

	<p>University of Technology Department of Communication Engineering Division of wireless Communication Engineering Systems</p>	
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MODULE DESCRIPTOR FORM
 نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	DIGITAL TECHNIQUES		Module Delivery	
Module Type	BASIC		Theory Lab	
Module Code	DITE111			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	1	Semester of Delivery		1
Administering Department	Type Dept. Code	College	Type College Code	
Module Leader	Dr. Ammar A. Yahya		e-mail	11196@uotechnology.edu.iq
Module Leader's Acad. Title			Module Leader's Qualification	PhD
Module Tutor	None		e-mail	None
Peer Reviewer Name			e-mail	
Review Committee Approval	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

<p>Module Aims أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> 1. Able to perform the conversion among different number systems. 2. Understand Boolean algebra and basic properties of Boolean algebra. Familiar with basic logic gates. 3. Able to design simple combinational logics using basic gates. 4. Analysis and design of combinational circuits. 5. Analysis and design of sequential circuits. 6. Able to perform the conversion among different number systems. 7. Understand Boolean algebra and basic properties of Boolean algebra. Familiar with basic logic gates. 8. Able to design simple combinational logics using basic gates. 9. Analysis and design of combinational circuits. 10. Analysis and design of sequential circuits.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> 1. Explain the concept of Binary systems and its application in Digital Design. 2. Understand and recognize Digital Logic Gates. 3. Describe the concepts of Combinational and sequential Circuits. 4. Identify the different Application areas of Digital Design. 5. Learn the essentials of the Logic Gates. 6. Building the truth tables. 7. Constructing the Boolean function. 8. Gate-Level minimization 9. Constructing the Digital Circuit
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p>Introduction to Digital Technique 2Hrs. Basic definitions 2Hrs. System of numbers 6Hrs. General number formula: Binary, octal, decimal & hexadecimal numbers. Numbers base conversion 6Hrs. Arithmetic operation in different numbers, complements, binary codes, BCD, Ex- 3, gray codes. Boolean algebra 6Hrs. Basic definitions, basic theorem and properties, Boolean functions. Canonical & standard forms digital logic gates 6Hrs. Karanough maps 6Hrs. AND and OR implementation, don't care condition. Adders arithmetic Operation and Processes 6Hrs. Subtractors, Half and Full Adders and Subtractors, Binary Parallel Adders, Binary Serial Adder, Addition and Subtraction of Signed BCD Number, ABCD Adder and Arithmetic Unit (ALU) . Code conversion 6Hrs.</p>

	<p>Even and odd parity logic, decoders, encodes comparator, multiplexers & DE multiplexers.</p> <p>Combinational circuits: 8Hrs. Analysis and synthesis of combinational circuits, multiplexer, de-multiplexer, encoder, decoder, code-converter, adder, subtractor, comparator, parity generator/checker, priority en- coder.</p> <p>Sequential Circuits: 8Hrs. Flip-flops- SR, JK, D and T. Registers- buffer registers, shift registers etc. Counters asynchronous and synchronous counters.</p> <p>Interface circuits: 8Hrs. Digital to analog converter (DAC) - weighted resistor method, R-2R ladder method; Analog to Digital converter (ADC) - parallel comparator method, counter method, successive approximation method, dual-slope method.</p> <p>Families of logic circuits 8Hrs. The DL, RTL, DTL, TTL, ECL, I2L, MOS (PMOS, NMOS, CMOS).</p>
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.</p>
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Student Workload (SWL)

الحمل الدراسي للطالب

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Number systems (decimal, binary, octal, hexadecimal, BCD, excess-3, gray code))
Week 2	Number systems (conversions, operations, complement's) Logic gates (AND, OR, NOT)
Week 3	Logic gates (NAND, NOR, XOR, XNOR) Logic gates (logic Simplification (Boolean, Demorgan's theorem))
Week 4	Karnaugh maps (2-variables, 3-variables) ,(4-variables, 5-variables)
Week 5	Karnaugh maps (SOP, POS, don't care)
Week 6	Arithmetic operations (adder, parallel binary adder), Arithmetic operations (subtractor)
Week 7	Arithmetic operations (decoder, encoder),(multiplexer, demultiplexer), (comparator)
Week 8	Flip-flops (SR latch, D latch), Flip-flops (T-latch, J-K F.F), Flip-flops (edge triggered)
Week 9	Counters (asynchronous), (synchronous), (decade, up/down) ,(cascade, counter decoding)
Week 10	Shift-registers (serial in/serial out, serial in/parallel out, parallel in/ serial out, parallel in/parallel out)
Week 11	Shift-registers (bidirectional , shift register counter (Johnson counter, Ring counter))
Week 12	Multivibrators (definition, astable, bistable,), (monostable, 555 timer)
Week 13	A/D and D/A convertors (R/2R DAC, R/2nR DAC,flash ADC)
Week 14	The DL, RTL, DTL, TTL, ECL, I2L, MOS (PMOS, NMOS, CMOS).
Week 15	Preparatory Week
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Introduce tools, facilities and components needed for the experiments in digital electronics.
Week 2	Logic Gates (NOT, AND, OR) -Relate voltage levels and electrical connections to digital logic levels
Week 3	Logic Gates (NAND, NOR, EX-OR)- Relate voltage levels and electrical connections to digital logic levels
Week 4	Boolean Algebra-Implementation of the Given Boolean Function using Logic Gates in Both Sop and Pos Forms.
Week 5	Universal Gates Relate voltage levels and electrical connections to digital logic levels and verify the operation of the universal logic gates.
Week 6	Half Adder & Full Adder-Design &verify Operation of Half Adder &Full Adder.
Week 7	Half Subtractor & Full Subtractor-Study &verify Operation of Half Subtractor & Full Subtractor.
Week 8	Parallel Adder & Parallel Subtractor-Implementation of 4-Bit Parallel Adder& Parallel Subtractor Using Logic Gates.
Week 9	Comparator -Design & verify the Operation of Magnitude Comparator.
Week 10	Decoders-Implementation and verification of Decoder using Logic Gates.
Week 11	Multiplexers-Use the multiplexer to implement complex logical functions.
Week 12	Flip-Flop (S-R Flip-Flop, J-K Flip-Flop)-Review differences between logic circuits and persistent memory, review properties for the S-R flip-flop and J-K flip-flop, and construct a circuit using a flip-flop.
Week 13	Flip-Flop (T Flip-Flop, J-K Flip-Flop)-Review differences between logic circuits and persistent memory, review properties for the T flip-flop and J-K flip-flop, and construct a circuit using a flip-flop.
Week 14	Asynchronous Counter-Build and analyze various an asynchronous up and down counter, and change the model of the counter.
Week 15	Synchronous Counter-Build and analyze various a synchronous up and down counter, and change the model of the counter.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	" <i>Digital Fundamentals</i> ", Eleventh Edition, Thomas L. Floyd, 2015, Pearson Education, ISBN 13: 978-1-292-07598-3.	Yes
Recommended Texts	" <i>Digital Design</i> ", FIFTH EDITION, M. Morris Mano & Michael D. Ciletti, 2013, Pearson Education, ISBN-13: 978-0-13-277420-8.	yes
Websites	" <i>Computer Logical Organization Tutorial</i> ", Tutorials Point website, http://www.tutorialspoint.com/computer_logical_organization/index.htm	

APPENDIX:

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

Note:

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



University of Technology
Department of Communication
Engineering
Division of wireless Communication
Systems Engineering



MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	ELECTRICAL ENGINEERING FUNDAMENTALS I		Module Delivery	
Module Type	CORE		Theory Lab	
Module Code	ELEF114			
ECTS Credits	7			
SWL (hr/sem)	175			
Module Level	1	Semester of Delivery		1
Administering Department	Type Dept. Code	College	Type College Code	
Module Leader	inmar natiq ghazi		e-mail	Inmar.n.ghazi@uotechnology.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Msc.	
Module Tutor	None		e-mail	None
Peer Reviewer Name			e-mail	
Review Committee Approval			Version Number	

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Aims أهداف المادة الدراسية</p>	<ol style="list-style-type: none">1. Understanding the basic concepts of electric circuits and their behavior2. Familiarizing students with different circuit elements such as resistors, capacitors, and inductors3. Understanding how to use different mathematical and analytical techniques to solve circuit problems4. Understanding the principles of electromagnetism and their application to electrical engineering5. Understanding the basic principles of electronics and digital systems.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1. Work effectively as part of a team, collaborating with others in the design, testing, and implementation of electrical engineering projects.2. Apply critical thinking skills to analyze and solve electrical engineering problems, including calculating circuit impedances, power dissipation, and other important parameters.3. Describe the basic principles of electromagnetism and electromagnetic waves, including Maxwell's equations and wave propagation.4. Use appropriate tools and software for circuit simulation, design, and analysis, including computer-aided design (CAD) tools and simulation software.5. Develop effective written and oral communication skills needed to explain complex electrical engineering concepts to non-technical audiences.6. Demonstrate a strong understanding of the ethical and professional responsibilities of an electrical engineer, including the importance of safety, environmental sustainability, and social responsibility.7. Demonstrate a solid understanding of electrical circuit analysis, including the principles of voltage, current, resistance, capacitance, and inductance.
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p>System of units, voltage and current, circuit elements, voltage and current sources, electrical resistance and conductance, Ohm's and Kirchhoff's laws, power and energy.(15Hrs)</p>

	<p>Resistances in series and parallel, source transformation, current and voltage division, Delta-star and star-delta transformations(15Hrs)</p> <p>Basic terminology, the loop current method, the node voltage method, circuit theorems: Superposition, Thevenin's, Norton's, reciprocity, and maximum power transfer.(15Hrs)</p> <p>Magnetic fields, flux density, permeability, reluctance, magnetizing force, hysteresis, air gaps, series and series parallel magnetic circuits. Faraday' law of electromagnetic induction, Lenz's law, self-inductance, types of inductors, induced voltage, energy stored in an inductor.(15Hrs)</p> <p>The electric field, dielectric strength, capacitance, types of capacitors, energy stored by a capacitor, capacitors in series and in parallel.(15Hrs)</p> <p>General format for sinusoidal voltage or current, phase relation, average, peak, and RMS values, response of R, L, C elements to sinusoidal voltage or current average power and power factor .(15Hrs)</p>
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<p>Learning and Teaching Strategies استراتيجيات التعلم والتعليم</p>	
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<p>Strategies</p>	<ol style="list-style-type: none"> 1. Lectures: This is a common method of teaching in which the instructor presents material through speeches, discussions, and presentations. 2. Hand-on Training: This learning strategy involves giving students hands-on experience with electrical engineering concepts, through lab exercises, projects, etc. 3. Collaborative Learning: This is a student-centered learning approach that involves group work, discussions, and problem-solving activities. 4. Inquiry-Based Learning: This strategy involves encouraging students to ask questions, seek answers, and conduct their own research. 5. Flipped Classroom: In a flipped classroom, students are expected to learn the basics of electrical engineering concepts through online lectures outside of class time. Classroom time is then reserved for interactive activities like group discussions and problem-solving. 6. Visual Aids: Using visuals, such as diagrams, charts, and illustrations, can also help students to grasp and retain information more easily.
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Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	82	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	5
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, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الأسبوعي النظري للفصل الأول	
	Material Covered
Week 1	System of units, voltage and current, circuit elements, voltage and current sources,
Week 2	electrical resistance and conductance, Ohm's and Kirchhoff's laws, power and energy
Week 3	Resistances in series and parallel, source transformation, current and voltage division
Week 4	Delta-star and star-delta transformations
Week 5	Basic terminology, the loop current method, the node voltage method
Week 6	circuit theorems: Superposition, Thevenin's, Norton's
Week 7	reciprocity, and maximum power transfer theorem
Week 8	Magnetic fields, flux density, permeability, reluctance, magnetizing force, hysteresis
Week 9	air gaps, series and series parallel magnetic circuits.
Week 10	Faraday' law of electromagnetic induction, Lenz's law, self-inductance, types of inductors,

	induced voltage, energy stored in an inductor
Week 11	The electric field, dielectric strength, capacitance, types of capacitors, energy stored by a capacitor, capacitors in series and in parallel.
Week 12	General format for sinusoidal voltage or current, phase relation
Week 13	average, peak, and RMS values,
Week 14	response of R, L, C elements to sinusoidal voltage or current average power and power factor .
Week 15	Preparatory Week
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus) (المنهاج الاسبوعي للمختبر (الفصل الاول))	
	Material Covered
Week 1-2	Instrumentations-Electrical-Component-Measurement
Week 3-4	ohm's law and Kirchhoff`s laws
Week 5-6	Series and parallel and mixed electrical circuits
Week 7-8	Delta-Star-and-Star-Delta-Circuit-Conversions
Week 9-10	superposition theorem
Week 11-12	Thevenin's theorem
Week 13-14	maximum power transfer theorem
Week 15	Review Week

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	INTRODUCTORY CIRCUIT ANALYSIS by Robert L. Boylestad 10 th and 11 th edition	Yes
Recommend ed Texts	DC Electrical Circuit Analysis: A Practical Approach Copyright Year: 2020, dissidents.	No

Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering
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APPENDIX:

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

Note:	<p>NB Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.</p>			
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Ministry of Higher Education and
Scientific Research - Iraq
University of Technology
Department of Communication
Engineering
Wireless Communications Engineering



MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	PHYSICS OF SEMICONDUCTORS AND MATERIALS		Module Delivery
Module Type	BASIC		Theory tutorial
Module Code	PHSM112		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	1	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Amenah ali salman	e-mail	Amenah.a.salman@uotechnology.edu.iq
Module Leader's Acad. Title	Assist.Professor	Module Leader's Qualification	MS.c
Module Tutor	None	e-mail	None
Peer Reviewer Name	none	e-mail	none
Review Committee Approval	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

<p>Module Aims أهداف المادة الدراسية</p>	<ol style="list-style-type: none">1. Fundamental understanding: By delving into the underlying principles and theories governing the behavior of solids and semiconductors.2. Material characterization: Researchers study the properties of solid-state materials to characterize their structural, electrical, thermal, and optical properties. Techniques such as X-ray diffraction,.3. Device design and fabrication: Semiconductors are vital components in modern electronic devices such as diodes4. Students will be able to solve the problem that related with the energy of the carriers' charge5. Students will be able to understand the light nature, crystal structure of material ,the bond of material, the energy band and the P-n junction in electronic device.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1. The ability to use techniques, skills and modern engineering tools required in various engineering practices.2. Knowledge of contemporary issues.3. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions4. Knowledge of Crystal Structures: Learners should acquire knowledge of different crystal structures found in solid-state materials. They should understand the arrangement of atoms or molecules in various crystal lattice systems, including their symmetries, unit cells, and crystallographic planes.5. Understanding of Energy Bands: Learners should comprehend the concept of energy bands in solids and semiconductors. They should be able to explain the formation of valence and conduction bands and the role of energy bandgaps in determining the electrical properties of materials.6. Familiarity with Charge Carrier Behavior: Learners should gain an understanding of charge carrier behavior in semiconductors, including the concepts of electron and hole conductivity, drift, diffusion, and recombination processes. They should be able to analyze the electrical transport properties of semiconductors.7. Knowledge of Semiconductor Devices: Learners should develop knowledge of various semiconductor devices and their operating principles. This may include diodes.8. Understanding of Doping: Learners should grasp the concept of doping in semiconductors and its effects on the electrical properties of materials.

<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p>Energy level and atomic models: The atom models, wave nature of light, dual nature of matter, wave function Heisenberg's of uncertainty principles, energy band theory of metals, insulators and semiconductors, crystal and structure, ionic and covalent and metallic bond, energy band of crystal, internal structure of material cell, packing miller index, crystal plane and diffraction, brags law, x-ray diffraction. (20Hrs)</p> <p>Semiconductors, and insulators: Intrinsic and extrinsic semiconductors, Carrier concentration, Dependence of Fermi level on carrier-concentration and temperature, Hall effect. (20Hrs)</p> <p>P-N junction: V-I characteristics, Energy Band diagram, Biasing of a junction, charge transition and diffusion capacitance, diode switching time, diode model , small signal model and local line concept, varactor model, tunnel diode. (20Hrs)</p>
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<p>Learning and Teaching Strategies استراتيجيات التعلم والتعليم</p>
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<p>Strategies</p>	<p>Comprehensive lectures that introduce and explain the key concepts, theories, and principles related to semiconductors and solid-state materials. They can use visual aids, such as slides and multimedia presentations, to enhance understanding and engage learners. use experimental setups or simulations to showcase the behavior of semiconductors and solid-state materials. provide a range of problems that require learners to apply their understanding of concepts, solve numerical calculations. Problem-solving activities promote critical thinking and help learners develop a deeper understanding of the material</p>
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<p>Student Workload (SWL) الحمل الدراسي للطالب</p>			
<p>Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل</p>	<p>63</p>	<p>Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا</p>	<p>4</p>
<p>Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل</p>	<p>62</p>	<p>Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا</p>	<p>4</p>

Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125
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Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction -The atom models, wave nature of light, dual nature of matter,
Week 2	wave function Heisenberg's of uncertainty principles, energy band theory of metals
Week 3	insulators and semiconductors, crystal and structure, ionic and covalent and metallic
Week 4	bond, energy band of crystal, internal structure of material cell, packing miller index
Week 5	crystal plane and diffraction ,brags law, x-ray diffraction
Week 6	Semiconductors and insulators.
Week 7	Intrinsic and extrinsic semiconductors
Week 8	Carrier concentration,
Week 9	Dependence of Fermi level on carrier-concentration and temperature
Week 10	Hall effect
Week 11	p-n junction, V-I characteristics, Energy Band diagram, ,
Week 12	Biasing of a junction, charge transition and diffusion capacitance,
Week 13	diode switching time, diode model
Week 14	small signal model and local line concept,
Week 15	Varactor model, tunnel diode
Week 16	Final Exam

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Material sciences, J. C. Anderson and K.D. Leaver, prentice Hall. Solid state electronic device, B. G. Streetman ,prentice, Hall Electronic device, R.J. Tcci, prentice Hall	Yes
Recommended Texts	Engineering physics – Cengage learning, B. K Pandey and S. Chaturvedi	yes
Websites	http://link.springer.com/book	

APPENDIX:

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

Note:

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

	University of Technology Department of Communication Engineering Division of wireless Communication Engineering Systems	
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MODULE DESCRIPTOR FORM
 نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	MATHEMATICS I		Module Delivery
Module Type	BASIC		Theory
Module Code	MATH113		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	1	Semester of Delivery	1
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Lec. Lamia Abd Al-Ameer	e-mail	Lemia.a.hadi@uotechnology.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	MS.C
Module Tutor	None	e-mail	None
Peer Reviewer Name		e-mail	
Review Committee Approval	/ /	Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Aims أهداف المادة الدراسية</p>	<ol style="list-style-type: none">1. To familiarize students with fundamental mathematical concepts and principles. This includes topics such as algebra, calculus, and geometry.2. to introduce calculus, including the concepts of limits and Derivatives. This forms the basis for understanding the fundamental principles of calculus and their applications. Also, this module aims to introduce students to important mathematical concepts and structures such Trigonometric Functions, Hyperbolic Functions, and Transcendental Functions.3. Mathematics is a language of its own, and effective communication of mathematical ideas is crucial. The module aims to enhance students' skills in expressing mathematical concepts clearly, both orally and in writing. This includes learning how to write mathematical proofs and explanations.4. This module includes applications of mathematics in various fields, such as physics, and engineering. This aims to demonstrate the relevance and practicality of mathematical concepts.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1. The ability to identify and formulate and solve the engineering problems.2. Use both the limit definition and rules of differentiation to differentiate functions.3. Sketch the graph of a function using asymptotes, critical points, the derivative test for increasing/decreasing functions, and concavity.4. Apply differentiation to solve applied max/min and related rates problems.5. Use L'Hospital's rule to evaluate certain indefinite forms.6. The students should be able to identify and access relevant mathematical resources, such as textbooks, online materials, or academic journals, to deepen their understanding of mathematical concepts beyond the classroom.7. Students should gain experience in formulating mathematical models to represent real-world problems or situations. They should be able to translate practical problems into mathematical terms, analyze the models, and interpret the results in the context of the original problem.

Indicative Contents

المحتويات الإرشادية

- **Limits and continuity [12 Hrs.]:**
 1. Introduction to Limits: Definition of a limit and its notation. Evaluating limits using numerical, graphical, and algebraic methods. Basic Limit Laws. Infinite limits and their behavior
 2. L'Hôpital's Rule: Evaluating limits involving indeterminate forms using L'Hôpital's Rule. Applications of L'Hôpital's Rule to solve limit problems.
 3. Introduction to Continuity: Definition and properties of continuity. Definition of continuity of a function at a point and over an interval. Understanding the concept of a continuous function. Identifying continuous and discontinuous points on a graph. Types of discontinuities.

- **Trigonometric functions [12Hrs.]:**
 1. Introduction to Trigonometric functions: Definition, graphs, and basic identities of trigonometric functions.
 2. Trigonometric equations: Solving equations involving trigonometric functions.
 3. Differentiation and Integration of Trigonometric functions and their inverses.

- **Hyperbolic Functions [12 Hrs.]:**
 1. Introduction to Hyperbolic functions: Definition and notation of hyperbolic sine (\sinh), hyperbolic cosine (\cosh), hyperbolic tangent (\tanh), and their reciprocals.
 2. Graphs and properties of hyperbolic functions, including symmetry, periodicity, and asymptotes.
 3. Differentiation and integration of hyperbolic functions and their inverses.

- **Transcendental Functions [12Hrs.]:**
 1. Exponential Functions: Definition and properties of exponential functions, including the natural exponential function. Exponential growth and decay models. Logarithmic functions and their properties. Solving exponential and logarithmic equations.
 2. Differentiation and integration of transcendental functions, including exponential, logarithmic, and trigonometric functions.

- **Applications of Derivatives [12 Hrs.]:**
 1. Rates of Change and Tangent Lines: Average rate of change and instantaneous rate of change. Slope of a tangent line as the derivative.
 2. Curve Sketching: Analysis of functions and their graphs using derivatives. Identifying critical points. Sketching curves based on given information.
 3. Optimization Problems: Applications of optimization in real-life scenarios, such as maximizing area, minimizing cost, or maximizing profit.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<ul style="list-style-type: none"> • Clear Communication: Clearly communicate the learning objectives, expectations, and instructions to the students. Use clear and concise language to explain mathematical concepts and techniques. • Interactive Lectures: Make the lectures interactive by incorporating questions, examples, and activities that encourage student participation. Engage students in discussions and problem-solving activities to promote active learning. • Visual Aids and Demonstrations: Use visual aids, such as charts, diagrams, graphs, and illustrations to help students visualize abstract concepts and make connections between different mathematical ideas. • Problem-Solving Sessions: Dedicate specific class time to problem-solving sessions where students can actively apply mathematical concepts and techniques to solve problems. Encourage collaborative problem-solving activities that promote peer learning and teamwork. • Formative Assessment: Incorporate regular formative assessments, such as quizzes, class exercises, or short assignments, to gauge student understanding and provide timely feedback. Use the feedback to identify areas where students may be struggling and adjust your teaching accordingly. • Encourage Reflection: Encourage students to reflect on their learning process, problem-solving strategies, and understanding of mathematical concepts. Promote metacognitive thinking by asking students to explain their reasoning and approaches to solving problems. • Stay Organized: Maintain organized records of lesson plans, instructional materials, and student assessments. Create a system to track student progress, strengths, and areas for improvement. This organization will help you effectively manage the course and monitor student learning.
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	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)	6, 13	LO #1-4
	Assignments	2	10% (10)	3, 10	LO # 2,4,5
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	14	LO # 5,6
Summative assessment	Midterm Exam	1 Hrs.	10% (10)	8	LO # 1-4
	Final Exam	3 Hrs.	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Fundamental mathematical concepts, and principles.
Week 2	Limits involving infinity.
Week 3	Definition of continuity, Continuous functions.
Week 4	Trigonometry, Trigonometric Functions, Graphs.
Week 5	Analytic Geometry, Inverse of trigonometric functions.
Week 6	Trigonometric Functions differentiation and integration.
Week 7	Hyperbolic functions definition, properties, and graphs.
Week 8	Inverse of hyperbolic functions, Hyperbolic functions differentiation and Integration.
Week 9	Transcendental Functions, Inverse functions.
Week 10	definitions, properties, and graphs of Natural Logarithmic, Exponential and Power
Week 11	Derivatives and Integrals of Natural Logarithmic, Exponential and Power
Week 12	Applications of derivatives, related rates of changes, maxima, minima, and mean value theorem.
Week 13	Curve sketching with y' and y'' , Graphing rational functions-Asymptotes and Dominant terms
Week 14	Optimization.
Week 15	Application of Optimization
Week 16	Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	G. B. Thomas, M. D. Weir, J. Hass, and F. R. Giordano, Thomas' Calculus, Addison-Wesley, 2005.	Yes

APPENDIX:

GRADING SCHEME

مخطط الدرجات

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

Note:

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

	University of Technology Department of Communication Engineering Division of Optical Communication Systems Engineering	
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MODULE DESCRIPTOR FORM
 نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	ENGLISH TECHNIQUES		Module Delivery
Module Type	BASIC		Theory
Module Code	ENTE111		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	1	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Dr. Ali Shawket		e-mail ali.s.thiab@uotechnology.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D.
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Review Committee Approval		Version Number	

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Aims أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> 1. Introduce basics English language, rules and ways of social expressing, different types of conversations, listening and speaking. 2. Enable the student to build up the vocabulary after study and understand the reading articles in detail and watching videos. 3. Select some reading passages from communication and computer books to extend students learning skills and make it more interesting. 4. Advanced rules and ways of social expressing, different types of conversations, listening and speaking.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ul style="list-style-type: none"> • An ability to communicate effectively with a range of audiences • An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives • The ability to work in multi-disciplinary teams. • Parts of Speech (Noun, verb, adjective, adverb, etc), Structure and kinds of sentences, Tenses in English, Prepositions of time and place. • How to write and understand simple paragraphs on arrange of topics within the field of the study and interest or experience. • Develop the extensive intensive reading skills by taking different passages. • Expose to important technical vocabulary and Idioms from communication and computer resources.
	<p style="text-align: center;">A- Communicative competences</p> <p>Listening - Understand and identify the main points of dialogues of 230-250 words on familiar topics regularly encountered in life, work, school, etc., within the scope of the curriculum. - Listen and guess meanings (through the expressions and feelings of the speakers) in familiar monologues and conversations in everyday life - Understand the main points of news programs, broadcasts, interviews, etc., on familiar topics which are clearly delivered in simple language, or with illustrative images. (5Hrs)</p> <p>Speaking - Pronounce clearly and relatively accurately short dialogues. - Speak and interact with fellow speakers about familiar topics, express personal views and exchange information about the topics covered in the curriculum. - Describe in simple discourse familiar topics, narrate a short story closely related to the topics covered. - Present preparedly the projects on the topics in the curriculum. (5Hrs)</p>

<p>Indicative Contents المحتويات الإرشادية</p>	<p>Reading - Read and comprehend the main points, specific contents of a text of 200 words on current and familiar topics. - Read and understand the argument flow of texts, identify main conclusions in texts using clear language. - Read to find and summarize short texts of everyday use such as simple letters, brochures, using words and structures from the original texts. (5Hrs)</p> <p>Writing – write paragraphs (block and indented styles), Write simple connected and coherent texts of 180-200 words; write short reports based on suggestions, providing factual information and reasons for the recommendations made in the reports; collect short information from several sources and summarize it. - Complete (write/fill) administrative forms such as CVs and resumes, letter of application for employment, emails, etc. - Write descriptive texts of simple charts and tables. (5Hrs)</p> <p>B- Linguistic knowledge</p> <p>Pronunciation: Vowel and consonant syllable, words with different syllables, Words with stress (specials cases) – Words without stress, Sentence stress, assimilation, linking vowels with vowels Question, intonation, Homophones, practicing words and terms, phrases, and sentences related to the students’ major. (4Hrs)</p> <p>Vocabulary: Words related to themes and topics of the course, collocations, words with different meanings and pronunciations. (3Hrs)</p> <p>Grammar: parts of speech, past, Present, and future tenses, Word structure (compound nouns), Countable and uncountable nouns. Types on sentences: simple, compound, complex sentences, Articles, language function: commands, requests, offers, advice and instructions. Modal verbs, Relative pronouns and Relative clauses with which-that-who-whom-whose-where-when. Prepositions, Phrasal verbs (including verbs, adverbs and prepositions), comparison showing changing things, Sentences of reason and results and Conjunctions: although, however etc, active and passive, Adverbial clauses of condition, Comparatives and superlatives of adjectives. (3Hrs)</p>
<p>Learning and Teaching Strategies استراتيجيات التعلم والتعليم</p>	
<p>Strategies</p>	<p>The main strategy to adopt is to encourage students to participate in lectures and interact during lectures, while improving and expanding thinking skills at the same time. This will be achieved through classes and interactive tutorials particularly in relation to their exact specialization, and linking the English language curriculum to that in order to enhance vocabulary and terminology relevant to the field of Communications Engineering.</p>

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	1h and 8min
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Grammar Review
Week 2	Technical Report Writing
Week 3	How to read numbers
Week 4	Computers
Week 5	Evolution of Telecommunications
Week 6	Telegraph
Week 7	Telephony
Week 8	Semiconductors
Week 9	The photoelectric cell
Week 10	Transmission Lines
Week 11	Satellite Transmission
Week 12	Optical Fiber Transmission

Week 13	Multimedia
Week 14	Radar Systems
Week 15	Artificial Intelligence
Week 16	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	A Course in English for Engineering and Science Students Aiad, Jihad Shams Al-Deen, University of Technology	Yes
Recommended Texts	1- New Headway plus for Student's beginner and intermediate Book by John and Liz Soars 2- New Headway plus for Student's beginner and intermediate workbook by John and Liz Soars	YES
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

APPENDIX:

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

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



University of Technology
Department of Communication Engineering
Division of Optical Communication
Engineering Systems



MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	HUMAN RIGHTS & DEMOCRACY		Module Delivery
Module Type	BASIC		Theory
Module Code	HRAD112		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	1	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Lec. nihaya Mohammed	e-mail	nihayaMAbdAli@uotechnology.edu.iq
Module Leader's Acad. Title	lecture	Module Leader's Qualification	MSC
Module Tutor	None	e-mail	None
Peer Reviewer Name			
Review Committee Approval		Version Number	

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Aims أهداف المادة الدراسية</p>	<p>– The student’s knowledge of the conceptual aspect and historical development of the human rights and democracy subject</p> <ul style="list-style-type: none">- Developing the student’s analytical and critical skills regarding the reality and future of human rights and democracy- Training students to be important participants in aspects of public life, such as those who adhere to the principles of human rights and participate in popular political life.- Students prefer to understand the importance of education in spreading the culture of human rights and democracy in building a civilized society based on good governance, the most important components of which are faith, people, and their education, and they participate in governance through free and fair elections.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<p>–Familiarity with the concept of human rights and its related definitions, discussing them, dismantling most of them, and criticizing them in a scientific way to reach the most accurate and objective ones</p> <p>–Identifying the historical development of the concept of human rights and the most important contributions of human civilizations such as Mesopotamia civilization, Greek civilization, Western Christian civilization, and Islamic civilization in this development.</p> <p>– introducing the student to the most important international document in the field of human rights that has been ratified</p> <p>–Distinguishing between the basic, natural rights that a person acquires as a human being and the acquired rights that he enjoys because he belongs to a specific group, such as the rights of workers, children, the elderly, and health care. The nature of political, civil, economic, social and cultural rights will also be learned</p> <p>– Considering and respecting the rights of women and minorities in diverse societies and the importance of ensuring that these segments exercise their political, social and economic rights and are guaranteed by the state and its institutions.</p> <p>The importance of awareness and respect for children’s rights</p> <p>– Introduction to democracy and its general principles</p> <p>Identifying the linguistic and terminological concept, the concept of democratic transformation, and concepts related to it</p> <ul style="list-style-type: none">– Women's rights in ancient and modern civilizations– Learn about public freedoms and organizations

Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A - human rights (hrs15) - Introducing the concept of human rights and concepts related to them - Historical framework for the development of the concept of human rights - Fundamental rights and acquired right Promoting human rights Child Rights Women's rights and minority rights -The importance of teaching human rights in Iraqi universities and schools Part B – democracy (hrs15) -Introduction to democracy And its concept -The historical development of the concept of democracy and its most important types -The basic features of the concept of democracy. -Democratic governments with the characteristics of a presidential system and a parliamentary system -Terrorism, sectarianism, and national reconciliation, general discussion
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	- Discussion and critical thinking of the subject’s vocabulary -Using the evaluation group method - Using the role-playing method (classroom or attendance only) and explaining some of the subject’s vocabulary - Writing analytical papers for the vocabulary of the subject or outside it, which are directly related to the topics of human rights and democracy -Collect examples and information from reality about human rights violations, discuss them in a scientific manner, and find solutions to the problems facing democratic practice in Iraq.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	1hur 8min
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Historical development of human rights
Week 2	Universal Declaration of Human Rights
Week 3	Human rights in ancient civilizations
Week 4	Human rights in heavenly religions
Week 5	Human rights in Judaism
Week 6	Human rights in Christianity Human rights in the Islamic religion
Week 7	Mid-term Exam
Week 8	International human rights agreements
Week 9	Human rights in the modern era
Week 10	Democracy Its concept and principles
Week 11	Women's rights in ancient civilizations in the modern era
Week 12	Public freedoms
Week 13	International organizations
Week 14	International organizations
Week 15	Preparatory Week
Week 16	Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Maher Saleh Allawi, and others. Human Rights, Children and Democracy, 2009	Yes
Recommended Texts	ماهر صالح علاوي، وآخرون. حقوق الإنسان والطفل والديمقراطية، 2009	No
Websites	http://search.shamaa.org/FullRecord?ID=22247	

APPENDIX:

GRADING SCHEME

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
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	F – Fail	راسب	(0-44)	Considerable a mount of work required

Note:

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First and second Semester

Module 1

Module Information			
Module Title	Workshops		Module Delivery <input type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input checked="" type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Type	Support		
Module Code	WSHE106		
ECTS Credit/year	8		
SWL/year	200		
Module level	1	Semester of Delivery	1, 2
Module Leader	Training and Workshops Center	College	
Module Leader Academic Title	Prof.	e-mail	twc@uotechnology.edu.iq
Module Tutor		Module Leader's Qualification	Ph.D.
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	1/6/2023	e-mail	
		Version Number	1

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

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

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

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

Student Workload (SWL)			
Structured SWL (h/sem)	93	Structured SWL (h/w)	6.00
Unstructured SWL (h/sem)	7	Unstructured SWL (h/w)	0.46
Total SWL (h/sem)	100		
Structured SWL (h/year)	186	Structured SWL (h/w)	6.00
Unstructured SWL (h/year)	14	Unstructured SWL (h/w)	0.46
Total SWL (h/year)	200		

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

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

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

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

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

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

Recommended Texts		
Websites		