MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	**Electrical Circuits Analysis**	**Module Delivery**	
Module Type	B	☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☒ Practical ☐ Seminar	
Module Code	**COE111**		
ECTS Credits	6		
SWL (hr/sem)	**150**		
Module Level	UG1	**Semester of Delivery**	1
Administering Department		**College**	
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date		**Version Number**	

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. To understand the concepts of basic electrical elements, sources, and electrical network configurations. Also, to understand how the electrical elements such as resistors, capacitors, and inductors are construct a simple and complex electrical network configuration 2. To develop problem solving skills through different solving techniques. 3. The course deals with the basic concept of electrical circuit theories, rules methods analysis (Ohm Law, Kirchhoff's Laws, Thevenin, Norton, Superposition, Mesh analysis, maximum power transfer, etc.)
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Learning standard measurement units used in electrical networks, 2. study the nature of electricity of materials in term of conductivity and resistivity of materials and how it divided into the conductor, insulator, and semiconductor elements. 3. Define electrical power, charge, voltage, current, resistors, capacitors, inductors, and electrical energy. 4. Study and analysis different types of circuit connections (series, parallel, delta, star, and complex configuration). 5. Discuss dependent and independent electrical source (voltage and current). 6. Define Ohm's law and explain its importance in electric and electronic circuit analysis. 7. Explain Kirchhoff voltage law (KVL) and Kirchhoff current law (KCL) that it is used in electric network analysis. 8. Study and explain in details various theorems and techniques used in electrical circuit analysis (superposition, Nodal analysis, Mesh, Thevenin, Norton theorem, and maximum power transfer) 9. study capacitor sand inductors properties and their circuit configurations. 10. Discuss alternating current and voltage waveforms AC sinusoidal waveforms in term of mean, effective values and phasors diagrams in an electric circuit. 11. Repeat various techniques used in solving electrical circuits exceed by ac sources.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. DC part: standard units used in electrical circuits, Charge, Current and voltage definitions, Passive electric components (R, C, and L), series and parallel connections, sources conversions. [20 hrs.] Della to star and star to delta conversion, Ohm's law, power, energy, and Kirchhoff's laws. [20]

	Methods of analysis (Source Conversions, Mesh analysis, Nodal analysis, superposition theorem, Thévenin's theorem, Norton's Theorem, and maximum power transfer theorem) [30].
	Capacitors and Inductors (introduction, properties, and configurations) [10 hrs.]
	AC part: Sinusoidal Ac Voltage Characteristics and Definitions, average value, effective value (rms value). [10 hrs.]
	Phasor diagrams, definition of complex impedance, AC circuit analysis with complex numbers. [20 hrs.]
	AC Circuits II - Phasor diagrams, complex impedance, AC circuit with complex numbers. [10 hrs.]
	Series-Parallel Ac Networks, Methods of Analysis of AC networks (Source Conversions, Mesh analysis, Nodal analysis, superposition theorem, Thévenin's theorem, Norton's Theorem, and maximum power transfer theorem) [20 hrs.]
	Revision problem class [10hrs]
	.

Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	Teaching strategies adopted in electrical circuit analysis class encourage students to understanding basic electrical components (R, C, and L) properties and electric ac and dc sources used in supplying different electric networks. Also, expanding their problem solving skills. Also, help them to improve skills in discovering electrical systems fault diagnosis. 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	100	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	50	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3

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

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Electrical Circuit Elements And Variables
Week 2	Ohm's law, electrical power, energy, and efficiency
Week 3	Resistance Series and Parallel Networks. Current and Voltage Divider Rules.
Week 4	Kirchhoff's Laws (KVL and KCL)
Week 5	Sources Conversions and Δ To Y Transformations
Week 6	Loop Current Method (Mesh Analysis) and Nodal Analysis
Week 7	Thévenin's and Norton's Theorems
Week 8	Superposition Theorem
Week 9	Maximum Power Transfer Theorem
Week 10	Introduction to Sinusoidal Ac Waveforms (Characteristics and Definitions).
Week 11	Average and Rms Waveforms Values. Response of Basic R, L, And C Elements to A Sinusoidal Voltage Or Current.
Week 12	Series and Parallel Ac Circuits and Power Factor
Week 13	Methods of AC circuit analysis I

Week 14	Methods of AC circuit analysis II
Week 15	Inductor and capacitor circuits
Week 16	**Preparatory week before the final Exam**

	Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر
	Material Covered
Week 1	Lab 1: resistance measurement (color code and mustimeter method)
Week 2	Lab 2: Ohms Law
Week 3	Lab 3: Resistance Series and Parallel Networks.
Week 4	Lab 4: Kirchhoff's Laws (KVL and KCL).
Week 5	Lab 5: Δ To Y Transformations
Week 6	Lab 6: Superposition Theorem
Week 7	Lab 7:Thévenin's Theorems.
Week	Lab 8: Norton's Theorems.
Week 9	Lab 9:Maximum Power Transfer Theorem
Week 10	Lab 10:Characteristics of Sinusoidal Ac Waveforms
Week 11	Lab 11: Series and Parallel Ac Circuits
Week12	Lab12: Series and Parallel Capacitors.
Week13	Lab13: Series and Parallel Inductor Circuits
Week14	Lab14: Transient in Capacitance Networks and Time Constant
Week15	Lab15: R-L Transient and Time Constant

	Learning and Teaching Resources مصادر التعلم والتدريس	
	Text	**Available in the Library?**
Required Texts	R.L, Boylestad " Introductory Circuit analysis 5th edition. Merrill publishing company	Yes
Recommended Texts	Charles Alexander, "Fundamentals of Electric Circuits" 5TH Edition, Publisher: McGraw-Hill Publishing Company, 2013.	yes
Websites	https://www.coursera.org/browse/physical-sience-and-engineering/electronic	

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	**Basic Learning Activity**		☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	**COE112**			
ECTS Credits	**5**			
SWL (hr/sem)	**125**			
Module Level	UGI	**Semester of Delivery**		
Administering Department		**College**		
Module Leader		**e-mail**		
Module Leader's Acad. Title		**Module Leader's Qualification**		
Module Tutor		**e-mail**		
Peer Reviewer Name		**e-mail**		
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	1. To develop problem solving skills of Pre-differential calculus. 2. To understand Derivative as a Function. 3. To get a good grip on the Rules of differentiation. 4. To have a full grasp of the differentiation methods. 5. To be able to deal with Interpretations of the derivative.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize several aspects about Real Numbers System. 2. Being able to deal with parts of the Cartesian Coordinates System. 3. List the various terms associated with Functions. 4. Identify different types of functions. 5. Evaluating Limit for various types of Functions. 6. Testing for the continuity of Functions. 7. Evaluate the derivative of a function using the Definition. 8. Discuss the Rules of differentiation. 9. Map several functions to their derivatives. 10. Describe different differentiation methods. 11. Analyze the Tangent Line Slope using derivative. 12. Discuss the Rate of Change in the real-world using derivative. 13. Explain the Position, Velocity, and Acceleration using derivative. 14. Identify when it is worthy using L'Hopital Rule for evaluating a limit of a function. 15. Use the derivative to find Taylor and Maclaurin Series expansion of a function.
Indicative Contents المحتويات الإرشادية	**Part A – Pre Differential Calculus.** This part will include a Review of Real Numbers System in terms of Intervals, Inequalities, Absolute Value. After that, the Cartesian Coordinates System Increment, Distance, Straight Line Equation, Circle Equation. Furthermore, the Functions characteristics domain, Range, odd, even, and then its Types {Polynomial, Algebraic, Transcendental Functions (Exponential, Logarithmic, Trigonometric, Inverse Trigonometric, Hyperbolic, Inverse Hyperbolic)}. Finally, the Limit and Continuity of Functions is explained (Theorems on Limit "Calculation Techniques", One-Sided and Two-Sided Limit, Limit at infinity, Theorems on Limit at infinity, Some special limits, Conditions of Continuity.) [12 hrs] Revision problem tutorial sessions [6 hrs] **Part B – Differential Calculus.** This part will discuss the first key part of the semester namely Differentiation starting from defining the derivative based on the limit, to Calculating the Derivatives from this Definition, doing to explaining the rules of differentiation (Constant, Powers of a function, Constant Multiple, Summation of Functions, Product of Two Functions, Quotient of Two Functions.) Furthermore, functions under focus and their Derivatives will be demonstrated, followed by differentiation methods namely Implicit, Logarithmic, and chain rule. [8 hrs] Revision problem tutorial sessions [4 hrs]

	Part C – Interpretations of the derivative.
	This part will take the knowledge provided in part B and employ it to a meaningful Interpretations of the derivative {Slope of the Tangent Line, Rate of Change, (Position, Velocity, and Acceleration), L'Hopital Rule, Taylor and Maclaurin Series.} [10 hrs] Revision problem tutorial sessions [5 hrs]

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The primary approach for presenting this module will be encouraging students to participate in the activities, as well as enhancing and improving their critical thinking abilities. This will be accomplished through lectures, tutorials, debates, and assessing activities.

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	2	5% (5)	5 and 11	LO #1 - #4 and #5 - #10
	Assignments	2	5% (5)	6 and 13	LO #1 - #5 and #6 - #12
	Projects / Lab.	N/A	N/A	N/A	
	Report	N/A	N/A	N/A	
Summative assessment	Midterm Exam	2hr	20% (20)	8	LO #1 - #7
	Final Exam	3hr	70% (70)	16	All
Total assessment		100% (100 Marks)			

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	**Review of Real Numbers System (**Intervals, Inequalities, Absolute Value.**)**
Week 2	**Cartesian Coordinates System (**Increment, Distance, Straight Line Equation, Circle Equation.**)**
Week 3	**Functions (**Domain, Range, odd, even, Types {Polynomial, Algebraic}.**)**
Week 4	**Functions (**Types {Transcendental Functions (Exponential, Logarithmic, Trigonometric, Inverse Trigonometric, Hyperbolic, Inverse Hyperbolic)}.**)**
Week 5	**Limit and Continuity of Functions (**Theorems on Limit "Calculation Techniques", One-Sided and Two-Sided Limit.**)**
Week 6	**Limit and Continuity of Functions (**Limit at infinity, Theorems on Limit at infinity, Some special limits, Conditions of Continuity.**)**
Week 7	**Differentiation (**Derivative as a Function, Calculating Derivatives from the Definition.**)**
Week 8	**Differentiation (**Rules of differentiation {Constant, Powers of a function, Constant Multiple, Summation of Functions, Product of Two Functions, Quotient of Two Functions}.**)**
Week 9	**Differentiation (**Functions and their Derivatives, Implicit differentiation.**)**
Week 10	**Differentiation (**Logarithmic differentiation, chain rule.**)**
Week 11	**Interpretations of the derivative (**Slope of the Tangent Line.**)**
Week 12	**Interpretations of the derivative (**Rate of Change.**)**
Week 13	**Interpretations of the derivative (**Position, Velocity, and Acceleration.**)**
Week 14	**Interpretations of the derivative (**L'Hopital Rule.**)**
Week 15	**Interpretations of the derivative (**Taylor and Maclaurin Series.**)**
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Tutorial)

المنهاج الاسبوعي للدرس التدريبي

	Material Covered
	Each weak a questions sheet will be solved and discussed related to the material covered in the theoretical lecture.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Joel R. Hass, Christopher E. Heil, Maurice D. Weir, "Thomas' Calculus: Early Transcendentals", Pearson Education, 14th Edition, (January 1, 2017), ISBN-13 : 978-0134439020.	Yes
Recommended Texts	Anthony Croft, Robert Davison, "Mathematics for Engineers: A Modern Interactive Approach", Prentice Hall, 3rd edition, (January 1, 2008), ISBN-13 : 978-0132051569.	No
Websites	https://www.khanacademy.org/math/differential-calculus	

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

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معلومات المادة الدراسية</td></tr>
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العلاقة مع المواد الدراسية الأخرى</td></tr>
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	Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية
Module Objectives أهداف المادة الدراسية	1. To develop problem solving skills and understanding of logic circuit design methodology. 2. To familiarize students with the core ideas of Boolean algebra and how it is used in digital logic circuits. 3. The course deals with the basic concept of logic circuits. 4. The course is the building block for Computer Architecture course. 5. To understand how to design combinational logic circuits. 6. To understand and apply optimization algorithms to design logic circuits.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Differentiate between analog and digital quantities. 2. Appreciate the power of using binary number system. 3. Realize the importance of digital codes. 4. Realize the importance of the abstraction provided by logic gates. 5. Use Boolean algebra to analyze and simplify logic circuits. 6. Use simulation of logic circuits. 7. Use Karnaugh map to optimize the Boolean expressions. 8. Grasp the concept of Don't care and understand why Quine–McCluskey method is more suitable than Karnaugh map for simplifying more than four variables Boolean equations. 9. Apply systematic procedure to solve some of the digital design problems. 10. Utilize Verilog to verify the logic circuit design. 11. Understand universal gates properties and how to utilize these gates in the logic circuit implementation. 12. Understand how to implement arithmetic for computers. 13. Understand how to expand an existence design to solve bigger problems. 14. Understand how to reduce propagation delay. 15. Utilize algorithmic thinking to simplify the design of a digital system.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: Introduction to Digital Logic Design, Number Systems and Codes Introduction to digital systems - Digital and analog quantities, binary digits, logic levels, digital waveforms, overview of basic logic functions, fixed-function integrated circuits, introduction to programmable logic, digital system application, positional number system, decimal numbers, binary numbers, number-base conversions, binary arithmetic, complements of numbers, signed binary numbers, arithmetic operation with signed binary numbers , hexadecimal numbers, octal numbers, binary coded decimal(BCD), digital codes. [6 hrs] Logic Gates and Boolean Algebra

	Review of AND, OR and NOT gates, NAND, NOR, EX-OR, EX-NOR, introduction to Hardware Description Languages (HDL), Boolean operation and expressions, laws and rules of Boolean algebra, De Morgan's Theorems, Boolean analysis of logic circuits, simplification using Boolean algebra, canonical and standard forms of Boolean expressions, Boolean expression and truth tables, developing Verilog model for logic circuits, gate delays, the Karnaugh Map, prime implicant and essential prime implicant, Karnaugh map minimization, don't care Conditions, Quine–McCluskey method. [10 hrs]
	Combinational Logic Analyses
	Basic combinational logic circuits, design procedure, implementing combinational logic, Verilog models of combinational logic circuits, code conversion, the universal property of NAND and NOR gates, Combinational logic using NAND gates only and NOR gates only. [6 hrs]
	Combination Logic Circuit Applications
	Half Adder, full Adder, half Subtractor, full Subtractor, parallel Binary adders and parallel Binary subtractors, 4-bit subtractor using 4-bit Adder, The Adder – Subtractor circuit, adder expansion, carry lookahead adder, decimal adder, parity generation and checking, magnitude comparator. [8 hrs]

Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	These learning and teaching strategies aim to create an engaging and interactive learning environment. We summarize them below: 1. **Lectures:** the instructor will present in-class lectures to introduce and clarify important concepts, theories, and principles related to the design of digital logic circuits. 2. **Interactive Discussions**: Engaging students in interactive discussions to encourage critical thinking. 3. **Hands-on Laboratory Work**: students gain practical experience in a controlled environment to reinforce theoretical concepts. 4. **Group Projects:** Assigning group projects that require students to collaborate and work together to solve logic circuit design problems. This promotes teamwork, communication, and division of tasks. 5. **Simulations and Virtual Labs**: Utilizing simulation software and virtual labs to provide students with virtual hands-on experiences when physical resources are limited. 6. **Use of Visuals and Multimedia:** Incorporating visual aids, multimedia resources, and interactive tools can enhance understanding and engagement.

7. **Assessment and Feedback**: Regular assessments, including quizzes, tests, and examinations to show how well the students understand the subject.
8. **Practice and Revision Sessions**: Providing dedicated practice sessions and revision classes enables them to improve students' comprehension and strengthen their information.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	٩٣	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	٥٧	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	١٥٠.		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	6 and 12	LO #1- #5 and #6 - #11
	Assignments	2	10% (10)	3 and 12	LO #2 and #5, #7, #11
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	14	LO #5 - #13
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to digital and analog quantities, integrated circuits, and digital system applications
Week 2	Number-base conversions, binary arithmetic, octal and hexadecimal numbers, complements of numbers

Week 3	Signed numbers, arithmetic operation with signed binary numbers, BCD, digital codes
Week 4	Review of AND, OR and NOT gates, NAND, NOR, XOR, XNOR, introduction to Hardware HDL, Boolean operation and expressions, laws and rules of Boolean algebra, De Morgan's Theorems
Week 5	Boolean analysis of logic circuits, simplification using Boolean algebra, canonical and standard forms of Boolean expressions, Boolean expression, and truth tables
Week 6	developing Verilog model for logic circuits, gate delays
Week 7	Karnaugh Map, prime implicant and essential prime implicant, Karnaugh map minimization
Week 8	Midterm exam + don't care conditions, Quine–McCluskey method
Week 9	Basic combinational logic circuits, design procedure, implementing combinational logic
Week 10	Verilog models of combinational logic circuits, code conversion
Week 11	the universal property of NAND and NOR gates, Combinational logic using NAND gates only and NOR gates only
Week 12	Half Adder, full Adder, half Subtractor, full Subtractor
Week 13	parallel Binary adders and parallel Binary subtractors, 4-bit subtractor using 4-bit Adder, The Adder – Subtractor circuit, adder expansion
Week 14	carry lookahead adder, decimal adder
Week 15	Odd and Even functions, Parity generation and checking, magnitude comparator
Week 16	**Preparatory week before the final Exam**

	Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر
	Material Covered
Week 1	Lab 1: Introduction to the lab kits.
Week 2	Lab 2: NOT, AND, OR gates implementation using kit
Week 3	Lab 3: NAND, NOR, EX-OR, EX-NOR gates
Week 4	Lab 4: Rules of Boolean algebra (implementation using kit)
Week 5	Lab 5: Universal gates and De Morgan's Theorems (implementation using kit)
Week 6	Lab 6: SOP (implementation using kit)
Week 7	Lab7: POS (implementation using kit)
Week 8	Lab 8: Karnaugh Map (implementation using kit)
Week 9	Lab 9: Karnaugh Map + don't care condition (implementation using kit)

Week 10	Lab 10: Binary to Gray code, and Gray code to Binary (implementation using kit)
Week 11	Lab 11: BCD to Excess-3 Code Conversion (implementation using kit)
Week 12	Lab 12: Adders (implementation using Kit)
Week 13	Lab 13: Adders (implementation using Logisim)
Week 14	Lab 14: Subtractors (implementation using kit)
Week 15	Lab 15: Subtractors (implementation using Logisim)

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1-Digital Design with an Introduction to the Verilog, HDL, VHDL and System Verilog, Sixth edition, M. Morris Mano, Michael D. Ciletti, 2019.	NO
	2-Digital fundamentals, Eleventh Edition, Thomas L. Floyd, 2015.	NO
Recommended Texts		
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	**Academic English**		**Module Delivery**	
Module Type	Secondary		☒ Theory ☐ Lecture ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	COE115			
ECTS Credits	2.00			
SWL (hr/sem)	75			
Module Level	1	**Semester of Delivery**		1
Administering Department		**College**		
Module Leader		**e-mail**		
Module Leader's Acad. Title		**Module Leader's Qualification**		
Module Tutor		**e-mail**		
Peer Reviewer Name		**e-mail**		
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 Aims أهداف المادة الدراسية	Nowadays English has a special and predominant role in the communicative sphere of the world. It also has a special identity in the field of education. This module aims to enhance both the verbal and written communication skills of students. The aim requires a particular focus on the development of the basic language skills (speaking, listening, reading and writing) and on broadening students' vocabulary and syntactical range so that they can communicate easily on a wide range of topics.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	This semester will help students through enhancing their knowledge and understanding and enabling them to use grammar correctly, analyze the element of language and establish the appropriate relationship among linguistic components, in addition to understanding the meaning of sentences and paragraphs. So the learning outcomes will be: 1. The course covers the core language skills that students need to communicate successfully in technical specializations. 2. Enable students to give their opinions and participate in discussions on a wide range of English topics. 3. The ability to communicate effectively in written format on a range of contemporary topics, especially technical ones. 4. Understanding the key points of a range of moderately complex oral and written texts with relative ease. 5. Communicating effectively as part of a multicultural and international group. 6. Expressing meaning and using different vocabularies through the use of digital technology.
Indicative Contents المحتويات الإرشادية	**A- Communicative competences** - **Listening** - Understand and identify the main points of dialogues 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. - **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. - **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.
- **Writing** – write paragraphs (block and indented styles), Write simple connected and coherent texts; 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. Write descriptive texts of simple charts and tables.

B- **Linguistic knowledge**
- **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.
- **Vocabulary**: Words related to themes and topics of the course, collocations, words with different meanings, and pronunciations.
- **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.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

| **Strategies** | The teacher should prepare his/her students for listening to academic lectures and academic reading to some extent. In addition to that, students should participate in the lecture through the skills of speaking, writing , reading and listening

Students are taught by Communicative language teaching (CLT), in which students are encouraged to communicate with each other in the target language. Students need to be exposed to the target language as much as possible to understand and use the target language in real-life situations. A variety of ways will be used to teach students Technical English.

A. Working in groups.
B. Class Discussions.
C. Presentation to get students to communicate with each other in the target language and to practice using the target language for communication.
D. Visual by the use of pictures, images, and spatial understanding. |

E. Aural (auditory-musical) by using sound and music.	
F. Verbal (linguistic), using words, both in speech and writing.	

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	2
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	2	10% (10)	5 and 10	LO #1 and #4
	Assignments	2	10% (10)	2 and 12	LO #3, #4, and #6
	Project / presentation	1	10% (10)	14	All
	Report	1	10% (10)	15	All except #5
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1, #3, and #4
	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** **Parts of speech(nouns-verbs-adjectives-adverbs-prepositions-articles-pronouns-conjunctions-interjections)** **Unit One of the book (Headway)**

Week 2	• The components, structure and kinds of the sentences
	    - Simple-compound –complex
	    - Declarative- interrogative –exclamatory – conditional –imperative
	• Unit Two (Headway)

Week 3	• Tenses (present, past and future)
Week 4	• Reading Skills and how to make skimming, scanning and intensive reading (Passage) • Unit Three (Headway)
Week 5	• Writing Skills (Punctuation – ways to join sentences- principles of paragraph structure) • Unit Four (Headway)
Week 6	• Passive and active sentences in scientific writing. • Unit Five (Headway)
Week 7	Mid-term Exam
Week 8	• Listening skills- How to participate in different topics- how to avoid silence • How to answer the questions of the passage in exam (WH Questions) • Unit Six (Headway)
Week 9	• Reading skills (Passage) • Unit Seven + unit Eight (Headway)
Week 10	• Idioms and idiomatic expression • Unit Nine (Headway)
Week 11	• Written Conversation in English • Unit Ten (headway)
Week 12	• Phrasal verbs • Unit Eleven (Headway)
Week 13	• Conditional in English • Speaking skills (how to make presentation) • Unit Twelve (Headway)
Week 14	• Presentations
Week 15	• Unit thirteen + unit fourteen (headway)
Week 16	Preparatory week before the final Exam

	Learning and Teaching Resources مصادر التعلم والتدريس	
	Text	**Available in the Library?**
Required Texts	1- New Headway Plus for Beginners, English Course, John and Liz Soars.(4ᵗʰ edition). Oxford University Press. 2- Santiago Remacha Esteras. (2007). Infotech: English for Computer Users. (4ᵗʰ edition). Cambridge.	Yes
Recommended Texts	Murphy, R. (1985). English Grammar in Use. Cambridge.	No
Websites	Randall's ESL Cyber Listening Lab - English Listening	

	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 and AutoCAD**			**Module Delivery**	
Module Type	Core			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	COE114				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	1	**Semester of Delivery**		1	
Administering Department	Type Dept. Code	**College**			
Module Leader		**e-mail**			
Module Leader's Acad. Title		**Module Leader's Qualification**			
Module Tutor		**e-mail**			
Peer Reviewer Name		**e-mail**			
Scientific Committee Approval Date		**Version Number**	1.0		

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

	Module Aims, Learning Outcomes and Indicative Contents
	أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية
Module Objectives أهداف المادة الدراسية	1. Creating accurate and detailed technical drawings: AutoCAD enables users to produce precise 2D drawings with accurate dimensions, annotations, and symbols. It allows for the creation of technical drawings that can be used for construction, manufacturing, or documentation purposes. 2. Designing 3D models: AutoCAD supports the creation of three-dimensional models of objects, structures, or products. Users can visualize and analyze designs in 3D, enhancing their understanding of spatial relationships and enabling better communication of design intent. 3. Streamlining the design process: AutoCAD offers features like parametric design, which allows for easy modification of designs by changing parameters. It also provides tools for automating repetitive tasks and customizing the software to suit specific workflows, reducing manual effort and increasing efficiency. 4. Collaborating and sharing designs: AutoCAD enables collaboration among team members by facilitating the sharing of drawings, allowing for markups, and tracking revisions. It supports interoperability with other software applications, enabling seamless exchange of design data. 5. Generating presentation and visualization materials: AutoCAD includes rendering capabilities to create realistic visual representations of designs. Users can generate high-quality renderings, animations, and walkthroughs for presentations or marketing purposes.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Proficiency in creating 2D drawings: Users will learn how to create accurate and detailed 2D drawings using AutoCAD. This includes skills in drawing lines, shapes, dimensions, annotations, and symbols. 2. Ability to design in 3D: AutoCAD enables users to create three-dimensional models of objects and structures. Users will develop the skills to design and manipulate 3D objects, apply materials, add textures, and set up lighting for enhanced visual representation. 3. Understanding of parametric design principles: AutoCAD offers parametric design capabilities, allowing users to associate parameters and constraints with design elements. Users will learn how to create intelligent designs that can be easily modified by adjusting parameters. 4. Proficiency in using drafting tools and commands: AutoCAD provides a wide range of tools and commands for drafting and editing. Users will gain proficiency in using these tools to accurately create, modify, and organize elements within a drawing. 5. Visualization and rendering skills: AutoCAD includes rendering capabilities that allow users to generate realistic visual representations of their designs. Users will learn how to apply materials, set up lighting, and create high-quality renderings for presentations or visualization purposes.

Indicative Contents
 	
المحتويات الإرشادية
	1. Introduction to AutoCAD:
	
	  - Overview of AutoCAD and its applications
	
	  - User interface and navigation
	
	  - Drawing and editing tools

	2. Basic 2D Drawing:
	
	  - Creating basic shapes (lines, circles, rectangles, etc.)
	
	  - Modifying objects (trimming, extending, filleting, etc.)
	
	  - Adding annotations and dimensions
	
	3. Advanced 2D Drawing:
	
	  - Working with layers and layer properties
	
	  - Creating and using blocks and attributes
	
	  - Advanced editing commands (offset, array, mirror, etc.)
	
	4. Project Work and Case Studies:
	
	  - Applying AutoCAD skills to complete real-world projects.

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	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	**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**	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 AutoCAD- Overview of AutoCAD and its interface
Week 2	Object Properties Layers and layer properties Applying colors, linotypes, and line weights Managing object properties
Week 3	Text and Annotations Adding and formatting text in drawings Creating and editing dimensions Using dimension styles and tolerances
Week 4	Drawing Basics- Creating lines.
Week 5	Drawing Basics- Creating arcs.
Week 6	Drawing Basics- Creating circles.
Week 7	Drawing Basics- Creating POLYLINE
Week 8	Drawing Basics- Creating ELLIPSE
Week 9	Drawing Basics- Creating POLYGON
Week 10	Drawing Basics- Creating RECTANGLE
Week 11	Modify Tools- Copy (cp) or (co), Mirror (mi)& Offset (o)
Week 12	Modify Tools- Array (ar), Move (m) &Scale (sc)
Week 13	Modify Tools- Stretch (s), Trim (tr)& Extend (ex)
Week 14	Modify Tools- Break (br) ,Join (j), Chamfer (cha) & Fillet (f)
Week 15	Review for over all
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Creating- lines.

Week 2	Creating- arcs.
Week 3	Creating- circles.
Week 4	Creating -POLYLINE
Week 5	Creating- ELLIPSE
Week 6	Creating -POLYGON
Week 7	Creating -RECTANGLE

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		Yes
Recommended Texts		No
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
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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

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First and Second Semester

Module 1

Module Information		
Module Title	Workshops	Module Delivery
Module Type	Support	☐ Theory
Module Code	COE116	☐ Lecture
ECTS Credit/year	4	☐ Lab ☐ Tutorial
SWL/year	100	■ Practical ☐ Seminar
Module level	1	Semester of Delivery	1, 2
Module Leader	Training and Workshops Center	College	
Module Leader Academic Title		e-mail	
Module Tutor		Module Leader's Qualification	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		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

	Tinsmith workshops), and mechanical operation skills, for example (Turning). 3- Acquisition of the student's mechanical forming skills, for example (Casting and Blacksmithing). 4- The student acquires basic engineering skills such as Welding, Carpentry, and Electrical installations that serve him in the professional field. 5- Enabling the student to operate the various machines and devices in mechanical operations and formation. ٦- Cooperative learning by working collectively.
Inductive Contents	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

Learning and Teaching Strategies	
Strategies	

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

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

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

	-Introduction to the basics of metal casting. -Simple wooden disc exercise. Half workout.
Week 5	Casting workshop Wheel exercise. Pushing arm exercise.
Week 6	Casting workshop. -Complete pulley exercise. -Circular pole exercise. -Written exam in practical exercises.
Week 7	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	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	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	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	Automotive Workshop - Open the engine and identify the parts -Lubrication system -Cooling system.
Week 12	Automotive Workshop -The fuel system. -The old and new ignition circuits. -Written exam in practical exercises.
Week 13	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

	- Exercise of cylinders with an oblique cut Roll forming operations Connection without the use of an intermediary Written exam in practical exercises
Week 25	Electric Workshop Occupational Safety and its importance in electrical workshops An introduction to the basics of electrical installations - Linking a simple circuit consisting of a lamp to the control of a single-way switch. Connect two lamps in series with one-way switch control. Connecting two lamps in parallel with the control of a single road switch. Connect two lights with one-way dual switch control.
Week 26	electric Workshop Connect a fluorescent lamp circuit to a one-way switch control Connecting an electric supply socket circuit to the control of a separate or combined one-way switch Written exam in practical exercises
Week 27	electric 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 Exercise forming the number six in English
Week 28	supplementary training curriculum Welding workshop Plumbing workshop Blacksmith's workshop
Week 29	supplementary training curriculum - Automotive workshop - Turning workshop Fitting workshop
Week 30	supplementary training curriculum Carpentry workshop The plumbing workshop electric Workshop

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

Recommended Texts		
Websites		