable students to troubleshoot and solve problems related to diode-based circuits. 4. To cultivate critical thinking and analytical skills necessary for electronic circuit analysis and design.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the fundamental principles of diode operation and their applications. 2. Analyze and design basic diode circuits. 3. Analyze and design basic rectifiers. 4. Analyze and design clippers. 5. Analyze and design clampers. 6. Troubleshoot and solve problems related to diode circuits. 7. Apply critical thinking skills to evaluate the performance and limitations of diode-based and transistor-based circuits. 8. Analyze and design basic Bipolar Junction Transistors (BJTs) and DC Biasing Circuits of BJTs 9. Analyze and design basic Bias Stabilization and BJT Switching Circuits. 10. Evaluate the behavior of diodes in various circuit configurations, such as voltage multipliers and voltage regulators. 11. Analyze and design basic BJT Modeling and AC Equivalent Circuits 12. Troubleshoot and solve problems related to diode circuits. Apply critical thinking skills to evaluate the performance and limitations of diode-based and transistor-based circuits.
Indicative Contents المحتويات الإرشادية	Introduction to Diodes and Semiconductor Physics [5 hrs] • Basic principles of semiconductor physics • Intrinsic and extrinsic semiconductors • Formation of PN junctions and diode characteristics Diode Models and Circuit Analysis Techniques [5 hrs] • Ideal diode model and its limitations • Piecewise linear diode model • Analysis techniques for diode circuits Diode Rectifiers [5 hrs] • Half-wave and full-wave rectifiers • Rectification efficiency and ripple factor • Filter capacitors and voltage regulation Diode Clippers and Clampers [5 hrs] • Series and shunt diode clippers • Clamping circuits and DC restoration • Wave shaping using diodes Zener Diodes and Voltage Regulation [5 hrs]

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
	• Zener diode characteristics • Zener diode voltage regulation • Zener diode as a voltage reference Diode Applications in Power Supplies [5 hrs] • Transformer-based power supplies • Bridge rectifiers and filtering techniques • Voltage multipliers and voltage regulators Diode Limiting and Clamping Circuits [5 hrs] • • Voltage limiters and peak detectors • • Clamping circuits and DC biasing Diode-Based Sensors and Optoelectronics [5 hrs] • Photodiodes and their characteristics • Light-emitting diodes (LEDs) and display technologies • Optocouplers and photoresistors Bipolar Junction Transistors (BJTs)[5hrs] • Introduction to transistors: types, symbols, and basic characteristics. Bipolar Junction Transistors (BJTs) [5hrs] • Structure, modes of operation (active, cutoff, and saturation), and current-voltage characteristics. Bipolar Junction Transistors (BJTs) [5hrs] • Common-Terminal configurations (CE, CB, CC). Bipolar Junction Biasing (BJTs) Part 1 [5hrs] • DC Biasing BJT Modeling and AC Equivalent Circuits [5hrs] • Modeling and AC Equivalent Circuits BJT Small-Signal Analysis [5hrs] • BJT Small-Signal Analysis Frequency Response of BJT [5hrs] • Frequency Response of BJT

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Lectures: Interactive lectures will be conducted to introduce theoretical concepts, principles, and circuit analysis techniques. 2. Laboratory Sessions: Hands-on laboratory experiments will provide practical experience in building and analyzing diode circuits. 3. Problem-Solving Sessions: Regular problem-solving sessions will be held to reinforce understanding and develop problem-solving skills. 4. Group Discussions: Group discussions will encourage students to critically analyze and discuss diode applications and circuit design challenges. 5. Case Studies: Real-world case studies will be presented to illustrate the relevance of diode-based circuits in various industries. 6. Assignments and Assessments: Assignments and assessments will be given to assess students' understanding and application of diode concepts.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ **15** 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
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**	5	20% (4)	Continuous	All
	Online assignments	1	3% (3)	Continuous	LO #3, #4 and #6, #7
	Lab.	7 Labs	14% (2)	Continuous	All
	Report	1	3% (3)	Continuous	LO #12
Summative assessment	**Midterm Exam**	2 hr	10% (10)	11	LO #1 - #11
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)	--	--

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Semiconductors
Week 2	Characteristics of PN Junctions Diodes
Week 3	Diode Circuit Applications (Clippers)
Week 4	Diode Circuit Applications (Clippers)
Week 5	Diode Circuit Applications (Clampers)
Week 6	Diode Rectifier Circuits
Week 7	Voltage-Multiplier Circuits
Week 8	Zener Diodes and Applications

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
Week 9	Bipolar Junction Transistors (BJTs)
Week 10	DC Biasing Circuits of BJTs
Week 11	Midterm Exam
Week 12	BJT Modeling and AC Equivalent Circuits
Week 13	BJT Modeling and AC Equivalent Circuits
Week 14	BJT Small-Signal Analysis
Week 15	Frequency Response of BJT Amplifiers
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 0: Introduction to Electronics Lab. and Practical Considerations
Week 2	Lab 1: Forward and Reverse Diode Biasing
Week 3	Lab 1: Forward and Reverse Diode Biasing
Week 4	Lab 2: Clipping Circuits
Week 5	Lab 2: Clipping Circuits
Week 6	Lab 3: Clamping Circuits
Week 7	Lab 3: Clamping Circuits
Week 8	Midterm Exam
Week 9	Lab 4: Rectifier Circuits
Week 10	Lab 4: Rectifier Circuits
Week 11	Lab 4: Rectifier Circuits
Week 12	Lab 5: The Zener Diode
Week 13	Lab 6: Light Emitting Diodes (LEDs)
Week 14	Lab 7: Characteristics of Bipolar Junction Transistors
Week 15	Lab 7: Characteristics of Bipolar Junction Transistors

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Robert L. Boylestad, "Electronic Devices and Circuit theory" Prentice Hall International	Yes
Recommended Texts	1. Theodore F. Bogart, "Electronic Devices and Circuits", Merrill Publishing Company. 2. Jacob Millman," Microelectronics", McGraw-Hill Book Company	No
Websites	https://www.allaboutcircuits.com	

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Engineering Mathematics I**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐**Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**EMT3**				
ECTS Credits	**6.00**				
SWL (hr/sem)	**150**				
Module Level	2		**Semester of Delivery**	3	
Administering Department	MCCE		**College**	COE	
Module Leader	Dr. Zeyid Tariq Ibraheem		**e-mail**	zeyid.tariq@uoitc.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	16/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Mathematic 2 (MAT2)	**Semester**	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	Students will be able to demonstrate the application of relevant mathematics underpinning telecommunications, linear systems, digital signal processing, networks and laboratories, as well as substantial parts of many final year modules.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the engineering series. 2. Study different types of Fourier series 3. Study different types of transformation module. 4. Constructing linear programming for all types of series
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: Part A: Fourier Series: Introduction to trigonometric series,Background on Fourier series [3 hrs] Comparison of time and frequency domain [6 hrs] Covering the common forms of the Fourier series: 1. Sine and cosine form [3hrs] 2. Exponential form [3hrs] 3. Amplitude phase form [3 hrs]. Part B: Fourier transform: How to convert a function into a form that describes the frequencies present in the original function [6hrs] Application of Fourier transform in many telecommunication fields like signal processing [3hrs]. Quick method for calculating Fourier transforms [3hrs]. Studying inverse transforms [3hrs]. Part C: Laplace transforms. Learning how to convert a function of a real variable in the time domain to a function of a complex variable in the complex frequency domain (also known as s-domain or s-plane). [3 hrs] Complex frequency. [3 hrs] Studying Partial fractions and the solution of differential equations by Laplace transform. [3hrs] Modeling for Mechanical & electronic applications. [3hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The **assessment strategy** for this module is designed to provide students with the opportunity to demonstrate the learning outcomes. The written examination will assess the knowledge and assimilation of mathematical

	terminology, notation, concepts and techniques, as well as the ability to work out solutions to previously unseen problems under time-constrained conditions. The assignments give the students a chance to practise the required techniques shortly after they have been taught and in problems of a similar level to those that they will meet in the exam. Thus, the **summative assessment** for this module consists of the following. · 2-hour, closed-book written examination. · Two take-home problem sheets, submitted as coursework. **Formative assessment and feedback** For the module, students will receive formative assessment/feedback in the following ways. · During lectures, by question and answer sessions · During office hour meetings with students · By means of unassessed tutorial problems in the notes (with answers/model solutions) · Via assessed coursework

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	102	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
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	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	**Basic Background for Fourier Series**
Week 2	**Trigonometric Fourier Series**
Week 3	**Complex Exponential Fourier Series**
Week 4	**Basic Background for Fourier Transform**
Week 5	**Fourier Cosine and Sine Transform**
Week 6	**Fourier Exponential Transform**
Week 7	**Continuous Time Signal**
Week 8	**LTI Systems**
Week 9	**Midterm Exam. (1)**
Week 10	**Existence of Fourier Transforms**
Week 11	**Laplace Transforms**
Week 12	**Inverse Laplace Transform**
Week 13	**Ordinary differential equation using Laplace Transform**
Week 14	**Application for Fourier Series and Fourier Transforms**
Week 15	**Midterm Exam. (2)**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
	No Laboratory

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	"Thomas CALCULUS" 11th Edition, 2005.	Yes

Recommended Texts	1. "Thomas CALCULUS" 11th Edition, 2005. 2. "Schaum's Outlines, Differential Equations", 2nd Edition, Richard Bronson. 1994. 3. "Schaum's Outlines, Matrix Operations", 2nd Edition, Richard Bronson. 1989. 4. Advanced engineering mathematics, 9th ed., Kreyszig, 2006.	No
Websites	https://www.coursera.org/browse	

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Mobile Computing**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MCP3**				
ECTS Credits	**5.0**				
SWL (hr/sem)	**125**				
Module Level	3		**Semester of Delivery**	6	
Administering Department	MCCE		**College**	COE	
Module Leader	Dr. Ghada Al-Kateb		**e-mail**	ghada.emad@uoitc.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Dr. Ghada Al-Kateb		**e-mail**	ghada.emad@uoitc.edu.iq	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date			**Version Number**		

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Computer Networks, Operating Systems, Programming Fundamentals and communications	**Semester**	3,4 and 5
Co-requisites module	Mobile Application Development, Cloud Computing, Embedded Systems and IoT and network security	**Semester**	7 and 8

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	**1.** Upon successful completion of the Mobile Computing module, students will be able to: **2.** Demonstrate a comprehensive understanding of mobile computing principles and the unique challenges associated with mobile environments, including mobility, limited resources, and power constraints. **3.** Analyze and evaluate mobile communication technologies, including GSM, 3G, 4G, 5G, and wireless protocols like Wi-Fi and Bluetooth, with an understanding of their role in mobile networks. **4.** Compare and contrast mobile operating systems, specifically Android and iOS, focusing on their architecture, resource management strategies, and hardware integration techniques. **5.** Design and develop mobile applications using modern development tools such as Android Studio and Xcode, incorporating user interfaces, sensors, and mobile-specific features. **6.** Implement effective networking solutions within mobile applications, ensuring real-time communication and seamless integration with web services and peer-to-peer communication protocols. **7.** Apply appropriate data management techniques for mobile applications, using both local (SQLite) and cloud-based (Firebase) storage systems, ensuring efficient data handling and synchronization. **8.** Identify and mitigate security vulnerabilities in mobile applications, employing encryption, authentication, and secure data handling techniques to ensure user privacy and app security. **9.** Optimize the performance of mobile applications, addressing memory, battery, and CPU usage issues, and applying techniques to ensure energy-efficient and smooth-running applications. **10.** Perform comprehensive testing and debugging of mobile applications, utilizing automated testing tools and debugging techniques to ensure robustness, reliability, and security. **11.** Critically assess emerging trends and technologies in mobile computing, including the impact of 5G, the Internet of Things (IoT), and edge computing, and apply these concepts in the development of forward-thinking mobile solutions.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon successful completion of the Mobile Computing module, students will be able to: 1. **Demonstrate a comprehensive understanding of mobile computing principles** and the unique challenges associated with mobile environments, including mobility, limited resources, and power constraints. 2. **Analyse and evaluate mobile communication technologies**, including GSM, 3G, 4G, 5G, and wireless protocols like Wi-Fi and Bluetooth, with an understanding of their role in mobile networks. 3. **Compare and contrast mobile operating systems**, specifically Android and iOS, focusing on their architecture, resource management strategies, and

	hardware integration techniques. 4. **Design and develop mobile applications** using modern development tools such as Android Studio and Xcode, incorporating user interfaces, sensors, and mobile-specific features. 5. **Implement effective networking solutions** within mobile applications, ensuring real-time communication and seamless integration with web services and peer-to-peer communication protocols. 6. **Apply appropriate data management techniques** for mobile applications, using both local (SQLite) and cloud-based (Firebase) storage systems, ensuring efficient data handling and synchronisation. 7. **Identify and mitigate security vulnerabilities in mobile applications**, employing encryption, authentication, and secure data handling techniques to ensure user privacy and app security. 8. **Optimise the performance of mobile applications**, addressing memory, battery, and CPU usage issues, and applying techniques to ensure energy-efficient and smooth-running applications. 9. **Perform comprehensive testing and debugging** of mobile applications, utilising automated testing tools and debugging techniques to ensure robustness, reliability, and security. 10. **Critically assess emerging trends and technologies in mobile computing**, including the impact of 5G, the Internet of Things (IoT), and edge computing, and apply these concepts in the development of forward-thinking mobile solutions.
Indicative Contents المحتويات الإرشادية	**1. Introduction to Mobile Computing:** • Overview of mobile computing concepts, limitations, and evolution. **2. Mobile Communication Technologies:** • Mobile networks (GSM, 3G, 4G, 5G) and wireless communication protocols (Wi-Fi, Bluetooth). **3. Mobile Operating Systems:** • Structure and architecture of Android and iOS, focusing on resource management and hardware interaction. **4. Mobile Application Development:** • Designing and developing mobile applications using Android Studio and Xcode, with emphasis on UI/UX and sensor integration. **5. Mobile Networking and Communication:** • Communication protocols (TCP/IP, HTTP) and real-time networking challenges in mobile systems. **6. Data Management in Mobile Systems:** • Local (SQLite) and cloud-based (Firebase) data storage, synchronisation, and offline support.

	7. Mobile Security and Privacy: • Mobile app security challenges, implementing encryption, authentication, and handling user data securely. **8. Performance Optimisation:** • Techniques for improving mobile app performance and efficiency, with a focus on resource management. **9. Testing and Debugging Mobile Applications:** • Automated testing strategies and debugging tools to ensure app robustness. **10. Emerging Trends in Mobile Computing:** • Impact of 5G, IoT integration, and edge computing in mobile applications. **11. Ethical and Legal Considerations:** • Ethical issues, privacy concerns, and legal regulations in mobile app development. **12. Future Directions in Mobile Computing:** • Exploration of future innovations and trends in mobile technologies.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. **Lectures and Interactive Discussions:** Deliver key mobile computing concepts, enhanced with real-world case studies and interactive discussions to promote critical thinking. 2. **Practical Lab Sessions:** Weekly lab sessions provide hands-on experience with mobile development tools, allowing students to apply theoretical knowledge in areas such as app development, security, and performance optimization. 3. **Project-Based Learning:** Students will design and develop a full mobile application, integrating concepts like UI design, networking, and cloud integration, fostering independent learning and problem-solving skills.

	4. **Case Studies and Problem-Solving:** Real-world case studies and practical exercises will challenge students to analyze mobile computing issues and propose innovative solutions. 5. **Flipped Classroom Approach:** Pre-class materials and tutorials will be provided, enabling active classroom learning through discussions and problem-solving activities. 6. **Guest Lectures and Industry Engagement:** Industry professionals will deliver lectures on current trends, giving students insight into practical applications of mobile computing. 7. **Continuous Assessment and Feedback:** Regular quizzes, assignments, and feedback will ensure ongoing evaluation and help students refine their skills and understanding. 8. **Collaborative Learning:** Group work and peer learning will enhance teamwork, communication, and problem-solving abilities. 9. **Use of Learning Management Systems (LMS):** A digital platform will support asynchronous learning, providing access to materials, resources, and discussion forums.

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	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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)	3 and 7	LO #1- #5 and #6- #10
	Assignments	2	8% (8)	2 and 6	LO #1- #5 and #6- #10
	Projects / Lab.	1	10% (10)	Continuous	All

	Report	2	8% (8)	4,8	LO #1- #5 and #6- #10
Summative assessment	**Midterm Exam**	4hr	10% (10)	8	LO #1- #5 and #6- #10
	Final Exam	8hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Mobile Computing
Week 2	Mobile Operating Systems
Week 3	Wireless Communication Technologies for Mobile Devices
Week 4	The Cellular Concept and Mobile Telecommunication Systems
Week 5	Mobile IP and Network Layer Protocols
Week 6	Mobile Transport Layer Protocols
Week 7	Wireless Application Protocol (WAP)
Week 8	Midterm Exam (1)
Week 9	Mobile Ad Hoc Networks (MANETs)
Week 10	Introduction to 4G and 5G Networks
Week 11	Mobile Security
Week 12	Emerging Trends in Mobile Computing
Week 13	Mobile Application Development
Week 14	Performance Optimization in Mobile Computing
Week 15	Midterm Exam. (2)

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to Android Studio and Development Environment Setup
Week 2	Lab 2: Mobile Operating Systems and App Lifecycle
Week 3	Lab 3: Wireless Communication in Android
Week 4	Lab 4: cellular Network Simulation and Mobile IP
Week 5	Lab 5: Developing Mobile Applications with Sensors
Week 6	Lab 6: Implementing Mobile IP in Android

Week 7	Lab 7: Android Mobile Transport Layer Implementation
Week 8	Midterm Exam
Week 9, 10 and 11	Lab 8: Mobile Security – Data Encryption and Secure Communication
Week 12, 13 and 14	Lab 9: Android Ad Hoc Wireless Network Simulation
Week 15	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Raj Kamal, *Mobile Computing* (4th Edition), Oxford University Press, 2024.	No
Recommended Texts	• Reto Meier and Ian Lake, *Professional Android* (5th Edition), Wrox, 2023. • Neil Smyth, *iOS 16 Programming for Beginners*, Payload Media, 2024.	No
Websites	https://www.analyticssteps.com/blogs/introduction-mobile-computing	

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Statistics &Propability			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐**Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**STP3**				
ECTS Credits	4				
SWL (hr/sem)	**100**				
Module Level		2	**Semester of Delivery**		3
Administering Department		Mtce, Mtcc	**College**	EC	
Module Leader	Azzah Hazem Zeki		**e-mail**	Azza.hazem@uoitc.edu.iq	
Module Leader's Acad. Title		Ass. Prof	**Module Leader's Qualification**		Ms.C
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		18/06/2023	**Version Number**		1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Mathematics I	**Semester**	3
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. Providing the student with statistical information in support of his cognitive aspect. 2. Introducing students to the methods of applying statistical laws and obtaining results. 3. Benefit from the application of statistical laws in engineering applications 4. Extend and formalize knowledge of the theory of probability and random variables. 5. Study elementary concepts and techniques in statistical methodology
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. Enabling students to obtain knowledge and introduction to statistics 2. Enabling students to obtain knowledge in the use of statistical laws 3. Understand the laws of probability and probabilistic theories 4. Enabling students to apply the laws of statistics and probability in engineering applications 5. Enabling students to apply statistical methods in their graduation research 6. Taught the most important descriptive charts of data
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A - statistics</u> 1- Data – which includes graphical and numerical summaries to describe the distribution of a variable, or the relationship between two variables [10 hrs] 2- Measures of central tendency (mean, median, mode), measures of dispersion (variance, standard deviation), percentiles, quartiles. 3- and graphical representations of data (histograms, box plots). Produce graphical representations of data [3 hrs] 4- Discrete random variables (binomial, Poisson) and continuous random variables (normal, exponential). [10 hrs] <u>Part B – Probability</u> 1- Able to compute and interpret probability of events [5] 2- Graph data samples to represent data and results. [10] 3- Using probability and the properties of numerical summaries computed from a random samples and Describe probability distributions for certain types of random variables [10 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: -

	Providing students with general knowledge in statistics Applying the knowledge acquired by students in solving statistical problems and Benefiting from what students have learned in processing their graduation research data statistically

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
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, #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 : - Introduction to Statistics- Definitions and fundamentals
Week 2	Descriptive Statistics Vs Inferential Statistics Simple Random Samples
Week 3	Data Types - Qualitative random variables

	- Quantitative random variables
Week 4	Data presentation - Pie Charts - Bar Chart - Histograms
Week 5	Descriptive data: Measures of Central Tendency Arithmetic Mean . The Mode , Mode for ungrouped data, Mode for grouped data Application Example using Excel
Week 6	The Median Median for ungrouped data Median for grouped data . Range
Week 7	Variance Standard deviation Coefficient of variation
Week 8	Mid-term Exam
Week 9	Correlation and regression
Week 10	Probability Introduction Definition Approaches to probability theory
Week 11	Basic probability concepts Types of events Laws of probability
Week 12	Types of probabilities Conditional probability Tree diagram
Week 13	Counting rules Multiplication Rule Permutations Combinations
Week 14	Probability Distributions Discrete probability distributions. Bernoulli distribution Binomial distribution Poisson distribution
Week 15	Continuous probability distributions The Normal distribution The standard normal distribution
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Non
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	
Week 13	
Week 14	
Week 15	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Probability and Statistics Michael J. Evans and Jeffrey S. Rosenthal	Yes
Recommended Texts	"**Applied statistics and probability for engineers**", Montgomery Douglas C., and George C. Runger. John, Wiley & Sons, 5ed,	No
Websites	20+ Statistics Books for Free! [PDF] | InfoBooks.org	

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Web Design**			**Module Delivery**	
Module Type	**Core**			☒**Theory** ☐**Lecture** ☒**Lab** ☐**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	**WDG3**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	2		**Semester of Delivery**	3	
Administering Department	MCCE and MTCE		**College**	COE	
Module Leader	Maha Khalil Ibrahim		**e-mail**	Maha.ibrahim@uoitc.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	MS.c	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	16/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	CPR2	**Semester**	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	- Recognize and understand HTML web page elements - Know how to write HTML code - Understand and apply effective web design principles - Enhance web pages using text formatting, color, images, and multimedia - Incorporate forms into web pages - Understand and apply CSS to format web page elements - Plan, design, and publish a multi-page website - Understand the basics of javascript language. - Introducing Javascript as a scripting language. - Knowing Javascript as an object oriented languge. - Using javascript in forms and forms validation. - Plan, design, and publish a multi-page and dynamic website. - Design PHP based web pages using correct php, css, and syntax structure. - Create Web forms and pages that properly use HTTP GET and POST protocol as appropriate. - Design SQL language within MySQL and PHP to access and manipulate databases. - Install and configure both PHP and MySQL. - Demonstrate use of cookie, session, and authentication programming in PHP. - Design and create a complete web site that demonstrates good PHP/MySQL client/server design.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- To create an Information Architecture document for a web site. 2- To develop technical skills in the creation of high quality, usable, accessible web applications using industry-standard technologies. 3- To construct a web site that conforms to the web standards of today 4- To develop design skills for web applications with a variety of purposes and target user groups. 5- To understand the different approaches towards designing and developing web applications for different device types for responsive design. 6- To connect the website with a web server. 7- To learn how to connect the web page with a database.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part One :**An introduction to web technology**, introducing HTML(the HTML page structure ,tha basic HTML tags, lists types and tables. HTML images , HTML Formatting and colors, HTML styles, HTML forms [4 hours] Part Two:**HTML CSS**, HTML media, HTML blocks, HTML classes &id , Using CSS

	to Style a Site, Using CSS to Position Elements on the Page, CSS box model [6 hours] Part Three :**Introduction to Javascrip**t,Data Types and Variables, Decisions and Loops, Date, Time and Timers ,DOM Scripting Events, Forms and forms validation. [8 hours] Part Four:**Introduction to PHP,** Evaluation of Php, Basic Syntax, Defining variable and constant, Php Data type, Operator and Expression.[10 hours] Part Five :**Decisions and loop**, Making Decisions, Doing Repetitive task with looping, Mixing Decisions and looping with Html.[6 hours] Part Six: **Function** What is a function, Define a function, Call by value and Call by reference, Recursive function, String, Creating and accessing, String Searching & Replacing String, Formatting String, String, Related Library function[10 hours] Part Seven: **Array** Anatomy of an Array, Creating index based and Associative array Accessing array, Element Looping with Index based array, Looping with associative array using each () and foreach(), Some useful Library function.[10 hours] Part Eight **Handling Html Form with Php** Capturing Form, Data Dealing with Multi-value filed, GET and POST, Generating File uploaded form, redirecting a form after submission [6 hours] Part Nine **:Session and Cookie** Introduction to Session Control, Session Functionality What is a Cookie, Setting Cookies with PHP. Using Cookies with Sessions, Deleting Cookies, Registering Session variables, Destroying the variables and Session.[5 hours] Part Ten**: Database Connectivity with MySql** Introduction to RDBMS, Connection with MySql Database, Performing basic database operation(DML) (Insert, Delete, Update, Select), Setting query parameter, Executing queryJoin (Cross joins, Inner joins, Outer Joins, Self joins.) [10 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,

	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 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	47	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
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**	4	12% (3)	continues	2, 3, 4, 5
	project	1	7% (7)	Continues	4-7
	Online assignment	3	9% (3)	Continues	1,4,5
	lab	12	12% (1)	Continues	1-7
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	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	An introduction to web technology, introducing HTML(the HTML page structure ,tha basic HTML tags, lists types and tables.
Week 2	HTML images , HTML Formatting and colors, HTML styles, HTML forms

Week 3	HTML CSS, HTML media, HTML blocks, HTML classes &id
Week 4	Using CSS to Style a Site, Using CSS to Position Elements on the Page, CSS box model
Week 5	Introduction to Javascript,Data Types and Variables, Decisions and Loops
Week 6	Date, Time and Timers ,DOM Scripting Events, Forms and forms validation
Week 7	Introduction to PHP,Evaluation of Php, Basic Syntax, Defining variable and constant, Php Data type, Operator and Expression
Week 8	Mid-term Exam
Week 9	Decisions and loop, Making Decisions, Doing Repetitive task with looping, Mixing Decisions and looping with Html.
Week 10	**Function** What is a function, Define a function, Call by value and Call by reference, Recursive function, String, Creating and accessing, String Searching & Replacing String, Formatting String, String, Related Library function
Week 11	**Array** Anatomy of an Array, Creating index based and Associative array Accessing array, Element Looping with Index based array, Looping with associative array using each () and foreach(), Some useful Library function.
Week 12	**Handling Html Form with Php** Capturing Form, Data Dealing with Multi-value filed, GET and POST, Generating File uploaded form, redirecting a form after submission
Week 13	**Session and Cookie** Introduction to Session Control, Session Functionality What is a Cookie, Setting Cookies with PHP. Using Cookies with Sessions, Deleting Cookies, Registering Session variables, Destroying the variables and Session.
Week 14	**Database Connectivity with MySql** Introduction to RDBMS, Connection with MySql Database, Performing basic database operation(DML) (Insert, Delete, Update, Select), Setting query parameter, Executing queryJoin (Cross joins, Inner joins, Outer Joins, Self joins.)
Week 15	**Connecting database with PHP**
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction HTML tags, HTML formatting lists and images
Week 2	Using CSS to Position Elements on the Page, CSS box model

Week 3	Using CSS to Position Elements on the Page, CSS box model
Week 4	Javascript,Data Types and Variables, Decisions and Loops
Week 5	Date, Time and Timers ,DOM Scripting Events, Forms and forms validation
Week 6	Introduction to PHP,Evaluation of Php, Basic Syntax, Defining variable and constant, Php Data type, Operator and Expression
Week 7	Introduction to PHP,Evaluation of Php, Basic Syntax, Defining variable and constant, Php Data type, Operator and Expression
Week 8	Decisions and loop using for loop and for each examples, Functions declaration,using functions in program Mid-term Exam
Week 9	Dealing with arrays, Handling Html Form with Php Capturing Form, Data Dealing with Multi-value filed, GET and POST, Generating File uploaded form, redirecting a form after submission
Week 10	Session and Cookie. Using Cookies with Sessions, Deleting Cookies, Registering Session variables, Destroying the variables and Session.
11	Session and Cookie. Using Cookies with Sessions, Deleting Cookies, Registering Session variables, Destroying the variables and Session.
12	Database Connectivity with MySql
13	Database Connectivity with MySql
14	Connecting PHP with mysql.
15	Connecting PHP with mysql.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	-Laura Lemay, Rafe Coburn ,Jennifer Kyrnin , "SamsTeach Yourself HTML, CSS & JavaScript Web Publishing" ,7the edition , by Pearson Education, Inc. 2016 - Jeremy McPeak ,Beginning javascript, 5th edition ,2017 -Learning PHP A GENTLE INTRODUCTION TO THE WEB'S MOST POPULAR LANGUAGE, David Sklar,2016	Yes
Recommended Texts		
Websites	www.w3schools.com www.javapoint.com	

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.

المرحلة: الثانية

الفصل الدراسي: الرابع

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Communications Fundamentals**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CMF4**				
ECTS Credits	**7.0**				
SWL (hr/sem)	**175**				
Module Level	2		**Semester of Delivery**	4	
Administering Department	MCCE		**College**	COE	
Module Leader	Jaafar Adhab Angood		**e-mail**	Dr.jaafaraldhaibani@uoitc.edu.iq	
Module Leader's Acad. Title	Asst. Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	22/01/2025		**Version Number**	2.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Engineering Mathematics I (MAT1) and Electrical Circuits II (ECT2)	**Semester**	1 +2
Co-requisites module		**Semester**	

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

Module Objectives أهداف المادة الدراسية	1) To understand the Communications bands 2) This course deals with the basic concept of Modulation Technique and provide the understanding the Types of modulations techniques 3) To understand the Amplitude Modulation (AM, DSB,SSB,DSB-SC, SSB-SC) 4) To develop problem solving skills and understanding of Modulators and De-modulators designs and its applications in the communications. 5) To understand the Angle Modulation, FM,PM 6) To develop problem solving skills and understanding of Modulators and De-modulators designs and its applications in the communications. 7) To understand the PCM and design the PCM generators 8) To understand the Noise in Communication Systems and its calculations 9) To understanding Eliminate of Noise in communications. 10) To understand the Multiplexing and de-multiplexing for types of signals
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize the main parts of a communications system 2. Be able to represent the signals as time-domain and/or frequency-domain functions and draw them 3. Recognize the types of AM (SSB, DSB, SSB-SC, DSB-SC) and its applications 4. Recognize factors calculation such as power, modulation index, bandwidth, output signal. 5. Analyze the band pass signal of angle modulation (FM and PM) 6. Recognize how to design the AM modulators and demodulator 7. Recognize the main applications of different analogue modulation types. 8. Be able to analyze and design simple PCM generators in communications systems 9. Recognize how to eliminate the noise in communications systems 10. Be able to design the Multiplexing and de-multiplexing for types of signals. 11. Have a holistic understanding of analogue communication system
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Communication Systems:- Communication Systems – signals, baseband signal, band pass signal, transmitter, modulators, channels, wireless channels, communications networks, receivers, types of filters, types of signals, modulation, types of noise [20 hrs] AM modulation: - Modulators, transmitter power, single side band, double side band, Time domain, Frequency domain, modulation index, distortion, multi tone Am generator, supper Herodian receiver [20 hrs] Angle Modulation :- Frequency Modulation, Phase modulation, frequency division, bandwidth, side band power, Narrow band FM, wide band FM, Phase locked loop, VCO [10 hrs] Multiplexing :- Frequency division multiplexing, time division multiplexing, wavelength division multiplexing, de-multiplexing, signals, filters, carrier frequency [15 hrs] Noise: - types noise, thermal noise, shot noise, Noise Figure . [10 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types 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	97	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

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 – Communication system elements, Need for Modulation
Week 2	Signals in the Modulation Process (AM)
Week 3	**Amplitude Modulation (AM)** DSB, DSB-SC.
Week 4	**Amplitude Modulation (AM)** SSB, SSB-SC.
Week 5	**Amplitude Modulation (AM)** Multi- tone modulation, AM supper Herodian receiver
Week 6	**Amplitude Modulation (AM)** Vestigial Sideband (VSB) Modulation
Week 7	**Mid-term Exam** + Introduction of Angle Modulation
Week 8	**Angle Modulation** - Frequency Modulation
Week 9	**Angle Modulation** - Narrow Band FM - Wide Band FM
Week 10	**Angle Modulation** Phase Modulation Phase locked loop (PLL) , VCO AM supper Herodian receiver
Week 11	**Pulse Code Modulation (PCM)**
Week 12	**Noise in Communication Systems** - Types of noise in Communication systems - Thermal noise
Week 13	**Noise in Communication Systems** - Analysis of thermal noise -Noise figure Instructions -Signal to noise ratio (SNR)
Week 14	**Multiplexing and De Multiplexing** Frequency Division Multiplexing (FDM)
Week 15	**Multiplexing and De Multiplexing** Wavelength Division Multiplexing (WDM) Time Division Multiplexing (TDM)
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to Communication systems blokes
Week 2	Lab 2: Implementation of Amplitude Modulation (AM) , DSB, DSB-SC.
Week 3	Lab 2: Implementation of Amplitude Modulation (AM) , DSB, DSB-SC.
Week 4	Lab 4: Implementation of Multi- tone modulation, AM supper Herodian receiver
Week 5	Lab 5: Implementation of Angle Modulation, FM
Week 6	Lab 6: Implementation of Angle Modulation, PM
Week 7	Lab 7: Implementation of Multiplexing

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	- Ferrell G. Stremler, Introduction to Communication Systems, 1990 - Simon Haykin, "Communication Systems", 4th edition, John Wiley & Sons, Inc., 2004.	Yes
Recommended Texts	- Xiaodong Wang , H. Vincent Poor (Author) Wireless Communication Systems: Advanced Techniques for Signal Reception .	No
Websites	https://ict.iitk.ac.in/wp-content/uploads/EE320A-Principles-Of-Communication-CommunicationSystems-4ed-Haykin.pdf	

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Digital Electronics**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**ITC220150**				
ECTS Credits	6.00				
SWL (hr/sem)	**150**				
Module Level	2		**Semester of Delivery**	4	
Administering Department	MCCE		**College**	COE	
Module Leader	Taif Ali		**e-mail**	taif.alobaidi@uoitc.edu.iq	
Module Leader's Acad. Title	Lecturer Dr.		**Module Leader's Qualification**	Ph.D.	
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	16/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Electronics (**ITC200220**(ELC3))	**Semester**	3
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 provide an understanding of the principles and operation of transistors in digital electronic circuits. 2. To develop the ability to analyze and design transistor-based circuits for various applications. 3. To familiarize students with the practical aspects of implementing transistor circuits.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. **Transistor Fundamentals**: Explain the types, symbols, and basic characteristics of Bipolar Junction Transistors (BJTs) and Field-Effect Transistors (FETs), including their roles in electronic circuits. 2. **BJT Amplifier Analysis**: Analyze the operation of common-emitter BJT amplifiers, including small-signal modeling, gain calculation, and frequency response. 3. **MOSFETs and Switching Circuits**: Describe the structure, operation modes, and characteristics of MOSFETs, and demonstrate their use in switching circuits. 4. **Digital Logic Families**: Compare the characteristics of TTL and CMOS logic families, including speed, power consumption, and compatibility. 5. **Operational Amplifiers**: Evaluate the characteristics and basic applications of operational amplifiers in analog circuits. 6. **Power and Audio Amplifiers**: Differentiate between amplifier classes (A, B, AB, and C) and explain their applications in power amplification and audio circuits. 7. **Oscillators**: Design basic oscillators (e.g., LC, RC, and crystal oscillators) and explain their operational principles and applications in electronic systems. 8. **Data Converters**: Illustrate the principles of Analog-to-Digital (A/D) and Digital-to-Analog (D/A) conversion and their applications in digital systems. 9. **Integrated Circuits and Microcontrollers**: Describe the architecture and functions of integrated circuits (ICs) and microcontrollers, including memory and input/output interfaces. 10. **Digital Electronics Applications**: Develop practical circuits using logic gates, multiplexers, counters, and displays to solve real-world digital electronics problems.
Indicative Contents المحتويات الإرشادية	Week 1 [5 hrs]: • Introduction to transistors: types, symbols, and basic characteristics. • Bipolar Junction Transistors (BJTs): structure, modes of operation (active, cutoff, and saturation), and current-voltage characteristics. Week 2 [5 hrs]: • BJT amplifiers: common-emitter configuration, small-signal analysis, gain calculations, and frequency response.

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
	• BJT switching circuits: transistor as a switch, transistor saturation, and cutoff regions. Week 3 [5 hrs]: • Field-Effect Transistors (FETs): types, symbols, and basic characteristics. • Junction Field-Effect Transistors (JFETs): structure, modes of operation, and characteristics. Week 4 [5 hrs]: • Metal-Oxide-Semiconductor Field-Effect Transistors (MOSFETs): structure, modes of operation, and characteristics. • MOSFET amplifiers: common-source configuration, small-signal analysis, gain calculations, and frequency response. Week 5 [5 hrs]: • MOSFET switching circuits: transistor as a switch, MOSFET saturation, and cutoff regions. • CMOS logic gates: implementation using complementary MOSFETs. Week 6 [5 hrs]: • Introduction to digital logic families: TTL, CMOS, and their characteristics. • Transistor-Transistor Logic (TTL) circuits: basic gates, fan-out, and noise margin. Week 7 [5 hrs]: • Combinational logic circuits: multiplexers, decoders, and encoders. • Sequential logic circuits: flip-flops, registers, and counters. Week 8 [5 hrs]: • Overview of integrated circuits (ICs) and their packaging. • IC logic families: RTL, DTL, ECL, and their characteristics. Week 9 [5 hrs]: • Introduction to operational amplifiers (Op-Amps): characteristics and applications. • Op-Amp circuits: amplifiers, integrators, differentiators, and filters. Week 10 [5 hrs]: • Power amplifiers: class A, class B, class AB, and class C amplifiers. • Audio amplifier circuits: power amplification and speaker interfacing. Week 11 [5 hrs]: • Oscillators: principles, types (LC, RC, crystal), and applications. • Voltage-controlled oscillators (VCOs) and phase-locked loops (PLLs). Week 12 [5 hrs]: • Analog-to-Digital (A/D) and Digital-to-Analog (D/A) converters.

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
	• ADC and DAC circuits: successive approximation, flash, and sigma-delta converters. Week 13 [5 hrs]: • Introduction to microcontrollers: architecture, memory, and input/output interfaces. • Interfacing microcontrollers with digital circuits. Week 14 [5 hrs]: • Practical applications of digital electronics: logic gates, multiplexers, counters, and displays. • Introduction to programmable logic devices (PLDs) and field-programmable gate arrays (FPGAs). Week 15 [5 hrs]: • Review and revision of the course topics. • Project presentations and discussions.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Lectures: Provide theoretical foundations and explanations of concepts. 2. Demonstrations: Illustrate practical implementation and operation of transistor circuits. 3. Laboratory Sessions: Hands-on experiments to reinforce theoretical knowledge and develop practical skills. 4. Group Discussions: Encourage students to actively participate, ask questions, and discuss challenging topics. 5. Problem-Solving Exercises: Assignments and quizzes to enhance analytical and problem-solving abilities. 6. Project Work: Engage students in designing and implementing practical applications using digital electronics.

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
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	4	16% (4)	5,7(Lab),8,12	All
	Online Assignments	2	4% (2)	2, 9	LO #3, #4 and #6, #7
	Projects	1	4% (4)	14	All
	Labs	8	16% (2)	Continuous	All
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to transistors: types, symbols, and basic characteristics.
Week 2	BJT amplifiers: common-emitter configuration, small-signal analysis, gain calculations, and frequency response.
Week 3	Field-Effect Transistors (FETs): types, symbols, and basic characteristics.
Week 4	Metal-Oxide-Semiconductor Field-Effect Transistors (MOSFETs): structure, modes of operation, and characteristics.
Week 5	MOSFET switching circuits: transistor as a switch, MOSFET saturation, and cutoff regions.
Week 6	Introduction to digital logic families: TTL, CMOS, and their characteristics. + Overview of integrated circuits (ICs) and their packaging.
Week 7	Mid-term Exam

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 8	Introduction to operational amplifiers (Op-Amps): characteristics and applications.
Week 9	Power amplifiers: class A, class B, class AB, and class C amplifiers.
Week 10	Audio amplifier circuits: power amplification and speaker interfacing.
Week 11	Oscillators: principles, types (LC, RC, crystal), and applications.
Week 12	Analog-to-Digital (A/D) and Digital-to-Analog (D/A) converters.
Week 13	Introduction to microcontrollers: architecture, memory, and input/output interfaces.
Week 14	Practical applications of digital electronics: logic gates, multiplexers, counters, and displays.
Week 15	Review and revision of the course topics.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Transistor DC Biasing Circuits
Week 2	Lab 2: Logic Gates Circuits
Week 3	Lab 3: The Common Emitter Amplifier
Weeks 4,5	Lab 4: JFET Characteristics
Week 6	Lab 5: Transistor Switching Circuits
Week 7	Mid-term Exam
Weeks 8,9,10,11	Lab 6: Operational Amplifier Application Circuits (Inverting Amplifier, Non-Inverting Amplifier, Summer Amplifier, Integrator, and Differentiator)
Weeks 12,13	Lab 7: Oscillators (LC, RC, crystal), Timers, and Multi-Vibrators
Weeks 14,15	Lab 8: Analog-to-Digital (A/D) and Digital-to-Analog (D/A) converters.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Robert L. Boylestad, "Electronic Devices and Circuit theory" Prentice Hall International	Yes
Recommended Texts	1. Theodore F. Bogart, "Electronic Devices and Circuits", Merrill Publishing Company. 2. Jacob Millman," Microelectronics", McGraw-Hill Book Company	No
Websites	https://www.allaboutcircuits.com	

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Engineering Mathematics II**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐**Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**EMT4**				
ECTS Credits	**5.00**				
SWL (hr/sem)	**125**				
Module Level		2	**Semester of Delivery**		4
Administering Department		MCCE	**College**		COE
Module Leader	Dr. Nagham Ali Hussen		**e-mail**	Nagham.ali@uoitc.edu.iq	
Module Leader's Acad. Title		Lecturer	**Module Leader's Qualification**		Ph.D
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		01/06/2023	**Version Number**		1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Engineering mathematic I (EMT3)	**Semester**	3
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The module is designed to develop and extend the critical thinking skills and problem solving skills of the students beyond that which would normally be acquired in (EMT1) course. From a theoretical perspective, students will study pure mathematics, discrete Fourier transform with differential equations. The practical computing aspect of the module brings together a variety of techniques in applications of differential equations so the students may further advance their problem solving skills and apply some of the theory within a variety of interesting and challenging contexts.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand discrete time signal. 2. Study discrete Fourier transform. 3. Study 1st, 2nd and high order differential equations 4. Apply a problem solving strategy that may involve the use of multiple mathematical concepts. 5. Construct and manipulate a variety of mathematical statements. 6. Use differential equations solving heuristics and design (or follow) algorithms to carry out a specific sequence of processing steps and calculations. 7. Construct a mathematical model of a given scenario based on data. 8. Implement appropriate numerical methods to model and/or solve mathematical problems.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: Part A: Fourier Transform: Definition of Discrete transform and its properties [6hrs] Part B: Z-transforms: Definition and how to convert a discrete-time signal, which is a sequence of real or complex numbers, into a complex frequency-domain (z-domain or z-plane) representation [6hrs] Inverse Z-transform [3hrs] Applications and worked examples [3hrs] Part C: Differential Equations (1^{st} order DE. And 2^{nd} order DE.) Background , how differential equations relate one or more unknown physical quantities and their rates of change. [6hrs] Differential equations role in many disciplines including engineering, physics, economics, and biology. [6hrs]. Study of differential equations and study of their solutions (the set of functions that satisfy each equation) and of the properties of their solutions. [15hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The **assessment strategy** for this module is designed to provide students with the opportunity to demonstrate the learning outcomes. The written examination will assess the knowledge and assimilation of mathematical terminology, notation, concepts and techniques, as well as the ability to work out solutions to previously unseen problems under time-constrained conditions. The assignments give the students a chance to practice the required techniques shortly after they have been taught and in problems of a similar level to those that they will meet in the exam. Thus, the **summative assessment** for this module consists of the following. · 2-hour, closed-book written examination. · Two take-home problem sheets, submitted as coursework. **Formative assessment and feedback** For the module, students will receive formative assessment/feedback in the following ways. · During lectures, by question and answer sessions · During office hour meetings with students · By means of unassessed tutorial problems in the notes (with answers/model solutions) · Via assessed coursework

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	77	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
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	4	16% (4)	5 and 10	All
	Assignments	2	10% (5)	2 and 12	3,4,5,6
	Onsite assignments	3	9% (3)	Continuous	1,7,13
	Report	1	5% (5)	13	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Discrete-Time Signals
Week 2	Discrete Fourier Transform
Week 3	Z-Transform
Week 4	Differential Equations Basic concepts (order, degree, initial condition, general solution, particular solution).
Week 5	Partial Differential Equations
Week 6	Linear Equations and Separable Equations
Week 7	Bernoulli Differential Equations
Week 8	Substitutions and Exact Equations
Week 9	**Midterm Exam. (1), Substitutions and Exact Equations**
Week 10	2nd Order Differential Equations types of classifications, Linear Differential Operator.
Week 11	High order Differential Equations
Week 12	Homogenous L.D.E. with a constant coefficient, the characteristics polynomial
Week 13	Non-Homogenous L.D.E. with a **constant** coefficient.
Week 14	Graphs and Combinational optimization
Week 15	**Midterm Exam. (2), Graphs and Combinational optimization**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
	No Laboratory

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	"Thomas CALCULUS" 11th Edition, 2005.	Yes
Recommended Texts	1. "Thomas CALCULUS" 11th Edition, 2005. 2. "Schaum's Outlines, Differential Equations", 2nd Edition, Richard Bronson. 1994. 3. "Schaum's Outlines, Matrix Operations", 2nd Edition, Richard Bronson. 1989. 4. Advanced engineering mathematics, 9th ed., Kreyszig, 2006.	No
Websites	https://www.coursera.org/browse	

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Linear Algebra			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**ITC22**				
ECTS Credits	4.0				
SWL (hr/sem)	**100**				
Module Level	2		**Semester of Delivery**	4	
Administering Department	MCCE		**College**	COE	
Module Leader			**e-mail**	Israa.resen@uoitc.edu.iq	
Module Leader's Acad. Title	Lecture		**Module Leader's Qualification**	M.Sc.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	21/01/2025		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Mathematics II (MAT2)	**Semester**	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. Provide the student with sufficient information to enable them to identify real-life situations that can be solved using matrix algebra. 2. Train the student to formulate real-life problems as models in linear algebra. 3. Solve systems of linear equations using linear algebra. 4. Develop the student's skills in understanding matrices and performing arithmetic operations on matrices. 5. Study linear algebra in detail.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• Matrices and arithmetic operations. • Finding the inverse of matrices (using elementary transformations – Gaussian elimination). • Learning to find the determinant of matrices with small and very large sizes (definition method – modern method – cofactor expansion method – elementary transformation method). • Solving a non-homogeneous linear system using matrices when n=mn = mn=m (Cramer's method – definition method – Gaussian elimination method for finding the inverse and solving the system). • Solving a non-homogeneous linear system using matrices when the number of equations is less than the number of unknowns. • Solving a non-homogeneous linear system using matrices when the number of equations is greater than the number of unknowns. • How to find the rank of square and non-square matrices. • Using the determinant formula and how to find the rank of square and non-square matrices.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A –</u> -Basic concepts and definition of matrices [3 hrs] and their types - Arithmetic operations on matrices (addition, subtraction, multiplication) [3 hrs] and properties on those operations. The effect of the matrix and its applications in calculations [6 hrs] -Finding Determinants for Large Arrays - Properties of Determinants - Inverse of Matrices (Using Initial Transformations - Ellipsis for Kaus) - Properties of Matrices Inverse [6 hrs] <u>Part B –</u> -Complex numbers and calculations on them with their properties [3 hrs] -Describe probability distributions for certain types of random variables Methods for Solving Systems of Hetero linear Equations Using Kaus, Kaus, Gordon, and Kramer Method When the Determinant of a Matrix is Not Equal to Zero [9 hrs] -Definition of Euclidean space and some of its theories [3 hrs] -Definition of linear structure, Euclidean length and Euclidean distance between two vectors in Euclidean space [9 hrs] - Finding distinctive roots and characteristic vectors [3 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Encouraging the student to participate in exercises, while simultaneously improving and expanding critical thinking skills. This will be achieved through interactive classes and educational programs, as well as considering simple experiments that involve some sampling activities relevant to the student.

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
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**	3	15% (15)	5 and 14	LO #1, #2, #3 and #10, #11,#12
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	In-College Assignments	2	10% (10)	4 and 14	LO #5, #6 and #9, #10
	Report	1	5% (5)	10	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	3 hr	10% (10)	9	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	Basic concepts and definitions of matrices and their types, mathematical operations on matrices (addition, subtraction, multiplication), and the properties of these operations, the trace of a matrix and its applications in calculations.
Week 2	Complex numbers and their mathematical operations with their properties.
Week 3	Finding determinants of matrices with small dimensions.
Week 4	Finding determinants of matrices with large dimensions (definition, modern method, method of cofactors, and elementary transformations).
	Solving non-homogeneous linear systems using matrices when n=mn = mn=m (Cramer's Rule, the definition method, Gaussian elimination to find the inverse and solve the system).
Week 5	Systems of Linear Equations, Guassian and Gauss-Jordan Elimination
Week 6	Properties of matrix inverses.
Week 7	Vector Spaces
Week 8	Spanning Sets, Linear Independence, Bases, and Dimensions
Week 9	Mid-Course Examination
Week 10	Rank, Row Space, Column Space, Coordination, and Change of Basis
Week 11	Length and Dot Product for Real Vectors and an Introduction to Inner Product Spaces
Week 12	Orthonormal Bases, the Gram-Schmidt Process, and Cross Product
Week 13	Linear transformations and Their Kernals and Ranges
Week 14	Matrices for Linear Transformations, Transition Matrices, and Similarity
Week 15	Eigenvectors, Eigenvalues, and Diagonalization
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Ron Larson. Elementary Linear Algebra. Eighth edition. Boston: Cengage Learning, 2017. ISBN-13: 978-1-305-65800-4	Yes
Recommended Texts	Introduction to Linear Algebra, Sixth Edition Gilbert Strang. WELLESLEY-CAMBRIDGE PRESS Box 812060 Wellesley MA 0248. .(2023) (gilstrang@gmail.com) ISBN : 978-17331466-7-8	**No**
Websites	6 Best Linear Algebra Textbooks (2022 Review) - Best Books Hub	

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Linear Algebra			**Module Delivery**	
Module Type	Core			☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	ITC22				
ECTS Credits	4.0				
SWL (hr/sem)	100				
Module Level	2		**Semester of Delivery**	4	
Administering Department	MCCE		**College**	COE	
Module Leader			**e-mail**	Israa.resen@uoitc.edu.iq	
Module Leader's Acad. Title	Lecture		**Module Leader's Qualification**	M.Sc.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	21/01/2025		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Mathematics II (MAT2)	**Semester**	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. Provide the student with sufficient information to enable them to identify real-life situations that can be solved using matrix algebra. 2. Train the student to formulate real-life problems as models in linear algebra. 3. Solve systems of linear equations using linear algebra. 4. Develop the student's skills in understanding matrices and performing arithmetic operations on matrices. 5. Study linear algebra in detail.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• Matrices and arithmetic operations. • Finding the inverse of matrices (using elementary transformations – Gaussian elimination). • Learning to find the determinant of matrices with small and very large sizes (definition method – modern method – cofactor expansion method – elementary transformation method). • Solving a non-homogeneous linear system using matrices when n=mn = mn=m (Cramer's method – definition method – Gaussian elimination method for finding the inverse and solving the system). • Solving a non-homogeneous linear system using matrices when the number of equations is less than the number of unknowns. • Solving a non-homogeneous linear system using matrices when the number of equations is greater than the number of unknowns. • How to find the rank of square and non-square matrices. • Using the determinant formula and how to find the rank of square and non-square matrices.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A –</u> -Basic concepts and definition of matrices [3 hrs] and their types - Arithmetic operations on matrices (addition, subtraction, multiplication) [3 hrs] and properties on those operations. The effect of the matrix and its applications in calculations [6 hrs] -Finding Determinants for Large Arrays - Properties of Determinants - Inverse of Matrices (Using Initial Transformations - Ellipsis for Kaus) - Properties of Matrices Inverse [6 hrs] <u>Part B –</u> -Complex numbers and calculations on them with their properties [3 hrs] -Describe probability distributions for certain types of random variables Methods for Solving Systems of Hetero linear Equations Using Kaus, Kaus, Gordon, and Kramer Method When the Determinant of a Matrix is Not Equal to Zero [9 hrs] -Definition of Euclidean space and some of its theories [3 hrs] -Definition of linear structure, Euclidean length and Euclidean distance between two vectors in Euclidean space [9 hrs] - Finding distinctive roots and characteristic vectors [3 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Encouraging the student to participate in exercises, while simultaneously improving and expanding critical thinking skills. This will be achieved through interactive classes and educational programs, as well as considering simple experiments that involve some sampling activities relevant to the student.

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	٣
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**	3	15% (15)	5 and 14	LO #1, #2, #3 and #10, #11,#12
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	In-College Assignments	2	10% (10)	4 and 14	LO #5, #6 and #9, #10
	Report	1	5% (5)	10	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	3 hr	10% (10)	9	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	Basic concepts and definitions of matrices and their types, mathematical operations on matrices (addition, subtraction, multiplication), and the properties of these operations, the trace of a matrix and its applications in calculations.
Week 2	Complex numbers and their mathematical operations with their properties.
Week 3	Finding determinants of matrices with small dimensions.
Week 4	Finding determinants of matrices with large dimensions (definition, modern method, method of cofactors, and elementary transformations).
Week 5	Solving non-homogeneous linear systems using matrices when n=mn = mn=m (Cramer's Rule, the definition method, Gaussian elimination to find the inverse and solve the system).
Week 6	Systems of Linear Equations, Guassian and Gauss-Jordan Elimination
Week 7	Properties of matrix inverses.
Week 8	Vector Spaces
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Week 10	Mid-Course Examination, Rank, Row Space, Column Space, Coordination, and Change of Basis
Week 11	Length and Dot Product for Real Vectors and an Introduction to Inner Product Spaces
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Week 13	Linear transformations and Their Kernals and Ranges
Week 14	Matrices for Linear Transformations, Transition Matrices, and Similarity
Week 15	Eigenvectors, Eigenvalues, and Diagonalization
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Ron Larson. Elementary Linear Algebra. Eighth edition. Boston: Cengage Learning, 2017. ISBN-13: 978-1-305-65800-4	Yes
Recommended Texts	Introduction to Linear Algebra, Sixth Edition Gilbert Strang. WELLESLEY-CAMBRIDGE PRESS Box 812060 Wellesley MA 0248. .(2023) (gilstrang@gmail.com) ISBN : 978-17331466-7-8	**No**
Websites	6 Best Linear Algebra Textbooks (2022 Review) - Best Books Hub	

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
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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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Microprocessors**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MPS4**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	2		**Semester of Delivery**	4	
Administering Department	MCCE		**College**	COE	
Module Leader	Mohammad Hassan Maktoof		**e-mail**	Muhamed.hasan@uoitc.edu.iq	
Module Leader's Acad. Title	Asst. Lec.		**Module Leader's Qualification**	MSc.	
Module Tutor			**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	2025/1/23		**Version Number**	2.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Digital Systems Design II (DSD2)	**Semester**	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	This course introduces the programming, architecture and interfacing of the Intel 80x86 microprocessors for students who had previous knowledge in both computer hardware and software. A student, after successfully passing this course will be able to: ● Understand the main components and working principals of the Intel 80x86 microprocessor. ● Program and debug in assembly language. ● Understand the basic computer architecture. ● Understand the memory organization and memory interfacing. ● Perform input/output device programming in assembly. ● Understand the hardware and software interrupts and their applications. ● Understand the properties and interfacing of the parallel and serial ports.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1) Understand the main components and working principles of the Intel 80x86 microprocessor, 2) Program and debug in assembly language, 3) Understand the basic computer architecture, 4) Understand interrupts and their applications, 5) Perform input/output device interfacing/programming in assembly, 6) Understand the memory organization, design, and interfacing, 7) Understand the properties and interfacing of the parallel and serial ports,
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A – Microprocessor Software</u> **General Architecture [5 hrs]** This section provides an overview of the Intel family of microprocessors. Included is a discussion of the history of computers and the function of the microprocessor in the microprocessor based computer system. The block diagram and a description of the function of each block detail the operation of a computer system. Blocks, in the block diagram, show how the memory and input/output (I/O) system of the personal computer interconnect. **Addressing Modes [6 hrs]** In this section, the MOV (move data) instruction is used to describe the data-addressing modes. The MOV instruction transfers bytes or words of data between two registers or between registers and memory in the 8086. The data-addressing modes include register, immediate, direct, register indirect, base plus index, register-relative, and base relative-plus-index in the 8086 through the 80286 microprocessor. **Instruction sets Data movement [4 hrs]** This section concentrates on the data movement instructions. The data movement instructions include MOV, PUSH, POP, XCHG, IN, OUT, LEA, LAHF, and SAHF. The data

movement instructions are presented first because they are more commonly used in programs and are easy to understand.

Instruction sets Arithmetic Instructions [4 hrs]
In this section, we examine the arithmetic and logic instructions. The arithmetic instructions include addition, subtraction, multiplication, division, comparison, negation, increment, and decrement.

Program Control Instructions [4 hrs]
The program control instructions direct the flow of a program and allow the flow to change. A change in flow often occurs after a decision made with the CMP or TEST instruction is followed by a conditional jump instruction. This chapter explains the program control instructions, including the jumps, calls, returns, interrupts, and machine control instructions.

Revision problem classes [4 hrs]

Part B – Microprocessors H/W and Interfacing
Hardware Specifications [8 hrs].
In this section, the pin functions of both the 8086 and 8088 microprocessors are detailed and information is provided on the following hardware topics: clock generation, bus buffering, bus latching, timing, wait states, and minimum mode operation versus maximum mode operation. These simple microprocessors are explained first, because of their less intricate structures, as an introduction to the Intel microprocessor family.

Microprocessor timing [5 hrs]
It is essential to understand system bus timing before choosing a memory or I/O device for interfacing to the 8086 or 8088 microprocessors. This section provides insight into the operation of the bus signals and the basic read and write timing of the 8086/8088. It is important to note that we discuss only the times that affect memory and I/O interfacing in this section.

Memory Interface [8 hrs]
Whether simple or complex, every microprocessor-based system has a memory system. The Intel family of microprocessors is no different from any other in this respect. Almost all systems contain two main types of memory: read-only memory (ROM) and random access memory (RAM) or read/write memory. Read-only memory contains system software and permanent system data, while RAM contains temporary data and application software. This chapter explains how to interface both memory types to the Intel family of microprocessors. We demonstrate memory interface to an 8-, 16-, 32-, and 64-bit data bus by using various memory address sizes. This allows virtually any microprocessor to be interfaced to any memory system.

	Basic I/O Interface [6 hrs] In this section, we first introduce the basic I/O interface and discuss decoding for I/O devices. Then, we provide detail on parallel and serial interfacing, both of which have a variety of applications. To study applications, we connect analog-to-digital and digital-to-analog converters, as well as both DC and stepper motors to the microprocessor. **Interrupts [6 hrs]** In this section, the coverage of basic I/O and programmable peripheral interfaces is expanded by examining a technique called interrupt-processed I/O. An interrupt is a hardware-initiated procedure that interrupts whatever program is currently executing. This chapter provides examples and a detailed explanation of the interrupt structure of the entire Intel family of microprocessors.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types 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	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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)	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 the Microprocessor and Computer
Week 2	8086 Microprocessor Architecture
Week 3	Addressing Modes
Week 4	Instruction Set (Data Movement Inst.)
Week 5	Instruction Set (Logic and Arithmetic Inst.)
Week 6	Instruction Set (Program Control Instructions)
Week 7	Mid-term Exam
Week 8	8086/8088 Hardware Specifications (part 1)
Week 9	8086/8088 Hardware Specifications (part 2)
Week 10	Timing and Clocking
Week 11	Memory Types
Week 12	Memory Design and Interface (part 1)
Week 13	Memory Design and Interface (part 2)
Week 14	Basic I/O Interface
Week 15	Interrupts
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to 8086 Emulator
Week 2	Lab 2: Addressing Modes I
Week 3	Lab 3: Addressing Modes II
Week 4	Lab 4: Arithmetic Instructions
Week 5	Lab 5: Logical, Shift, and Rotate Instructions
Week 6	Lab 6: Transfer Control Within a Program
Week 7	Mid-term Exam
Week 8	CALL & RET Instructions
Week 9	Interrupts Handling
Week 10	Input/Output Instructions
Week 11	Robot Virtual Device
Week 12	Thermometer Virtual Device
Week 13	Traffic Light Virtual Device
Week 14	Steeper Motor Virtual Device
Week 15	Review 1
Week 16	Review 2

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Brey, Barry B. The Intel Microprocessors: 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium, Pentium Pro Processor, Pentium II, Pentium III, Pentium 4, and Core2 with 64-bit Extensions: Architecture, Programming, and Interfacing. Pearson Education India, 2009.	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

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	اللغة العربية			**Module Delivery**	
Module Type	S			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	ARB1				
ECTS Credits	2.00				
SWL (hr/sem)	50				
Module Level	1		**Semester of Delivery**	الثاني	
Administering Department	Type Dept. Code		**College**	Type Dept. Code	
Module Leader	مأمون يوسف رجب		**e-mail**	mamoun.yousef@uoitc.edu.iq	
Module Leader's Acad. Title	مدرس مساعد		**Module Leader's Qualification**	ماجستير	
Module Tutor	مأمون يوسف رجب		**e-mail**	mamoun.yousef@uoitc.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	15/6/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	*التعرف على أساسيات النحو العربي. * إكساب الطالب المهارة في الكتابة العربية من تصحيح الأخطاء الإملائية، ومعرفة القواعد النحوية والإملائية التي تصون اللسان عن الخطأ، ويفهم الطالب مدى أهمية اللغة العربية وقواعدها في الدراسات الإنسانية وفي كتابة البحوث والتقارير *التعريف بالأدب العربي وفنونه وعصوره القديمة .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	- إكساب الطالب المزيد من الثقافة بلغته وهويته العربية وهي لغة القرآن الكريم وإكسابه المزيد من الثقافة الدينية -أن يُميز الطالب بين أقسام الكلام وما يتبع ذلك من ضوابط إملائية ونحوية. -أن يُفرق الطالب بين همزتي القطع والوصل في اللفظ والكتابة. -أن يعرف الطالب القواعد الصحيحة لكتابة الهمزة بالشكل الصحيح. -تعريف الطالب بأهم الأخطاء اللغوية الشائعة. -تعريف الطالب بالضوابط الإملائية الصحيحة. - تعريف الطالب بأحكام العدد من حيث التذكير والتأنيث والإعراب والبناء، تمييز الأعداد . -تعريف الطالب بالأدب العربي، وإكسابه ثقافة موجزة بتراث أدبه العربي.
Indicative Contents المحتويات الإرشادية	1 القرآن الكريم- ودوره في ترسيخ اللغة العربية 2 -الجملة الاسمية والجملة الفعلية ومضامينهما 3 -قواعد كتابة الهمزة 4 الفعل وأنواعه 5 -تصويبات لغوية 6 -التفريق بين التاء المربوطة والتاء المفتوحة والهاء في نهاية الكلمة 7 -التفريق بين الياء وحركة الكسرة في مُخاطبة المؤنث 8 -العدد والمعدود 9 -إن وأخواتها 10 -الأفعال الناقصة 11 -المضاف والمضاف إليه 12 -الأدب العربي

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• إستراتيجية التعلم التعاوني. • إستراتيجية التعلم وجهاً لوجه. • إستراتيجية التعلم عبر الإنترنت. • إستراتيجية التعلم الهجين • تقسيم الطلبة على مجموعات صغيرة لعمل التقارير. • المحاضرات التقليدية.

	• استخدام منصات التعليم الإلكتروني (Google class room). • دمج بين التعليم التقليدي والتعليم عبر الإنترنت.

Student Workload (SWL) الحمل الدراسي للطالب موزع على (15) اسبوع			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2.2
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% (5)	4, 10	LO #1-4 , LO #5-9
	Assignments	2	10% (5)	4, 11	LO # 1-3 , LO # 4- 10
	Activities	2	10% (5)	4, 12	
	Report	1	10%(10)	16,12	LO #1-5, LO # 9-11
Summative assessment	**Midterm Exam**	2 hr	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	لقرآن الكريم ودوره في ترسيخ قواعد اللغة العربية
Week 2	الجملة الاسمية والجملة الفعلية ومضامينهما
Week 3	قواعد كتابة الهمزة
Week 4	الفعل وأنواعه
Week 5	التفريق بين التاء المربوطة والتاء المفتوحة والهاء في نهاية الكلمة
Week 6	الامتحان النصفي
Week 7	العدد والمعدود
Week 8	إن وأخواتها
Week 9	التفريق بين الياء وحركة الكسرة في مُخاطبة المؤنث
Week 10	تصويبات لغوية

Week 11	الأفعال الناقصة
Week 12	المضاف و المضاف إليه
Week 13	التفريق بين الضاد و الظاء
Week 14	الأدب العربي
Week 15	الامتحان النهائي

Delivery Plan (Weekly Tutorial) المنهاج الاسبوعي الإضافي	
	Material Covered
Each week, a question sheet related to the material presented in the theoretical lecture will be solved and debated.	

Learning and Teaching Resources مصادر التعلم و التدريس		
	Text	**Available in the Library?**
Required Texts		
Recommended Texts	1-الوجيز في اللغة العربية/ د.محي هلال السرحان 2- جامع الدروس الاملائية / د. فاضل عباس فاضل. 3_ العربية الجامعية لغير المتخصصين/ د. عبده الراجحي	
Websites		

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