University of Technology

Electromechanical Engineering

Unmanned Aircraft Systems Engineering Branch

First Cycle – Bachelor's Degree (B.Sc.) in Unmanned Aircraft Systems Engineering Program

2023 – 2024

Appendix 2 Program Catalogue

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1. Mission and Vision Statement

Vision Statement

The aim of Unmanned Aircraft Systems (UAS) Engineering Program is to build up an engineering institution in the unmanned aircraft and the autopilot system field as well as this program seeks to be an outstanding one among the top international university.

Mission Statement

1- The mission of the Unmanned Aircraft Systems (UAS) engineering program is preparing students for successful careers in the Unmanned Aircraft Systems (UAS) profession.
2- Provide graduates who are realizing the crucial concepts of unmanned aircraft systems, analyses that related to the aircraft design, construction, maintenance of unmanned systems as well as identify and apply correct navigational systems.
3- Improve the knowledge and skills graduates acquire through practical experience allows them to derive unique solutions within Unmanned Aircraft Systems
4- Provide educational and research resources by conducting high quality and innovative research in the Unmanned Aircraft Systems (UAS).

For future plans, the branch intends to cover all required courses in the unmanned aircraft systems in Iraq, including autopilot systems, structural aircraft design and navigational systems. Through the contribution with the Ministry of Defense, Ministry of interior, Transportation, Agreculture, Air survaing, Air servelliance and rescue during desaster. The branch will be developed these courses according to the needs of these fields.

2. Program Specification

Program Code	BSc-UNAS	ECTS	240
Duration	4 Year, 8 Semesters	Method of Attendance	Full Time

Subject Areas Requirements

The Unmanned Aircraft Systems program produces graduates who are prepared to enter the practice Unmanned Aircraft Systems. The program has been classified into three major components:
1. Foundation in the mathematical and physical sciences.
2. Engineering topics in both mechanical and electrical systems with design applications.

3. General education in the humanities, sport, english and ethics courses.

Mathematics and Physical Sciences

The engineering science fundamentals and engineering design skills are built upon the basic mathematics and physical sciences. The mathematical work begins with a three level course (six courses) sequence on differential and integral calculus. The first two courses include topics in limits, derivatives, and the integrals of functions of one variable, work on partial derivatives and multiple integrals is presented. Vector analysis and three-dimensional analytic geometry, solution of the first and second order linear differential equations with numerous applications, Laplace transforms, power series solutions, numerical methods, linear systems and numerical analysis with engineering applications in numerical differentiation and integration. With this foundation in mathematics, our students have the necessary tools for applications in analysis and design**.**

Physics (two courses): first level includes: Atomic structure, atomic bonding, types of forces, static and kinetic friction force, gravitational force and gravitational field strength. The second level provides the concepts and the main features of the materials engineering and materials science, including classification of the engineering materials, crystal structure, crystal system for the solid materials, elastic and plastic behavior of metallic materials, hardness and other mechanical properties**.**

It is noted that the number of hours for Math and Basic Science is 30 hours and it's satisfies ICAEE requirement.

Engineering Topics

The aim of the program is to graduate students capable to work as a mechanical and electrical engineer in **the Unmanned Aircraft Systems field**. The engineering topics are divided into four parts; preliminary joint courses, mechanical courses, electrical courses and final joint courses.

Preliminary joint courses:

- Workshop Training; Preparation of engineering cadres trained scientific and practical areas in the electricity, automobiles, machining (lathe, milling, drilling), forging, denting, filings, forging, welding, and casting.
- Computer Courses; Computer Science (Visual BASIC programs), Advanced Programming (C++), Application of Advance Computer (Microprocessors and MATLAB languages).
- Engineering and Machine Drawing is to teach students manual drafting and dimensioning of views, explains the principles of orthographic views, multi view projection and sectional view drawing.

Engineering courses are divided into two parts:

<u>**Mechanical Courses**</u>

- **Engineering Mechanics:** The primary purpose of the study of engineering mechanics is to develop the capacity to predict the effects of force and motion while carrying out the creative design functions of engineering. This capacity requires more than a mere knowledge of the physical and mathematical principles of mechanics; also required is the ability to visualize physical configurations in terms of real materials, actual constraints,and the practical limitations which govern the behavior of machines and structures.

- **Strength of Material.:** In this course, students will learn the fundamental concepts in the mechanics of materials and the behavior of solid bodies under various types of loads. Also, the students will learn the simple bending theory for beams and subsequently they have the ability to draw the shear force and bending moment diagrams. Simple torsion theory for shafts (circular), deflection of beams, complex stresses and compound beam will also be given to the students.

- **Aerodynamic:** This course will focus on the main theoretical principles of standard atmosphere (ISA), aerodynamic forces and moments on aircraft , Lift-lift coefficient-lift curves characteristics, drag-drag estimation, types of drag, stalling, subsonic and supersonic wings and sections characteristics , aerodynamic forces on steady level flight, level flight performance , The wing loading, performance curves in terms of thrust, performance curves in terms of power, climbing and drift-down performance, gliding performance , range and endurance(Piston a/c), rrange and endurance (jet a/c), take-off, landing, acceleration in climb, steady level turning performance, design performance, rotary-wing aerodynamic, airflow during hovering , aerodynamic of helicopter, required power, available power, flight range , range of climbing, flight ceiling, optimum air speed.

- **Theory of Machines:** This course covers different mechanism used in devices or machines and make them able to do complete analysis of mechanism (including linkage, gears, gear trains, cams, and followers). In addition this class covers the foundations of rigid multi-body mechanics. The topics include geometry of rigid bodies, rotating bodies, Lagrangian mechanics and variational principles, conservation of energy and momentum, symmetries, and impact dynamics.

- **Composite Materials:** In this course the students will have the capability for selecting the optimum composite material for a specific application by analyzing every area of the airframe given the operating environment and loads that a component experiences over the life of the airframe and subsequently determine the best mechanical properties. Various types and orientation of the fiber reinforcement as well as different types of

matrices will be given to the students. In addition, the effect of the volume, mass fraction and the density for each component on the mechanical properties of the composite materials is the main objective of this course.

- **Flight Dynamic:** This course Study of motion of aircraft, equations of motion, aerodynamic force representation, longitudinal and lateral motions, response to controls and to atmospheric disturbances, handling qualities criteria and other figures of merit. Attention is given to mathematical models and techniques for analysis, simulation, and evaluation of flying qualities, with brief discussion of guidance, navigation, and control issues.

- **Vibration and Noise:** This course deals with study of basics of the vibrations in a body, analysis of vibration phenomenon, control of vibration in machine parts, balancing. The subject also deals with Introduction of basic terminology of noise engineering and noise control. The students will be able to understand the sources of vibration and noise as well as make design modifications to reduce the vibration and noise and improve the life of the components.

- **Theory and Systems of Control:** In this course the students will realize the main theoretical principles of control systems as well as understanding by using different damping system and understand the principles of free & forced vibrations. Proceeding to the student free & forced vibrations of single degree of freedom. Systems, Instruments, and Apparatus that has been used in different types of control systems also will be given.

- **Aircraft Systems:** This course will focus on the main theoretical and practical principles of mechanical systems in the Unmanned Aircraft. The study focus on the applications of hydraulic and pneumatic systems in Unmanned Aircraft, typical workable system, components, Pneumatic systems, Advantages, Working principles, Typical Air pressure system, Brake system, Typical Pneumatic power system, Components, Landing Gear systems, Classification.

- **Aircraft Structures:** This course is an introduction for the analysis of aircraft structures. It bridges together the basic solid mechanics with applications to aerospace structures. The course starts with the introduction to the basic details of type of structures used in aircraft construction. It is followed by an introduction to the estimation of loads on wing, fuselage and landing gear.Moreover, this course covers different types of beams and columns subjected to various types of loading and support conditions with particular emphasis on aircraft structural components.

- **Aircraft Performance:** Study of performance and design characteristics of conventional aircraft using atmospheric properties, and the concepts of lift and drag. Design for specified flight conditions and the flight conditions for best performance using the physical characteristics of an aircraft. Analysis of level flight performance,

rates of climb, service and absolute ceilings, range, takeoff and landing, and turn performance.

- **Robotics and Automation:** Students will learn basic and advanced automation and robotic Systems. The subject included are; PID Controller, Ziegler–Nichol's method, tuning PID Controller, intelligent control systems, artificial intelligence, Fuzzy logic, Genetic algorithm, and robotic systems.

- **CAD / CAM:** Students will learn the fundamental theories behind CAD program and generate CNC codes from a given geometry, or draw the geometry of a part. Subsequently, they have the ability to write the G and M codes to cut different geometric shapes.

- **Aircraft Stability:** Students will learn (static, directional, lateral) stability and axes, for contribution of airplane component, wing, fuselage, horizontal and vertical tails, Dorsal Fin and all component.

- **Unmanned Aircrafts Design**: This course provides fundamental principles, design procedures, and design tools for unmanned Aircraft systems (UASs) with three sections focusing on Aircraft design, autopilot design, and ground system design. The design of manned aircraft and the design of UAS have some similarities and some differences. They include the design process, constraints (e.g., g-load, pressurization), and UAV main components (autopilot, ground station, communication, sensors, and payload). A UAS designer must be aware of the latest UAS developments; current technologies.

<u>**Electrical Courses**</u>

- **Fundamental of Electrical Engineering**: Illustration and discussion the fundamental electrical engineering is the main aims of this course. It will be studied the DC and AC Electrical Circuits, series, parallel. The students will have the ability to identify the equations voltages and current for circuits above.

- **Electric and Electronic Circuits**: This course will focus on the circuit analysis in a manner, more interesting, and easier for the student.   Proceeding to the student the first and second order circuits and without excitation. Three phases balanced, unbalance systems with their applications and coupling circuits will be given in addition to the illustration and discussion the resonance phenomena of the AC circuits.

- **Measurements and Instrumentations:** This course specification provides the main features of the Measurements and Devices. The students will learn the theory of

measurement including static characteristics of instruments, various standards, error analysis, classifications and statistical analysis. Also, the students have the ability to discuss and analyze various DC and AC bridges used for the measurement of resistances, impedances and associated parameters like inductance, capacitance and frequency.

- **Digital Electronics**: This course the study of electronic circuits that are used to process and control digital signals. In contrast to analog electronics, where information is represented by a continuously varying voltage, digital signals are represented by two discreet voltages or logic levels. This distinction allows for greater signal speed and storage capabilities and has revolutionized the world electronics. This course covers th e operation, application, and troubleshooting o f TTL and CMOS electronic logic devices, th e ir use in com binatorial and sequential logic circuits, th e interface betw een th e logic fam ilies, and the interface betw een digital and analog circuits. The course also provides a study o f Boolean algebra, binary and hexadecimal num ber systems, binary codes, and the analysis o f th e basic com ponents and circuits used in sem iconductor switching.

- **Analog Communications:** The course will introduce the participants to the signal representation in both time and frequency domain, basic analog communication techniques like modulation theory, system design for analog modulator and demodulator, random process and noise analysis.

- **Antennas and Waves Propagation:** This course covers the basic terminology and concepts of Antennas. To attain knowledge on the basic parameters those are considered in the antenna design process and the analysis while designing that. Analyze the electric and magnetic field emission from various basic antennas and mathematical Formulation of the analysis. To have knowledge on antenna operation and types as well as their usage in real time filed. Aware of the wave spectrum and respective band based antenna usage and also to know the propagation of the waves at different frequencies through different layers in the existing layered free space environment structure.

- **Aircraft Systems:** The course covers the electrical system of an integral and essential component of all but the most simplistic of aircraft designs. All aircraft electrical systems have components with the ability to generate electricity. Also studying the control and communication units.

- **Digital Communications:** The course covers the following topics: Principles of M-ary communication: signal space methods, optimum detection. Fundamental parameters of digital communication systems, various modulation techniques and their performance in terms of bandwidth efficiency and error probability. Efficient signaling with coded

waveforms. Block coding and convolutional coding. Joint modulation and coding. Equalization for communication over bandlimited channels. Brief overview of digital communications over fading multipath channels.

- **Radar Theory:** This course will provide theoretical knowledge of radar, transmit and receive signals. After this course the students able to analyze and solve the radar engineering problems.

- **Digital Signal Processing:** This unit of study aims to provide theoretical knowledge and principles of digital signal processing and the ability for analysis and solve its problems.

- **Navigation Systems:** This course specification provides the main features of the radio navigation systems . Fundamentals of navigation systems and Position Fixing, Categories of navigation, Geometric concepts of Navigation. The Earth in inertial space, Different Coordinate Systems, Coordinate Transformation. Different types of radio navigation- ADF, VOR, DME, TACAN,VORTAC, Doppler, Hyperbolic Navigations . Point positioning and differential positioning , Concepts of GPS , Differential GPS (DGPS) and Space based Augmentation system (SBAS). The students learn the theoretical knowledge and principles of radio Navigation systems and the ability to analysis and solve the Engineering Navigation problems.

- **Microprocessor and Microcontroller:** The rapid improvement in microprocessor architecture has led to advances in the technology used to build computers and innovation in computer design. The study of microprocessor architecture is to focus on the structure and behavior of the computer. The course on microprocessor includes elements such as instruction sets, formats, operation codes, data types, the number and types of registers, addressing modes, main memory access methods, and various I/O mechanisms of microprocessor. Microcontrollers based embedded systems are involved in almost every facet of modern life. Consumer gadgets, entertainments gadgets, medical devices and automobiles all contain embedded Microcontroller. The tremendous number of applications for embedded computing has given rise to high demand for engineers with experience in designing and implementing embedded systems with microcontroller. This course is designed to provide an introduction to microcontroller architecture, internal and external peripherals and assembly language programming.

- **Radar Systems:** This unit of study aims to provide theoretical and experimental knowledge of radar, antennas and microwave. After this course the students able to analyze and solve the engineering problems.The students learn the main radar systems, some types of antennas and some RF devices used in radar applicationssuch; MTI and pulse Doppler radar, delay-line canceler, range-gated Doppler filters, pulse Doppler radar, tracking radar, target-reflection characteristics and angular accuracy, radar transmitters, Klystron amplifier, traveling-wave-tube amplifier, modulators, solid-state transmitters, Magnetron, radar antennas, receivers, displays, and duplexers, detection of radar signals in noise, and other radar topics.

- **Autopilot and Mission Planning:** The students will learn the main theoretical principles of inertial navigation, the system, instruments, basics of inertial navigation, accelerometer measurement, gyroscopes, gyroscope measurements, platform, strap down inertial navigation concept. Inertial navigation, mechanization,earth-centered inertial frame, local-level frame (LLF), local-level fravertical mechanizationme (LLF), computational frame, horizontal mechanization, vertical mechanization, error , error propagation, error propagation, attitude and heading references,gravity sensors,gravity sensors,air-data systems, air-data measurements,air temperature,angle of attack and angle of sideslip, automatic flight control, INS/GPS Integration, error feedback schemes, error feedback schemes,closed-loop INS/GPS architecture, types of integration, loosely coupled INS/GPS integration,tightly coupled INS/GPS integration, Ultra-Tight INS/GPS integration.

- **Digital Image Processing:** The course covers the fundamental techniques and algorithms used for acquiring, processing and extracting useful information from digital images. Particular emphasis will be placed on covering methods used for image sampling and quantization, image transforms, image enhancement and restoration, image encoding, image analysis and pattern recognition. In addition, the students will learn how to apply the methods to solve real-world problems in several areas including medical, remote sensing and surveillance and develop the insight necessary to use the tools of digital image processing (DIP) to solve any new problem.

Final Joint Courses,

- Electromechanical Equipment, this course specification provides the main features of the Electromechanical Systems and Devices.
- Unmanned Aircraft Systems (UAS) Operation and Maintenance, illustration and discussion the principles of Power plant operation and maintenance.
- Unmanned Aircraft Systems (UAS) efficiency for mechanical and electrical applications.
- Aviation Safety Management; this course specification provides the main features of the navigation Air traffic Management for example the monitoring and unmanned aircraft movement and keep the connection with it, how to follow the aircraft and keep it to land safely.
- Control Theory and Systems; illustration and discussion the Main Theoretical Principles of control systems, understanding of signals in order to control by find the final transfer functions for the system, as well as plot the signal to study the control signal properties.

Others, Including General Education

The third major area of the curriculum is the general education component. The university of technology has a mandated general education requirement for all degrees. To satisfy the General Education Requirements **the Unmanned Aircraft Systems (UAS)** Engineering Program set required courses in the general education component as follows:

- English Language (two levels), this course will improve the ability of the students to understand, speak, read and write English as a second language with some technical texts. It is also intended to teach them, how to use technical English effectively as a language of instruction, Lab. Experiments and Exercises, examples, using Technical Terminologies as close as possible to the lectures they receive during their study.

- Human Rights (second level), Freedom and Democracy, the course covers the concept of human rights and development, definition, classes, properties, and the most important human rights conventions and declarations and international conventions on human rights and human rights in religions and the role of non-governmental organizations in this field and other human rights issues. The substance of freedom and democracy include the concept of freedom and kinds, democracy and the types and components, individual liberty and freedom forced to reconcile the sovereignty, freedom, democracy during the Greeks time, lobbyists, the most important theories on the nature of election, the rights of minorities in democratic governance and other topics that make the student familiar with the issues.

- Sport (first level), concentrates on different sport activities.

Major Design Experience

In the last year, students take final major design course. In this course, students learn how to apply the basic engineering science and design principles to formulate a design problem, and then follow the recommended process to complete the design project. Students are required to demonstrate their ability to use the knowledge of mechanical and electrical courses for the whole undergraduate curriculum. Some professional components if not taught in other courses, such as life- long learning to keep knowledge up to date, are covered in this course. For the capstone design experience. The students are typically in teams of three people. At the end of the year, all the design teams present their capstone design projects. The evaluation includes the project evaluation in three parts (overall technical content, presentation, and response to questions), assessment of the related Graduate Outcomes and comment.

4. Program Goals (objectives)

1- Unmanned Aircraft Systems Engineering Program seeks to provide the state-of-the-art classroom and practical instruction necessary for graduates to become Unmanned Aircraft Systems industry engineers.

2- Pursue graduate education and research at major research universities in Unmanned Aircraft Systems engineering, and related fields.

3- This program pursues to graduate qualified students in their chosen fields to be supervisory and management positions.

4- Pursue graduates to engage in continued learning through professional development.

5- The knowledge and skills graduates acquire through practical experience allows them to derive unique solutions within Unmanned Aircraft Systems applications and provide safe and professional UAS operations.

5. Student (Graduate) Learning Outcomes

Students from **Unmanned Aircraft Systems Engineering Program** will attain (by the time of graduation):

1. An ability to identify, formulate, and solve engineering problems that relate to unmanned aircraft systems by applying principles of engineering, science, and mathematics.

2. An ability to analyze unmanned systems—perform analyses related to design, construction, maintenance of unmanned systems as well as identify and apply correct navigational systems.

3. An ability to develop and conduct appropriate experiments, analyze and interpret data, and use engineering judgment to draw conclusions.

4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solution in the unmanned aircraft systems.

5. Engage the knowledge of flight safety operations with the use of unmanned aircraft systems.
6. An ability to identify the correct sensor for appropriate applications.
7. Apply solid ground/air safety procedures to unmanned systems missions**.**

6. Academic Staff (Faculty)

Faculty Name	Highest Degree Earned- Field and Year	Rank	Email
Hosham Salim Anead	**PhD. in Elect. Eng. (2002)**	**Prof.**	**50043@uotechnology.edu.iq**
Ahmad Hameed Rija	**PhD. in Elect. Eng.**	**Asst. Prof.**	**50073@uotechnology.edu.iq**

	(2016)		
Faraj Mahel Mohammed	**PhD. in Mech. Eng. (2003)**	**Prof.**	**50127@uotechnology.edu.iq**
Muhammad Abdul Razzak Yass	**PhD. in Mech. Eng. (2003)**	**Prof.**	**50251@uotechnology.edu.iq**
Enaam Obeid Hassoun	**PhD. in Mech. Eng. (2005)**	**Asst.Prof.**	**50109@uotechnology.edu.iq**
Walaa Mousa Hashim	**PhD. in Mech. Eng. (2015)**	**Asst.Prof**	**50091@uotechnology.edu.iq**
Huda Akram Zainal	**PhD. in Materials. Eng. (2015)**	**Asst.Prof**	**50286@uotechnology.edu.iq**
Ahmed Abdulqader Hussein	**PhD. in Elect. Eng. (2017)**	**Lecturer**	**50045@uotechnology.edu.iq**
Akeel Ali Wannas	**PhD. in Elect. Eng. (2016)**	**Lecturer**	**20184@uotechnology.edu.iq**
Mazin Abdulaali Hamzah	**PhD. in Elect. Eng. (2024)**	**Lecturer**	**50152@uotechnology.edu.iq**
Mayada Taki Wazi	**MSc. In Math. (2016)**	**Lecturer**	**Mayada.T.Wazi@uotechnology.edu.iq**
Nasseruallah Oudah Saadi	**MSc. (2008)**	**Asst. Lecturer**	**10600@uotechnology.edu.iq**
Sajid Qasim ghadhban almalaki	**MSc. (2020)**	**Asst. Lecturer**	**11536@uotechnology.edu.iq**
Muayad Waleed Nafea	**MSc. In Sport.**	**Asst. Lecturer**	**10755@uotechnology.edu.iq**
Wathiq kathim Salman	**MSc (2022)**	**Asst. Lecturer**	**Watheq82eq@gmail.com**
Hussain Ali Hadi	**MSc. Elect. Eng. (2001)**	**Asst. Lecturer**	**50292@uotechnology.edu.iq**

7. Credit Grading and Credits GPA

University of Technology is following the bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs student workload, including structure and unstructured workload.

Grading

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who are failed a course. The grading system is defined as follows:

Group	Grade	التقدير	Marks (%)	Definition
Grading Scheme				
مخطط الدرجات				
Success Group (50-100)	A - Excellent	امتياز	90 - 100	Outstanding
	B – very Good	جيد جدا	80 – 89	Above average with some errors
	C - Good	جيد	70 – 79	Sound work with notable Error
	D - Satisfactory	متوسط	60 – 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work with met 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
Notes:				
Marks with decimal places above or below 0.5 will 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 fail" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Calculation of the Cumulative Grade Point Average (CGPA)

The CGPA is calculated by the summation of each module score multiplied by ita ECTS, all are divided by the program total ECTS.

CGPA of a 4 – year B.SC. Degrees:

CGPA = [91st module score x ECTS) + (2nd module score x ECTS) + …]/240

8. Curriculum/Modules

Semester 1: 30 ECTS: 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
WOSH111	Workshops	87	13	4	S	
ENLA112	English Language I	31	44	3	S	

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MATH113	Mathematics I	59	91	6	B	
PHYS114	Physics I	59	91	6	B	
FACD115	Engineering Drawing (AutoCAD)	59	41	4	S	
ENME116	Engineering Mechanics I	73	52	5	C	
FEEN117	Fundamentals of Electrical Engineering I	59	41	4	C	

Semester 2: 30 ECTS: 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
WORK111	Workshops	87	13	4	S	
MATH122	Mathematics II	59	91	6	B	
PHYS123	Physics II	59	91	6	B	
COSC124	Computer Science I	59	66	5	S	
FEEN125	Fundamentals of Electrical Engineering	73	77	6	C	
SPOR126	Sport	31	44	3	S	
ENME127	Engineering Mechanics II	73	52	5	C	

9. Contact:

Program Manager: Ahmed Hameed Reja, Asst. Prof., PhD. Electrical and Electronics Eng. (2016)

Program Coordinator: Ahmed Abdulqader Hussein, Asst. Prof., PhD. Electrical Eng. (2017)
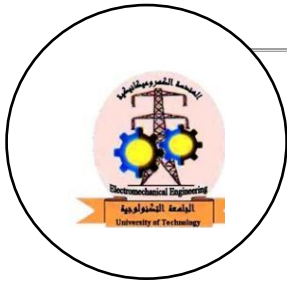
University of Technology

Electromechanical Engineering

Unmanned Aircraft Systems Engineering Branch

First Cycle – Bachelor's Degree (B.Sc.) in Unmanned Aircraft Systems Engineering Program

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Table of Contents

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1. Overview

This catalogue is about the courses (modules) given by the program of Unmanned Aircraft Systems Engineering to gain the Bachelor of Science degree. This program delivers 48 Modules with 6000 total student workload hours and 240 total ECTS. The module deliver is based on the Bologna Process.

2. Undergraduate Courses 2023-2024

First semester

Module 1

Code	Course/Module Title	ECTS	Semester
WOSH111	Workshops	4	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
0	0/6/0/0	87	13
Description			
Preparation of engineering cadres trained scientific and practical areas in the electricity, automobiles, machining (lathe, milling, drilling), forging, denting, filings, forging, welding, and casting.			

Module 2

Code	Course/Module Title	ECTS	Semester

ENGL112	English Language I	3	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
2	0	31	44
Description			

This course will improve the ability of the students to understand, speak, read and write English as a second language with some technical texts. It is also intended to teach them, how to use technical English effectively as a language of instruction, Lab. Experiments and Exercises, examples, using Technical Terminologies as close as possible to the lectures they receive during their study.

Module 3

Code	Course/Module Title	ECTS	Semester
MATH113	Mathematics I	6	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
4	0	59	91
Description			

The mathematics work begins with differential and integral calculus, limits, derivatives, and the integrals of functions of one variable, work on partial derivatives and multiple integrals is presented.

Module 4

Code	Course/Module Title	ECTS	Semester
PHYS114	Physics I	6	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
4	0	59	41
Description			

This course specification provides the concepts, principles, and main features of materials engineering. First level includes: Atomic structure, atomic bonding, types of forces, static and kinetic friction force, gravitational force and gravitational field strength.

Module 5

Code	Course/Module Title	ECTS	Semester
FACD115	Engineering Drawing (AUTO CAD)	4	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
0	4	59	41
Description			
The aims which can be achieved during teaching this course program. Learn sketching and taking field dimensions, take data and transform it into graphic drawings, learn basic engineering drawing formats, learn basic AutoCad skills and Learn who draw 2D drawings in AutoCad.			

Module 6

Code	Course/Module Title	ECTS	Semester
ENME116	Engineering Mechanics I	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
2	3	73	52
Description			
This unit of study aims to provide theoretical and practical knowledge and principles of Statics. Topics to be covered include equivalent systems of forces, resultants and distributed forces, equilibrium of rigid bodies, centroids, centers of gravity, fluid statics, moments of inertia, and friction.			

Module 6

Code	Course/Module Title	ECTS	Semester
FEEN117	Fundamental of Electrical Engineering I	4	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
2	2	59	41
Description			
In this course, students learn some details of Fundamental of DC circuits and their analysis by			

using different methods, Firstly, they are taken the atomic structure to understand the concept of current and voltage, and then they are given the Kirchhoff's current and voltage laws and how they can employ them to analysis of the DC circuits. Besides, the analysis methods are presented to teach the students the analysis of the DC circuits. In addition, the analysis the DC circuits by network theorems are given.

Second semester

Module 1

Code	Course/Module Title	ECTS	Semester
WOSH111	Workshops	4	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
0	6	87	13
Description			

Preparation of engineering cadres trained scientific and practical areas in the electricity, automobiles, machining (lathe, milling, drilling), forging, denting, filings, forging, welding, and casting.

Module 2

Code	Course/Module Title	ECTS	Semester
MATH122	Mathematics II	6	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
4	0	59	91
Description			

Vector analysis and three-dimensional analytical geometry are included in this course. Topics include solution of the first and second order linear differential equations with numerous applications.

Module 3

Code	Course/Module Title	ECTS	Semester
PHYS123	Physics II	4	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**

4	0	59	41

Description

The second level provides the concepts and the main features of the materials engineering and materials science, including classification of the engineering materials, crystal structure, crystal system for the solid materials, elastic and plastic behavior of metallic materials, hardness and other mechanical properties.

Module 4

Code	Course/Module Title	ECTS	Semester
COSC124	Computer Science I	4	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
2	2	59	41

Description

This Course Specification provides the main features of the computer, A basic computer system is defined as a device that accepts input, processes data, stores data, and produces output. A personal computer system includes a computer, peripheral devices, and software. Computers are categorized into five general types, based mainly on their processing speeds, size, and capacity to store data: supercomputers, mainframe computers, minicomputers, microcomputers, and micro-controllers.

Module 5

Code	Course/Module Title	ECTS	Semester
FEEN125	Fundamental of Electrical Engineering II	4	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	59	41

Description

In this course, students learn some details of Fundamental of AC circuits and their analysis by using different methods, Firstly, they are taken the atomic structure to understand the concept of current and voltage, and then they are given the Kirchhoff's current and voltage laws and how they can employ them to analysis of the AC circuits. Besides, the analysis methods are presented to teach the students the analysis of the AC circuits. In addition, the analysis the AC circuits by network theorems are given.

Module 6

Code	Course/Module Title	ECTS	Semester
SPOR126	Sport	3	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	31	44
Description			

The basis of assessment for course will be students' achievement in basic skills, learning attitude and attendance. Courses offered include: track and field, swimming, physical conditioning, basketball, volleyball, soccer, team handball, softball, squash, tennis, badminton, table-tennis etc.

Module 7

Code	Course/Module Title	ECTS	Semester
ENME127	Engineering Mechanics II	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
2	3	73	52
Description			

This unit of study aims to provide theoretical and practical knowledge and principles of Dynamics. Topics to be covered include introduction to dynamic, Kinematics of particles, rectilinear motion, velocity, acceleration and motion laws, plane curvilinear motion, projectile motion, impulse and momentum.

Contact

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MODULE DESCRIPTION FORM SEMESTER 1

Module Information
معلومات المادة الدراسية

Module Title	Workshops I	Module Delivery	
Module Type	Support	☐ Theory	
Module Code	WOSH111	☐ Lecture	
		☐ Lab	
ECTS Credits	4	☐ Tutorial	
		☒ Practical	
SWL (hr/sem)	100	☐ Seminar	

Module Level	1	Semester of Delivery	1
Administering Department	EMEN	College	EME
Module Leader	Training and Workshops Center	e-mail	twc @uotechnology.edu.iq
Module Leader's Acad. Title	Assist. Prof.	Module Leader's Qualification	PhD.
Module Tutor	-	e-mail	-
Peer Reviewer Name	-	e-mail	-
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	-	Semester	-
Co-requisites module	-	Semester	-

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

Module Objectives (Aims) أهداف المادة الدراسية	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 مخرجات التعلم للمادة الدراسية	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. 6- Cooperative learning by working collectively.
Indicative Contents المحتويات الإرشادية	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
استراتيجيات التعلم والتعليم

Strategies	This course aims to promote a set of learning strategies, including the strategy of learning by lecture, modeling and cooperative learning

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	87	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	13	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	0.9
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes				
	Assignments	Every 3 weeks	60%		All
	Projects / **Lab.**				
	Report				
Summative assessment	Midterm Exam				
	Final Exam	Week 15	40%		
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material 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	Preparatory week before the final Exam	

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

Grading Scheme
مخطط الدرجات

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

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

Module Information معلومات المادة الدراسية			
Module Title	English Language I	**Module Delivery**	
Module Type	Support	☒ Theory	
Module Code	ENGL112	☐ Lecture	
ECTS Credits	3	☐ Lab	
		☐ Tutorial	
SWL (hr/sem)	75	☐ Practical	
		☐ Seminar	
Module Level	1	**Semester of Delivery**	1
Administering Department	EMEU	**College**	EME
Module Leader	Yaser Ali Al -Yasiri	**e-mail**	50111@uotechnology.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	MSc.
Module Tutor	-	**e-mail**	-
Peer Reviewer Name	-	**e-mail**	-
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

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

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

Module Objectives أهداف المادة الدراسية	In this course, students will learn: • Proceeding the benefits of studying the English Language as a Second language • The knowledge about using Technical Terminologies in their studies • Understanding of using the scientific English language in the Academic Program How to write, describe, and type reports in English.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	In this course, – English Language I - students will learn: 1. Introduction to English. 2. Grammar: a. Verbs (regular verbs, irregular Verbs, Verb to Be, Modal Verbs). b. Adjectives (Adjective + Noun) c. Adverbs (Adverbs of Frequency). d. Negatives. e. Nouns (Plural Nouns). f. Pronouns. g. Preposition. h. Possessive (Possessive 's, Possessive Adjectives). i. Question Words. j. Requests and Offers. k. Tenses (Present Simple, Past Simple, Present Continuous, Present Simple and Present Continuous, Future Tense). 3. Vocabulary (Countries, Plurals, Jobs, Personal Information, Languages and Nationalities, The time, Places, Shopping, Transport, Food, Roleplay, Colours, Clothes, Revision). 4. Skills Work (Reading and Vocabulary, Listening and Writing, Listening and Speaking, Reading and Speaking, Speaking, Speaking and Writing, Reading and Listening, A mini Autobiography). Everyday English (Direction, Making Conversation – showing Interest, Going Sightseeing, Everyday Problems, Signs, Social Expression).
Indicative Contents المحتويات الإرشادية	a. Parts of Speech • What are the parts of speech? • Noun • Pronoun • Verb • Adjective

	- Adverb - Proposition - Conjunction - Interjection b. Preposition - What is the preposition? - Why does it use? - How does it use? c. Your world (unit Two). - How to know your world? - How to communicate with each other? - Knowing your Nationality. d. ALL ABOUT YOUR FAMILY AND FRIENDS - Personal information - Your family members. - Relatives and extended family. - Jobs. e. Everyday Life - Sport. - Food. - Drinks. - Activities. f. My favorite - Questions words. - Pronouns. - Demonstratives. - Adjectives. - Favorites. g. Where do I live? - Rooms. - Kitchen Furniture. - Bedroom Furniture. - Living Room Furniture. - Bathroom. - Grammar (difference between SOME and ANY). - Directions. - Grammar (difference between BUT&AND). - Because and So.

Learning and Teaching Strategies

	استراتيجيات التعلم والتعليم	
Strategies	The branch applies problem-based learning (new) and the student-active method, which helps the student getting the program outcomes.	

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**31**	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	**2**
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	**44**	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	**3**
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	1	5%	5	LO # 1 , 2, 3
	Assignments	1	7.5%	1 - 9	LO # 4 , 5
	Projects / Lab.				
	Report	1	2.5 %	11	6
Summative assessment	**Midterm Exam**	1.5 hr	15%	10	LO # 1 - 6
	Final Exam	3 hr	70%	17	All
Total assessment			100% (100 Marks)		

	Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري
	Material Covered
Week 1	Parts of speech, Introduction of English language, Sentences
Week 2	Introduction
Week 3	Countries
Week 4	Jobs
Week 5	Family
Week 6	The time
Week 7	preposition of time
Week 8	My favorites
Week 9	Rooms and furniture
Week 10	Mid-term Exam
Week 11	Question
Week 12	Saying years
Week 13	Questions (past simple)
Week 14	present continuous
Week 15	Positive (present continuous)
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	John and Liz Soars "New Headway Plus" Student's book.	Yes
Recommended Texts	John and Liz Soars "New Headway Plus" Workbook without key	Yes
Websites		

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

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

Module Information		
معلومات المادة الدراسية		
Module Title	Mathematics I	**Module Delivery**
Module Type	Basic	☒ **Theory** ☐ **Lecture** ☐ **Lab**
Module Code	MATH113	

ECTS Credits	6	☐ Tutorial
		☐ Practical
SWL (hr/sem)	150	☐ Seminar

Module Level	1	Semester of Delivery	1
Administering Department	EMEU	College	EME
Module Leader	Mayada Taki Wazi	e-mail	Mayada.t.wazi @uotechnology.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	MSc.
Module Tutor	-	e-mail	-
Peer Reviewer Name	-	e-mail	-
Scientific Committee Approval Date	07/06/2023	Version Number	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	-	Semester	-
Co-requisites module	-	Semester	-

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

Module Objectives (Aims) أهداف المادة الدراسية	1. To develop problem solving skills and understanding of Mathematical methods and theorems 2. To understand Functions, Determinants , Matrices , Complex numbers and Vectors 3. This course deals with the basic concept of Mathematics. 4. This is the basic subject for Higher Engineering Mathematics 5. To understand grammar's rule.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	In this course, for students will learn: 1. Summarize a basic Mathematics 2. Recognize functions inequality, intervals, domain and range 3. Discuss the relationship between trigonometric functions, inverse trigonometric functions 4. Describe conic sections (Circle, Parabola, Ellipse, Hyperbola)

	5. Define; Matrices , Determinants , Limits and Continuity 6. Identify the basic vectors and their applications 7. Discuss the operations of Matrices and Determinants 8. Discuss the complex numbers and its applications.
Indicative Contents المحتويات الإرشادية	In this course, students will learn: • Quadratic formula, binomial formula • Straight line, conic sections (Circle, Parabola, Ellipse, Hyperbola) • Functions (Inequality, Intervals, Domain and Range) • Functions (Inverse Functions, Drawing Function, Absolute Value) • Functions (Trigonometric Functions, Inverse Trigonometric Functions, Logarithmic Function) • Functions (Natural Logarithmic Function, Exponential Function, Hyperbolic Functions) • Functions (Inverse Hyperbolic Functions) • Limits and Continuity • Determinants (Properties, Grammer's Rule, Applications) • Matrices (Operations, Inverse of Square Matrix, Eigen Values and Eigen Vectors) • Polar Coordinates • Complex Numbers • Applications of Complex Numbers • Vectors, Properties of Vectors • Vectors in Free Space • Applications of Vectors

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The branch uses a problem-based learning which new and student active method. The method helps the student getting the program outcomes.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ **15** اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	1	7.5%	5	LO # 1 , 2, 3
	Assignments	1	7.5%	7	LO # 4 , 5
	Projects / Lab.				
	Report				
Summative assessment	**Midterm Exam**	1.5 hr	15%	10	LO # 1 - 6
	Final Exam	3 hr	70%	17	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered

Week 1	Introduction , quadratic formula , binomial formula Straight line, conic section (circle, parabola, Inequality, intervals, domain and range, Inverse function.
Week 2	Drawing function, Absolute value, Trigonometric function Inverse trigonometric function
Week 3	Logarithmic function, natural logarithmic function, Exponential function
Week 4	Hyperbolic functions, Inverse hyperbolic function
Week 5	Limits and continuity
Week 6	Matrices and Determinants, properties, Grammers Rule
Week 7	Applications, Matrices (operations)
Week 8	Inverse of Square matrix
Week 9	Eigen values and Eigen vectors
Week 10	**Mid-term Exam** , Cartesian coordinates
Week 11	Polar coordinates
Week 12	Complex Numbers and its applications
Week 13	Vectors
Week 14	Properties of vectors
Week 15	Vectors in free space, Applications of vectors
Week 16	**Preparatory week before the final Exam**

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

Required Texts	Thomas Calculus, George B. Thomas et al, 12th, edition, 2010, USA	Yes
Recommended Texts	- Howard Anton and et all, calculus, 7th edition, 2002. - K. A. Stroud, Engineering mathematics, 2nd edition, Hong Kong,1983 - George B. Thomas, calculus & Analytic geometry, 4th edition,USA,1974 - Mark Dugopolski, intermediate Algebra, 3rd edition, 2000 - John bird , "Higher Engineering Mathematics", 5th edition, Britain, 2006	No
Websites	https://www.coursera.org/browse/ mathematical-science-and-engineering/ engineering mathematics	

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 Title	Physics I	Module Delivery	
Module Type	Basic	☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	PHYS114		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	1	Semester of Delivery	1
Administering Department	EMEU	College	EME
Module Leader	Dr. Huda Akram Al-Salihi	e-mail	50286@uotechnology.edu.iq
Module Leader's Acad. Title	Asst. Prof.	Module Leader's Qualification	Ph.D.
Module Tutor	-	e-mail	-
Peer Reviewer Name	-	e-mail	-
Scientific Committee Approval Date	07/06/2023	Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	-	Semester	-
Co-requisites module	-	Semester	-

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives	1. Analyze the atomic structure and types of atomic bonding in solid

أهداف المادة الدراسية	materials. 2. To develop problem-solving skills and an understanding of the types of forces. 3. Apply static and kinetic friction laws in different cases. 4. Study and apply Newton's Laws 5. Study gravitational force and gravitational field strength
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	As a result of taking this course, students should be able to: 1. Demonstrate an understanding of the scientific method of Atomic Structure and Interatomic Bonding. 2. Demonstrate knowledge and understanding of Newton's Laws in everyday life. 3. Discuss the Types and interaction of forces and outline practical applications. 4. Demonstrate knowledge of the fundamentals of the Gravitation and Gravitational Fields 5. Explain the gravitational field strength and discuss different aspects of the Gravitation and Gravitational Fields in the universe.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Fundamental to the Engineering Physics. 1. Atomic Structure and Interatomic Bonding 2. Types and interaction of forces 3. Applying Newton's Laws 4. Fundamental of the Gravitation and Gravitational Fields 5. Application of gravitational field strength

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The branch use a problem based learning which new and student active

	method. The method helps the student getting the program outcomes.

Student Workload (SWL)				
الحمل الدراسي للطالب محسوب لـ **15** اسبوعا				
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل		59	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل		41	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل		100		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	7.5%	5 and 10	LO # 1, 2 & # 10, 11
	Assignments	2	7.5%	2 and 12	LO # 3, 4 & # 6, 7
	Projects / Lab.				
	Report				
Summative assessment	**Midterm Exam**	1.5 hr	15%	7	LO # 1 - 7
	Final Exam	3 hr	70%	16	All
Total assessment			100% (100 Marks)		

	Delivery Plan (Weekly Syllabus)
	المنهاج الاسبوعي النظري
	Material Covered
Week 1	Introduction – Engineering Physics
Week 2	Scope of Mechanical Physics
Week 3	Atomic theory
Week 4	Atomic Bonding in Solid Materials
Week 5	Types and interactions of Forces
Week 6	Static and Kinetic Friction Force
Week 7	Newton's Law : Law of Inertia
Week 8	Newton's Law: Law of Motion
Week 9	Newton's Law: Law of Action-Reaction
Week 10	Applying Newton's Laws
Week 11	Fundamental of the Gravitation and Gravitational Fields strength
Week 12	Newton's Law of Gravitation
Week 13	Types of Gravitational Fields
Week 14	Gravitational field strength
Week 15	Application of gravitational field strength
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

	مصادر التعلم والتدريس	
	Text	**Available in the Library?**
Required Texts	Samuel J. Ling, Jeff Sanny, William Moebs" University Physics Volume 1" OpenStax, 2021	Yes
Recommended Texts	Samuel J. Ling, Jeff Sanny, William Moebs" University Physics Volume 2" OpenStax, 2021	Yes
Websites		

Grading Scheme

مخطط الدرجات

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

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

Module Information

معلومات المادة الدراسية

Module Title	**Engineering Drawing (AutoCAD)**	Module Delivery

Module Type	Support	☐ Theory
Module Code	**ENDR 125**	☐ Lecture
		☒ Lab
ECTS Credits	**4**	☐ Tutorial
		☐ Practical
SWL (hr/sem)	**100**	☐ Seminar

Module Level	1	Semester of Delivery	1
Administering Department	EMEU	College	EME
Module Leader	Waleed Y. Shihab	e-mail	50195@uotechnology.edu.iq
Module Leader's Acad. Title	Assist. Lect.	Module Leader's Qualification	MSc.
Module Tutor	-	e-mail	-
Peer Reviewer Name	-	e-mail	-
Scientific Committee Approval Date	07/06/2023	Version Number	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	-	Semester	-
Co-requisites module	-	Semester	-

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

| Module Objectives

أهداف المادة الدراسية	Students learn how to create, edit, store, and print engineering drawings.
Module Learning Outcomes	Tour of AutoCAD.

2- User Interface.

3- Entering commands. |

مخرجات التعلم للمادة الدراسية	4- Basic Objects. 5- Object selection. 6- Entering coordinates. 7- Object snap. 8- Construction Aids. 9-Solid and curved objects. 10- Adding and Altering objects. 11- Moving and Duplicating Objects.
Indicative Contents المحتويات الإرشادية	1-Tour of AutoCAD. 2- User Interface. 3- Entering commands. 4- Basic Objects. 5- Object selection. 6- Entering coordinates. 7- Object snap. 8- Construction Aids. 9-Solid and curved objects. 10- Adding and Altering objects. 11- Moving and Duplicating Objects. 12- Modifying and Maneuvering**.**

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The branch uses problem-based learning which new and student-active method. The method helps the student get the program outcomes.

<table>
<tr><td colspan="4" align="center">**Student Workload (SWL)**

الحمل الدراسي للطالب محسوب لـ **15** اسبوعا</td></tr>
<tr><td>**Structured SWL (h/sem)**

الحمل الدراسي المنتظم للطالب خلال الفصل</td><td align="center">59</td><td>**Structured SWL (h/w)**

الحمل الدراسي المنتظم للطالب أسبوعيا</td><td align="center">4</td></tr>
<tr><td>**Unstructured SWL (h/sem)**

الحمل الدراسي غير المنتظم للطالب خلال الفصل</td><td align="center">41</td><td>**Unstructured SWL (h/w)**

الحمل الدراسي غير المنتظم للطالب أسبوعيا</td><td align="center">2.7</td></tr>
<tr><td>**Total SWL (h/sem)**

الحمل الدراسي الكلي للطالب خلال الفصل</td><td colspan="3" align="center">**100**</td></tr>
</table>

<table>
<tr><td colspan="6" align="center">**Module Evaluation**

تقييم المادة الدراسية</td></tr>
<tr><td></td><td></td><td>**Time/Number**</td><td>**Weight (Marks)**</td><td>**Week Due**</td><td>**Relevant Learning Outcome**</td></tr>
<tr><td rowspan="4">**Formative assessment**</td><td>**Quizzes**</td><td></td><td></td><td></td><td></td></tr>
<tr><td>**Assignments**</td><td></td><td></td><td></td><td></td></tr>
<tr><td>**Projects / Lab.**</td><td>1.5/2</td><td>25% (25)</td><td>7, 10</td><td>LO #1 - #7</td></tr>
<tr><td>**Report**</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">**Summative assessment**</td><td>**Midterm Exam**</td><td>1.5hr</td><td>15% (15)</td><td>10</td><td>LO #1 - #10</td></tr>
<tr><td>**Final Exam**</td><td>3hr</td><td>60% (60)</td><td>16</td><td>All</td></tr>
<tr><td colspan="2">**Total assessment**</td><td></td><td>100% (100 Marks)</td><td></td><td></td></tr>
</table>

<table>
<tr><td align="center">**Delivery Plan (Weekly Syllabus)**</td></tr>
</table>

	المنهاج الاسبوعي النظري
	Material Covered
Week 1	Tour of AutoCAD.
Week 2	User Interface.
Week 3	Entering commands.
Week 4	Basic Objects.
Week 5	Object selection.
Week 6	Entering coordinates.
Week 7	Object snap.
Week 8	Construction Aids.
Week 9	Solid and curved objects.
Week 10	Mid-term Exam
Week 11	Moving and Duplicating Objects.
Week 12	Modifying and Maneuvering.
Week 13	Orthographic projection.
Week 14	Isometric Projection.
Week 15	Preparing for the final exam
Week 16	Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Computer Aided Drawing. Assistant professor Ali Hussein Ali Saeed, UOT, 2011	Yes
Recommended Texts	Engineering Drawing. Assistant professor Abed Alrassol AL-Khfaf , UOT , 1990	No
Websites		

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

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

Module Information

معلومات المادة الدراسية

Module Title	**Engineering Mechanics I**	Module Delivery	
Module Type	Core	☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	**ENME116**		
ECTS Credits	**5**		
SWL (hr/sem)	**100**		
Module Level	1	Semester of Delivery	1
Administering Department	EMEU	College	EME
Module Leader	Walaa.M.Hashim	e-mail	50091@uotechnology.edu.iq
Module Leader's Acad. Title	Asst.Prof.	Module Leader's Qualification	Ph.D.
Module Tutor	-	e-mail	-
Peer Reviewer Name	-	e-mail	-
Scientific Committee Approval Date	07/06/2023	Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	-	Semester	-
Co-requisites module	-	Semester	-

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	In this course, students learn how to apply the basic principles from physics and mechanics to analysis and solve the forces, moment and couples problems. And also students learn how to apply the basic principles from physics and mechanics to analysis and solve the forces, moment and couples problems in three-dimensional (3D).
Module Learning Outcomes	In this course, students will learn: 1. Fundamentals of Engineering Mechanics 2. How to analyze the forces and moment in mechanisms

مخرجات التعلم للمادة الدراسية	3. Calculate the Resultant in two dimensional force systems 4. Fundamentals of Engineering Mechanics(3D) 5. How to analyze the forces and moment in mechanisms(3D) 6. Calculate the Resultant in three-dimensional force systems
Indicative Contents المحتويات الإرشادية	In this course, for engineering mechanics students will learn: ● Introduction to Statics ● Scalar quantity, vector quantity, standers units ● Two-dimensional force systems, rectangular components ● Moment, principle of moment, couple, couple-force system ● Resultants ● Three-dimensional force system, component forces for three dimensions ● Moment in three-dimensional force system, dot product, couple in three-dimensional force system, couple-force system in three-dimensional force system ● Resultant in three-dimensional force systems ● Equilibrium, free body diagram ● Three-dimensional force system, component forces for three dimensions ● Moment in three-dimensional force system, dot product, couple in three-dimensional force system, couple-force system in three-dimensional force system ● Resultant in three-dimensional force systems ● Equilibrium, free body diagram ● Structures analysis

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to encourage

	students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	73	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	41	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**		

Module Evaluation				
تقييم المادة الدراسية				
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	7.5% (7.5)	5	LO #1, 2,3
	Assignments	1	7.5% (7.5)	7	LO #4 ,5
	Projects / Lab.	1	10% (10)	Continuous	All
	Report				
Summative assessment	Midterm Exam	1.5hr	15% (15)	10	LO #1 - 5
	Final Exam	3hr	60% (60)	16	All

Total assessment	100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to static
Week 2	Two–dimensional force systems
Week 3	rectangular components
Week 4	Resultants
Week 5	Moment in three-dimensional force system,
Week 6	Dot product
Week 7	Couple in three-dimensional force system
Week 8	Equilibrium
Week 9	Mid-term Exam
Week 10	Free body diagram
Week 11	Structures
Week 12	Composite bodies & figures: Approximations
Week 13	Resultant in three –dimensional force systems.
Week 14	Friction: Types of friction, types of friction problem .
Week 15	Moment of inertia-composite area.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Weeks 1 and 2	The determination of the resultant of two forces (or more)
Weeks 3 and 4	The determination of friction coefficient between two surfaces
Weeks 5 and 6	Centroids and center of gravity
Weeks 7 and 8	Center of gravity of the composite areas
Weeks 9 and 10	The investigation of Hook's law using helical spring
Weeks 11 and 12	The fundamental law of rotation
Weeks 13 and 14	The law of energy conservation
Week 15	Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Engineering Mechanics Statics, J. L. Meriam and L.G. Kraige, John Wiley & Sons, 2013.	Yes
Recommended Texts	R. C. Hibbeler, "Engineering Mechanics: Statics & Dynamics", 14th ed. Pearson Prentice Hall.	Yes
Websites		

Grading Scheme

مخطط الدرجات

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

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

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Module Information معلومات المادة الدراسية				
Module Title	Fundamental of Electrical Engineering I		**Module Delivery**	
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	FEEN117			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level	1	**Semester of Delivery**		1
Administering Department	EMEU	**College**	EME	
Module Leader	Zainab Basheer Abdullah	**e-mail**	Zainab.B.Abdullah @uotechnology.edu.iq	
Module Leader's Acad. Title	Lect.	**Module Leader's Qualification**		MSc.
Module Tutor	-	**e-mail**	-	
Peer Reviewer Name	-	**e-mail**	-	
Scientific Committee Approval	07/06/2023	**Version Number**		1.0

Date			

<table>
<tr><td colspan="4" align="center">Relation with other Modules

العلاقة مع المواد الدراسية الأخرى</td></tr>
<tr><td>Prerequisite module</td><td>-</td><td>Semester</td><td>-</td></tr>
<tr><td>Co-requisites module</td><td>-</td><td>Semester</td><td>-</td></tr>
</table>

<table>
<tr><td colspan="2" align="center">Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية</td></tr>
<tr>
<td>Module Objectives

أهداف المادة الدراسية</td>
<td>
1. To develop problem solving skills and understanding of circuit theory through the application of techniques.
2. To understand voltage, current and power from a given circuit.
3. This course deals with the basic concept of electrical circuits.
4. This is the basic subject for all electrical circuits.
5. To understand Kirchhoff's current and voltage Laws problems.
6. To perform mesh and Nodal analysis.
</td>
</tr>
<tr>
<td>Module Learning Outcomes

مخرجات التعلم للمادة الدراسية</td>
<td>
1. Recognize how electricity works in electrical circuits.
2. List the various terms associated with electrical circuits.
3. Summarize what is meant by a basic electric circuit.
4. Discuss the reaction and involvement of atoms in electric circuits.
5. Describe electrical power, charge, and current.
6. Define Ohm's law.
7. Identify the basic circuit elements and their applications.
8. Discuss the various properties of resistors, capacitors, and inductors.
9. Explain the two Kirchoff's laws used in circuit analysis.
10. Identify the method of analysis (Mesh & Nodal) method.
11. Identify the network theorem of Thevenin's and Norton's.
</td>
</tr>
<tr>
<td>Indicative Contents</td>
<td>Indicative content includes the following.</td>
</tr>
</table>

المحتويات الإرشادية	**Part A : D-C circuit**
	A- Ohm's law, power, energy, efficiency
	B- Resistances in series , voltage source in series ,KVL ,batteries, polarity & drop voltages, voltage divider rule ,voltage relation(relative potential ,voltage description with one & tow points) ,Internal resistance of voltage source , voltage regulation .
	C- DC parallel circuits.
	Resistance in parallel, parallel network, KCL, current divider rule, open & short circuit.
	D- Series- parallel circuits.
	Series- parallel network KS, Ladder networks.
	E- Current Sources
	A source conversion, dependent & independent source, current source in series, current source in parallel.
	Analysis Method :
	Brunch current method, loop current method (mesh), Nodal voltage method, Bridges method, Delta-Star transformation and Star-Delta transformation.
	Network Theorems : Super position theorem, Thevinin's , Norton's theorem.

	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 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	41	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	5%	5	LO # 1 , 2, 3
	Assignments	1	5%	1-9	LO # 4 , 5
	Projects / Lab.		10%		
	Report	1	5 %	11	6
Summative assessment	Midterm Exam	1.5 hr	15%	10	LO # 1 - 6
	Final Exam	3 hr	60%	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered

Week 1	Introduction - Ohm's law, power, energy, efficiency.
Week 2	Resistances in series , voltage source in series ,KVL ,batteries, polarity & drop voltages.
Week 3	voltage divider rule ,voltage relation(relative potential ,voltage description with one & tow points) .
Week 4	Internal resistance of voltage source ,voltage regulation .
Week 5	DC parallel circuits.
Week 6	Resistance in parallel, parallel network.
Week 7	KCL, current divider rule, open & short circuit.
Week 8	Series- parallel circuits. Series- parallel network KS, Ladder networks.
Week 9	Current Sources : A source conversion, dependent & independent source, current source in series, current source in parallel .
Week 10	Analysis Method : Brunch current method, loop current method (mesh).
Week 11	Nodal voltage method, Bridges method.
Week 12	Delta-Star transformation and Star-Delta transformation.
Week 13	Network Theorems : Super position theorem.
Week 14	Thevinin's theorem.
Week 15	Norton's theorem.
Week 16	**Preparatory week before the final Exam**

<div align="center">

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

</div>

	Material Covered
Week 1 and 2	Lab 1: - Ohm's law
Week 3 and 4	Lab 2: Kirchoff's laws
Week 5 and 6	Lab 3: Delta / Star + transformation

Week 7 and 8	Lab 4: The venin's theorem
Week 9 and 10	Lab 5: Super Position theorem
Week 11 and 12	Lab 6: Induction & Capacitive Reactance
Week 13 and 14	Lab 7: Oscilloscope

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Introductory circuit Analysis by Robert L. Boylestad .	Yes
Recommended 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	

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

(0 – 49)	F – Fail	راسب	(0-44)	Considerable amount of work required

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

MODULE DESCRIPTION FORM

SEMESTER 2

Module Information معلومات المادة الدراسية					
Module Title	**Workshops I**		**Module Delivery**		
Module Type	**Support**		☐ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☒ Practical ☐ Seminar		
Module Code	**WOSH111**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level		1	**Semester of Delivery**		2
Administering Department		EMEU	**College**	EME	
Module Leader	Training and Workshops Center		**e-mail**	twc @uotechnology.edu.iq	
Module Leader's Acad. Title	Assist. Lect.		**Module Leader's Qualification**		MSc
Module Tutor	-		**e-mail**	-	

Peer Reviewer Name	-	e-mail	-
Scientific Committee Approval Date	07/06/2023	**Version Number**	1.0

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	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 مخرجات التعلم للمادة الدراسية	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.
	6- Cooperative learning by working collectively.
Indicative Contents المحتويات الإرشادية	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
استراتيجيات التعلم والتعليم

Strategies	This course aims to promote a set of learning strategies, including the strategy of learning by lecture, modeling and cooperative learning
Student Workload (SWL)	

الحمل الدراسي للطالب محسوب لـ **15** اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	87	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	13	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	0.9
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**				
	Assignments	Every 3 weeks	60% 0)		All
	Projects / Lab.				
	Report				
Summative assessment	**Midterm Exam**				
	Final Exam	Week 16	40% (40)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered

Week 1	Fitting workshop Occupational safety and its importance in filing workshops -An introduction to the basics of filing -Pen holder exercise "preparation and preparation
Week 2	Fitting workshop Pencil holder exercises finishing and assembling
Week 3	Fitting workshop -The catcher exercise. - Clamping exercise. Written exam in practical exercises.
Week 4	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 5	Carpentry workshop Garden fence work and how to connect its parts, the eight-star exercise
Week 6	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 7	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 8	The tinsmith workshop

	Geometric shapes
	Types of individuals and methods of individuals
	Geometric shape individuals exercise on a metal board
Week 9	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 10	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 11	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 12	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 13	Supplementary training curriculum
	Welding workshop
	Plumbing workshop
	Blacksmith's workshop
Week 14	Supplementary training curriculum
	Welding workshop
	Plumbing workshop
	Blacksmith's workshop
Week 15	Supplementary training curriculum
	- Automotive workshop
	- Turning workshop
	Fitting workshop

Week 16	Supplementary training curriculum Carpentry workshop The plumbing workshop electric Workshop	

<table>
<tr><td colspan="3">Learning and Teaching Resources

مصادر التعلم والتدريس</td></tr>
<tr><td></td><td>Text</td><td>Available in the Library?</td></tr>
<tr><td>Required Texts</td><td></td><td></td></tr>
<tr><td>Recommended Texts</td><td></td><td></td></tr>
<tr><td>Websites</td><td></td><td></td></tr>
</table>

<table>
<tr><td colspan="5">Grading Scheme

مخطط الدرجات</td></tr>
<tr><td>Group</td><td>Grade</td><td>التقدير</td><td>Marks %</td><td>Definition</td></tr>
<tr><td rowspan="5">Success Group
(50 - 100)</td><td>A - Excellent</td><td>امتياز</td><td>90 - 100</td><td>Outstanding Performance</td></tr>
<tr><td>B - Very Good</td><td>جيد جدا</td><td>80 - 89</td><td>Above average with some errors</td></tr>
<tr><td>C - Good</td><td>جيد</td><td>70 - 79</td><td>Sound work with notable errors</td></tr>
<tr><td>D - Satisfactory</td><td>متوسط</td><td>60 - 69</td><td>Fair but with major shortcomings</td></tr>
<tr><td>E - Sufficient</td><td>مقبول</td><td>50 - 59</td><td>Work meets minimum criteria</td></tr>
<tr><td rowspan="2">Fail Group
(0 – 49)</td><td>FX – Fail</td><td>راسب (قيد المعالجة)</td><td>(45-49)</td><td>More work required but credit awarded</td></tr>
<tr><td>F – Fail</td><td>راسب</td><td>(0-44)</td><td>Considerable amount of work required</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table>

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 Information

معلومات المادة الدراسية

Module Title	**Mathematics II**	Module Delivery	
Module Type	**Basic**	☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	**MATH122**		
ECTS Credits	**6**		
SWL (hr/sem)	**150**		
Module Level	1	**Semester of Delivery**	2
Administering Department	EMEN	**College**	EME
Module Leader	Lect. Mayada Taki Wazi	**e-mail**	Mayada.t.wazi @uotechnology.edu.iq
Module Leader's Acad. Title	Lecturer / MSc.	**Module Leader's Qualification**	MSC. applied sciences/applied mathematics
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	-	**Semester**	-
Co-requisites module	-	**Semester**	-

Module Aims, Learning Outcomes and Indicative Contents

	أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية
Module Objectives (Aims) أهداف المادة الدراسية	The students will learn the second part of the basic math 1. To develop problem solving skills and understanding of mathematical methods and theorems 2. To understand techniques of derivative 3. This course deals with the basic concept of differentiation , integration and differential equations D.E. 1st degree equation 4. Understanding and using integration's mathematical methods.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	In this course, for students will learn: 1. Summarize the differentiation , Integration and differential equations D.E. 1st degree 2. Recognize techniques of derivative. 3. Discuss applications of definite integral. 4. Describe some methods to solve differential equations D.E. 1st degree 5. Define implicit differentiation, partial fractions. 6. Identify definite integrals and definite integrals. 7. Discuss the operations of differentiation, integration. 8. Using integrations methods: by parts and by tabular
Indicative Contents المحتويات الإرشادية	In this course, students will learn: 1. Differentiation (Derivative Definition, Techniques of Derivative, Applications) • Differentiation (Derivative of Trigonometric Functions • Derivative of Inverse Trigonometric Functions, Chain Rule) • Differentiation (Parametric Equations, Implicit Differentiation) • Differentiation (Derivative of Some Functions, Derivative of Hyperbolic Functions, Derivative of Inverse Hyperbolic Functions) 2. Integration (Indefinite Integrals & Substitution Rule) • Integration (Definite Integrals, Properties, Relation Between Indefinite & definite Integrals) • Forms of Integration (Substitution Methods, By Part, By Tabular) • Integration (Partial Fractions For 2nd Equation Degree in Denominator) • Integration (Product between Trigonometric Functions, Product Between Hyperbolic Functions) • Integration (Simple Square Root, Trigonometric Substitutions, Hyperbolic Substitutions) • Integration of (Irrational Functions, Rational Functions)

• Applications of Definite Integral(Area, Area Under the Curve, Area between Curve and y-axis, Area Between Two Curves)
3. Differential Equations D.E, 1st degree ;
    • (1-Direct Integration , 2-Variable Separable)
    • (3- Homogeneous, 4- Linear Equations 5- Exact equations)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The branch use a problem based learning which new and student active method. The method helps the student getting the program outcomes.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ **15** اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation

تقييم المادة الدراسية

	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome

Formative assessment	Quizzes	6	7.5% (7.5)	5 to 10	LO #1, #2 and #10, #11
	Assignments	5	7.5% (7.5)	2 to 12	LO #3, #4 and #6, #7
	Projects / Lab.				
	Report				
Summative assessment	Midterm Exam	1.5hr	15% (15)	10	LO #1 - #10
	Final Exam	3hr	70% (70)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Differentiation Derivative by definition Techniques of differentiation & Applications
Week 2	Derivative of trigonometric functions Derivative of inverse trigonometric functions Chain rule, Parametric equation
Week 3	Implicit differentiation Derivative of some functions Derivative of hyperbolic functions Derivative of inverse of hyperbolic functions
Week 4	Integration : 2-1 Indefinite of integral Definite of integral ,Properties
Week 5	Relation between indefinite& definite integral Forms of integration

	Substitution
	By parts
Week 6	By tabulate
	By partial fractions
	For 2nd equation degree in denominator
	Product between trigonometric functions
	Product between hyperbolic functions
Week 7	Simple square root
	Trigonometric substitutions
	Hyperbolic substitutions
Week 8	Integration of irrational functions
	Integration of rational function
	Applications of definite integral
Week 9	Mid-term Exam
Week 10	Areas
	Area under the curve
	Area between curve and y- axis : 2-4-3 area between two curves
	Area in polar co-ordinates
Week 11	Volumes by slicing ,Disks around x-axis
Week 12	Disks around y-axis
	Volume in polar co-ordinate
Week 13	1st of D.E
	Introduction
Week 14	Formation of differential equation
	Solution of differential equation
Week 15	Method-1-by direct integration
	Method -2- by separating the variables

	Method -3- homogeneous equation
	Method -4- linear equation , use of integrating factor
	Method -5- Exact equation
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Thomas Calculus, George B. Thomas et al, 12th, edition, 2010, USA.	Yes
Recommended Texts	- Howard Anton and et all, calculus, 7th edition, 2002. -K.A.Stroud, Engineering mathematics,2nd edition, Hong Kong, 1983 - George B. Thomas, calculus & Analytic geometry, 4th edition, USA ,1974 - Mark Dugopolski , intermediate Algebra, 3rd edition, 2000 - John bird , "Higher Engineering Mathematics" , 5th edition, Britain, 2006	No
Websites	https://www.coursera.org/browse/ mathematical-science-and-engineering/ engineering mathematics	

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	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0 – 49)	F – Fail	راسب	(0-44)	Considerable amount of work required

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

Module Information
معلومات المادة الدراسية

Module Title	**Physics II**	Module Delivery	
Module Type	**Basic**	☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	**PHYS123**		
ECTS Credits	**4**		
SWL (hr/sem)	**100**		

Module Level	1	Semester of Delivery	2
Administering Department	EMEN	**College**	EME
Module Leader	Huda Akram Al-Salihi	**e-mail**	50286@uotechnology.edu.iq
Module Leader's Acad. Title	Asst. Prof.	**Module Leader's Qualification**	Ph.D.
Module Tutor	-	**e-mail**	-
Peer Reviewer Name	-	**e-mail**	-
Scientific Committee Approval Date	07/06/2023	**Version Number**	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	-		Semester	-
Co-requisites module	-		Semester	-

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	This course provides the concepts and the main features of the materials engineering and materials science, including classification of the engineering materials, crystal structure, crystal system for the solid materials, elastic and plastic behavior of metallic materials, hardness and other mechanical properties
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	In this course, students will learn: 1. Concept of materials science and materials engineering. 2. Study the general classification of engineering materials, in addition to the concept and types of advanced materials, especially composite materials. 3. Identify the crystal structure for the solid materials 4. Study the crystal systems for the solid materials 5. Study the mechanical properties of metallic materials where including mechanical test types and (elastic, plastic) behaviors.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1. Introduction to materials science and engineering. 2. Classification of engineering materials. 3. Composite Materials 4. Crystal Structure and Crystal Systems 5. Mechanical properties of the metallic materials .

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The branch use a problem based learning which new and student active method. The method helps the student getting the program outcomes.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ **15** اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	41	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل		**100**	

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	7.5% (7.5)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	7.5% (7.5)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.				
	Report				
Summative assessment	**Midterm Exam**	1.5 hr	15% (15)	10	LO #1 - #10
	Final Exam	3hr	70% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	المنهاج الاسبوعي النظري	
	Material Covered	
Week 1	Introduction to the Materials Science and Engineering	
Week 2	Classification of Engineering Materials	
Week 3	Characterization of the metallic materials	
Week 4	Characterization of polymeric and ceramic materials	
Week 5	Characterization of composite materials	
Week 6	Crystal Structure in the solid materials	
Week 7	Crystal Systems	
Week 8	Crystal & Space Lattice	
Week 9	Crystal System Types	
Week 10	**Mid-term Exam**, Atomic Packing Factor	
Week 11	Mechanical Properties of Metals / Elastic Deformation	
Week 12	Mechanical Properties of Metals/ Plastic Deformation	
Week 13	Engineering and True Stress- Strain Curve for Elastic and plastic materials	
Week 14	Brittle and Ductile materials	
Week 15	Examples	
Week 16	**Preparatory week before the final Exam**	

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

Required Texts	Prathap Haridoss" Physics of Materials: Essential Concepts of Solid-State Physics" Kindle Edition, 2015		Yes
Recommended Texts	Samuel J. Ling, Jeff Sanny, William Moebs" University Physics Volume 1" OpenStax, 2021		No
Websites			

Grading Scheme

مخطط الدرجات

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

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

Module Information

معلومات المادة الدراسية

Module Title	Computer Science I	**Module Delivery**	
Module Type	Support	☒ **Theory**	

Module Code	COSC124		☐ Lecture
ECTS Credits	4		☒ Lab
			☐ Tutorial
SWL (hr/sem)	Computer Science I		☐ Practical
			☐ Seminar

Module Level	1	Semester of Delivery	1
Administering Department	EMEU	College	EME
Module Leader	Ameer Abed Gaddoa	e-mail	ameer.A.Jaddoa @uotechnology.edu.iq
Module Leader's Acad. Title	Assist. Professor	Module Leader's Qualification	Ph.D.
Module Tutor	-	e-mail	-
Peer Reviewer Name	-	e-mail	-
Scientific Committee Approval Date	07/06/2023	Version Number	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	-	Semester	-
Co-requisites module	-	Semester	-

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

Module Objectives أهداف المادة الدراسية	In this course, the student will learn how to use software in his work (Visual Basic Language)
Module Learning Outcomes	In this course, – Computer Science students will learn: 1. Computer Hardware (Microprocessor, Memory, Input and Output Devices). Programming Languages, Operating Systems / Types of Files

مخرجات التعلم للمادة الدراسية	and Directories
	2. Numbers representation (Binary, Decimal, Octal, Hexadecimal)
	3. Logic Gates
	4. Algorithm and Flow Chart
	5. Programming in Visual Basic:
	    a. Introduction to visual basic
	    b. Elements of the Integrated Development Environment (IDE)
	    c. Toolbox (Properties and its Events)
	    d. Built the project by using Toolbox and Properties Window
	    e. Built the project by using Code Module
	    f. Input box and Messages box
	    g. Visual Basic Operators
	    h. Conditional Statements (IF, Select Case)
	6. One Dimensional Array
	7. Two Dimensional Array Subroutine

Indicative Contents المحتويات الإرشادية	In this course for Computer Science, the topics are: ● Logic Gates ● Numbers representation (Binary, Decimal, Octal, Hexadecimal) ● Algorithm & Flow Chart ● Programming in Visual Basic

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The branch use a problem based learning which new and student active method. The method help the student getting the program outcomes.

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**59**	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	**4**

Unstructured SWL (h/sem)	41	Unstructured SWL (h/w)	2.7
الحمل الدراسي غير المنتظم للطالب خلال الفصل		الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem)	100		
الحمل الدراسي الكلي للطالب خلال الفصل			

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	7.5%	5	LO # 1, 2
	Assignments	1	7.5%	7	LO # 3, 4
	Projects / Lab.	2	10%		
	Report				
Summative assessment	Midterm Exam	1.5 hr	15%	10	LO # 1 – 4
	Final Exam	3 hr	60%	17	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Computer Hardware Concepts
Week 2	Computer Software Concepts
Week 3	Application Software

Week 4	System Software
Week 5	Machine Language
Week 6	High Level Languages
Week 7	Assembly Language
Week 8	Programming Language
Week 9	Application Software
Week 10	Mid-term Exam
Week 11	Compiler and Interpreter
Week 12	Files & Folders
Week 13	Binary Decimal Octal and Hexadecimal number system
Week 14	Logic gates
Week 15	Algorithms & Flow Charts
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1 and 2	Windows 7 / operating systems
Week 3 and 4	Microsoft Word2007
Week 5 and 6	Microsoft Excel 2007
Week 7 and 8	Microsoft Power Point 2007
Week 9 and 10	Visual basic programming

Week 11 and 12	Assignment Statement
Week 13 and 14	Declaration Statement

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Introductory circuit Analysis by Robert L. Boylestad .	Yes
Recommended Texts	DC Electrical Circuit Analysis: A Practical Approach Copyright Year: 2020, dissidents.	No
Websites		

Grading Scheme

مخطط الدرجات

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

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

Module Information معلومات المادة الدراسية				
Module Title	Fundamental of Electrical Engineering		**Module Delivery**	
Module Type	Core		☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	FEEN125			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level	1	**Semester of Delivery**		1
Administering Department	EMEU	**College**	EME	
Module Leader	Zainab Basheer Abdullah	**e-mail**	Zainab.B.Abdullah @uotechnology.edu.iq	
Module Leader's Acad. Title	Lect.	**Module Leader's Qualification**		MSc.
Module Tutor	-	**e-mail**	-	
Peer Reviewer Name	-	**e-mail**	-	
Scientific Committee Approval Date	07/06/2023	**Version Number**	1.0	

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

Co-requisites module	-	Semester	-

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. To develop problem solving skills and understanding of circuit theory through the application of techniques. 2. To understand voltage, current and power from a given circuit. 3. This course deals with the basic concept of electrical circuits. 4. This is the basic subject for all electrical circuits. 5. To understand Kirchhoff's current and voltage Laws problems. 6. To perform mesh and Nodal analysis.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Recognize how electricity works in electrical circuits. 2. List the various terms associated with electrical circuits. 3. Summarize what is meant by a basic electric circuit. 4. Discuss the reaction and involvement of atoms in electric circuits. 5. Describe electrical power, charge, and current. 6. Define Ohm's law. 7. Identify the basic circuit elements and their applications. 8. Discuss the various properties of resistors, capacitors, and inductors. 9. Explain the two Kirchoff's laws used in circuit analysis. 10. Identify the method of analysis (Mesh & Nodal) method. 11. Identify the network theorem of Thevenin's and Norton's.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Indicative content includes the following. A-C circuit Impedance, admittance, phase diagram, resistance & capacitance, frequency response, inductive & capacitive, reaction power & power factor. AC series circuit, impedance phase diagram, R-L, R-C, series R-L-C, voltage divider rule, R-C frequency response, AC parallel circuits, admittance and phase diagram , R-L ,R-C & parallel R-L-C circuits, current divider rule, combined circuit. Method of A.C. Analysis :

	Source Conversions, Mesh Analysis. Nodal Analysis, Star-Delta and Delta-Star conversions. Network Theorems for A.C. Circuits : Thevenin's Theorem, Norton's Theorem

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 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	41	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	1	5%	5	LO # 1 , 2, 3
	Assignments	1	5%	1--9	LO # 4 , 5
	Projects / Lab.		10%		
	Report	1	5 %	11	6
Summative assessment	**Midterm Exam**	1.5 hr	15%	10	LO # 1 - 6
	Final Exam	3 hr	60%	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	AC circuits : Impedance, admittance, phase diagram,
Week 2	resistance & capacitance, frequency response, inductive & capacitive.
Week 3	reaction power & power factor.
Week 4	AC series circuit, impedance phase diagram.
Week 5	R-L, R-C, series R-L-C,
Week 6	voltage divider rule, R-C frequency response.
Week 7	AC parallel circuits, admittance and phase diagram.
Week 8	R-L ,R-C & parallel R-L-C circuits.
Week 9	current divider rule, combined circuit.
Week 10	Method of A.C. Analysis : Source Conversions.

Week 11	Mesh Analysis.
Week 12	Nodal Analysis.
Week 13	Star-Delta and Delta-Star conversions.
Week 14	Network Theorems for A.C. Circuits : Thevenin's Theorem.
Week 15	Norton's Theorem.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1 and 2	Lab 1: Thevenin's theorem
Week 3 and 4	Lab 2: Super Position theorem
Week 5 and 6	Lab 3: Induction & Capacitive Reactance
Week 7 and 8	Lab 4: Oscilloscope
Week 9 and 10	
Week 11 and 12	
Week 13 and 14	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Introductory circuit Analysis by Robert L. Boylestad .	Yes

Recommended 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	

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 Information

معلومات المادة الدراسية

Module Title	**Sports**	Module Delivery
Module Type	**Support**	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial**
Module Code	**SPOR121**	
ECTS Credits	**3**	

SWL (hr/sem)		**75**		☐ **Practical** ☐ **Seminar**	
Module Level		1	**Semester of Delivery**		2
Administering Department		EMEU	**College**	EME	
Module Leader	Muaid Waleed Nafai		**e-mail**	10755@uotechnology.edu.iq	
Module Leader's Acad. Title		Assist Prof	**Module Leader's Qualification**		MSc
Module Tutor	-		**e-mail**	-	
Peer Reviewer Name		-	**e-mail**	-	
Scientific Committee Approval Date		07/06/2023	**Version Number**	1.0	

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	-		**Semester**	-
Co-requisites module	-		**Semester**	-

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

Module Objectives أهداف المادة الدراسية	It aims to teach sport and its various arts as well as to follow-up with the latest professional and technical developments in sport sciences in order to graduate a highly qualified generation who can practice the professional sport in its different fields. Physical Education and Sport sciences aims to achieve the following: A. Knowledge and Understanding Demonstrate an understanding of the principles and concepts related to a variety of physical Education. B. Movement Composition Students should be able to compose and communicate meaning and ideas through movement. C. Performance and Application Apply tactics, strategies and rules in individual and group situations, health and fitness principles effectively

	through a variety of physical Activity.
	D. Social Skills At the end of the course's students should be able to: Work cooperatively, respect themselves, support and encourage others and develop attitudes and strategies that enhance their relationship with others
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A. Knowledge and Understanding A1. Enabling student to get the knowledge and understanding of the theoretical principles of sport. A2. This knowledge includes an in-depth understanding of the skills, tactics and strategies required for effective training, practices and game-day decisions. A3. Helping the students for achieving a physical fitness Improvement, sports skills Acquisition and mental abilities Improvement .
Indicative Contents المحتويات الإرشادية	1. To offer a variety of sports activities including traditional sports, outdoor sports, fitness, lifetime sports, etc., visits to out of school institutions, 2. To offer a variety of training methods to enhance physical fitness components using circuit training, video and ICT tools for movement analysis, observation sheets, etc. 3. To promote the use of self-evaluation sheets, tests, competitions, demonstrations, video analysis, etc., 4. To provide knowledge of the organization of an element of a lesson/a competition/ a tournament; to create awareness of the student's role as a team player, coach, referee, assistant, journalist, observer, etc., 5. To encourage participation with fair play: respecting others, the rules, materials and equipment, cooperating with others, working for a common goal and supporting the teacher, 6. To offer different topics to link theory and practice, being presented by the students as small projects in class.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم	
Strategies	The learning/ teaching of the sport complementary course develops individual and group needs. It is based on the following didactic principles: 1. acquiring new motor skills and further developing motor skills learned before, 2. using a variety of approaches and teaching methods, 3. focusing on students' varied learning styles and pace of learning, 4. using differentiation in order to meet students' individual needs, 5. focusing on students' abilities to apply skills, tactics and creative ideas, 6. reinforcing social skills, 7. promoting student's autonomy through teaching and learning, 8. improving students' performance by feedback, evaluation and self-evaluation, 9. linking and integrating practical and theoretical components, 10. using a range of teaching and learning resources including ICT.

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	31	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	44	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.9
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	7.5% (7.5)	5 and 10	LO #1, #2 and #10, #11
	Assignments				
	Projects / Lab.				
	Report	2	7.5% (7.5)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	1.5hr	15% (15)	10	LO #1 - #10
	Final Exam	3hr	70% (70)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Sports - concept, benefits and types
Week 2	Fitness - the concept and elements of fitness
Week 3	Football - concept + history,
Week 4	Football - basic soccer skills
Week 5	Football Law - Article 1, 2
Week 6	Football Law - Articles 3, 4, 5
Week 7	Basketball - concept + history

Week 8	Basketball - basic basketball skills
Week 9	Volleyball concept and skills
Week 10	Mid-term Exam
Week 11	Muscular system - concept + muscle, injuries
Week 12	Sport and Circulatory System
Week 13	Scouting - concept + stages + scouting law
Week 14	Biorhythm - concept + benefits + historical overview
Week 15	Biorhythm cycles
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	(الكرة الطائرة (تاريخ-مهارات-خطط-ادارة المباراة-والتدريب السلسلة الرياضية/ اساسيات لعبة كرة السلة التدريب الرياضي وآفاق المستقبل تطبيقات في تربية الحركة الكشفية استراتيجيات طرائق وأساليب التدريب الرياضي قانون كرة القدم	no
Recommended Texts		
Websites	https://www.s2s.net/home.php?P_hirek_azonosito=201 https://www.google.com/search?rlz=1C1GCEA_enIQ933IQ934&q	

Grading Scheme				
مخطط الدرجات				
Group	**Grade**	التقدير	**Marks %**	**Definition**
Success Group **(50 - 100)**	**A - Excellent**	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
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	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
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Module Information		
معلومات المادة الدراسية		
Module Title	**Engineering Mechanics II**	**Module Delivery**
Module Type	**Core**	☒ **Theory**

Module Code	**ENME127**		☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar
ECTS Credits	**5**		
SWL (hr/sem)	**125**		

Module Level	1	Semester of Delivery	1
Administering Department	EMEU	College	EME
Module Leader	Walaa.M.Hashim	e-mail	50091@uotechnology.edu.iq
Module Leader's Acad. Title	Asst.Prof.	Module Leader's Qualification	Ph.D.
Module Tutor	-	e-mail	-
Peer Reviewer Name	-	e-mail	-
Scientific Committee Approval Date	07/06/2023	Version Number	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	-	Semester	-
Co-requisites module	-	Semester	-

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

Module Objectives أهداف المادة الدراسية	To introduce the basic engineering principles required for analyzing and solving • Motion and the forces that produce it.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	To introduce the basic engineering principles required for analyzing and solving Motion and the forces that produce it.

	Indicative content includes the following.
Indicative Contents المحتويات الإرشادية	• Introduction to dynamic • Motion of particles: kinematics and kinetics • Newton's laws of motion • Work, energy, and power • Impulse and momentum Problem-Solving and Applications • Engineering problem-solving techniques • Case studies and practical examples

Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ **15** اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	73	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.5
Total SWL (h/sem)	**125**		

	الحمل الدراسي الكلي للطالب خلال الفصل

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	1	7.5% (7.5)	5	LO #1, 2,3
	Assignments	1	7.5% (7.5)	7	LO #4 ,5
	Projects / Lab.	1	10% (10)	Continuous	All
	Report				
Summative assessment	**Midterm Exam**	1.5hr	15% (15)	10	LO #1 - 5
	Final Exam	3hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to dynamic
Week 2	Kinematics of particles, rectilinear motion.
Week 3	Velocity , acceleration and ,motion laws
Week 4	Plane curvilinear motion (rectangular coordinate (x-y))
Week 5	Projectile motion
Week 6	Plane curvilinear motion(normal and tangential coordinates(n-t))

Week 7	Plane curvilinear motion(polar coordinates(r-θ))
Week 8	Kinetics of particles , Newton's second law
Week 9	Rectilinear motion.
Week 10	Mid-term Exam
Week 11	Curvilinear motion
Week 12	Kinetics of particles, Work, Power.
Week 13	Kinetics of particles, Efficiency.
Week 14	principle of work and kinetic energy.
Week 15	Impulse & momentum
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Weeks 1,2,3	The fundamental law of rotation
Weeks 4 ,5,6	The law of energy conservation
Weeks 7 ,8,9	Calculating the acceleration of a falling body using a simple pendulum
Weeks 10 ,11,12	Disc rolling on an inclined plane
Weeks 13 ,14	Uniformly accelerated motion of a flywheel
Week 15	Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	R. C. Hibbeler, "Engineering Mechanics: Statics & Dynamics", 14th ed. Pearson Prentice Hall.	Yes
Recommended Texts	J. L. Meriam and L.G. Kraige, "Engineering Mechanics Dynamics", John Wiley & Sons, 2013..	Yes
Websites		

Grading Scheme

مخطط الدرجات

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

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MODULE DESCRIPTION FORM

SEMESTER 3

<table>
<tr><td colspan="4" align="center">**Module Information**
معلومات المادة الدراسية</td></tr>
<tr><td>**Module Title**</td><td colspan="2">Crimes of the Baath Regime in Iraq</td><td>**Module Delivery**</td></tr>
<tr><td>**Module Type**</td><td colspan="2" align="center">Support</td><td rowspan="4">☒ **Theory**
☐ **Lecture**
☐ **Lab**
☐ **Tutorial**
☐ **Practical**
☐ **Seminar**</td></tr>
<tr><td>**Module Code**</td><td colspan="2" align="center">**CBRI201**</td></tr>
<tr><td>**ECTS Credits**</td><td colspan="2" align="center">2</td></tr>
<tr><td>**SWL (hr/sem)**</td><td colspan="2" align="center">50</td></tr>
<tr><td>**Module Level**</td><td>1</td><td>**Semester of Delivery**</td><td>2</td></tr>
<tr><td>**Administering Department**</td><td>EMEU</td><td>**College**</td><td>EME</td></tr>
<tr><td>**Module Leader**</td><td>Asst. Lect. Sajed qasim gadbahan</td><td>**e-mail**</td><td>11536@uotechnology.edu.iq</td></tr>
<tr><td>**Module Leader's Acad. Title**</td><td>Asst. Prof.</td><td>**Module Leader's Qualification**</td><td>PhD.</td></tr>
<tr><td>**Module Tutor**</td><td>-</td><td>**e-mail**</td><td>-</td></tr>
<tr><td>**Peer Reviewer Name**</td><td>-</td><td>**e-mail**</td><td>-</td></tr>
<tr><td>**Scientific Committee Approval Date**</td><td>25/05/2024</td><td>**Version Number**</td><td>1.0</td></tr>
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Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Democracy and Human Rights	**Semester**	1, 1
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	• Making this generation aware of the crimes committed by the Baathist regime • The extent of human rights violations publicly • Spreading awareness of the extent of violation of Sharia and law.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The outcomes students can get from this course: 1.Delivering theoretical lectures, 2-opening the door to discussion, participation, asking questions 3. Getting to know each other The extent of human rights violations committed by the Baath regime in Iraq over a long period of time during which the Iraqi people suffered from the scourges of wars, mass graves…etc. One of the heinous crimes at the international level
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. -Concept of crimes -Effects of crimes -Violations of law -Violations decisions -Prison and detention places -Environmental crimes

	-Destruction of cities and villages
	-Mass grave crimes
	-Genocide cemeteries events
	-The events of the Shaabani uprising
	-Genocide cemeteries
	-Kurdish cemeteries
	-Cemeteries of the Shaabaniya Intifada
	-Chronological classification
	Cemetery sites

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Delivering theoretical lectures, opening the door to discussion, participation, asking questions, and getting to know each other The extent of human rights violations committed by the Baath regime in Iraq over a long period of time during which the Iraqi people suffered from the scourges of wars, mass graves...etc. One of the heinous crimes at the international level

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	30	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	20	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem)		50	

	الحمل الدراسي الكلي للطالب خلال الفصل	

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	15 %	4, 9, 13	(1,2,3)
	Assignments	5	15 %	2, 5, 7, 11, 14	(1,2)
	Projects / Lab.	2 hrs.	10%	all	all
	Report				
Summative assessment	**Midterm Exam**	1.5 hr.	10 %	8	all
	Final Exam	3 hrs.	50%	16	all
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Concept of crimes
Week 2	Effects of crimes
Week 3	Violations of law
Week 4	Violations decisions
Week 5	Prison and detention places
Week 6	Environmental crimes

	Cemetery sites
Week 7	Destruction of cities and villages
Week 8	**Midterm Exam**
Week 9	Mass grave crimes
Week 10	Genocide cemeteries events
Week 11	The events of the Shaabani uprising
Week 12	Genocide cemeteries
Week 13	Kurdish cemeteries
Week 14	Cemeteries of the Shaabaniya Intifada
Week 15	Chronological classification
Week 16	**Final Exam**

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	A methodological book (Crimes of the Baath Regime in Iraq)Ministry of Higher Education and Scientific Research	Yes
Recommended Texts		
Websites		

Grading Scheme
مخطط الدرجات

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

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

Module Information معلومات المادة الدراسية			
Module Title	English Language II	**Module Delivery**	
Module Type	Basic	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	ENGL212		
ECTS Credits	2		
SWL (hr/sem)	75		
Module Level	1	**Semester of Delivery**	2
Administering Department	EMEU	**College**	EME

Module Leader	Yaser Ali		e-mail	50111@uotechnology.edu.iq
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	M.Sc.
Module Tutor	-		**e-mail**	-
Peer Reviewer Name	-		**e-mail**	-
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0

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

<table>
<tr><td colspan="2">Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية</td></tr>
<tr><td>Module Objectives
أهداف المادة الدراسية</td><td>

Proceeding the benefits of studying the English Language as a Second language
The knowledge about using Technical Terminologies in their studies
Understanding of using the scientific English language in the Academic Program
How to write, describe, and type reports and projects in English.

</td></tr>
<tr><td>Module Learning Outcomes

مخرجات التعلم للمادة الدراسية</td><td>
5. Introduction to English.
6. Grammar:
   a. Verbs (regular verbs, irregular Verbs, Verb to Be, Modal Verbs).
   b. Adjectives (Adjective + Noun)
   c. Adverbs (Adverbs of Frequency).
   d. Negatives.
   e. Nouns (Plural Nouns).
   f. Pronouns.
   g. Preposition.
   h. Possessive (Possessive 's, Possessive Adjectives).
   i. Question Words.
   j. Requests and Offers.
   k. Tenses (Present Simple, Past Simple, Present Continuous,
</td></tr>
</table>

	Present Simple and Present Continuous, Future Tense).
	7. Vocabulary (Countries, Plurals, Jobs, Personal Information, Languages and Nationalities, The time, Places, Shopping, Transport, Food, Roleplay, Colours, Clothes, Revision, and UAS idioms).
	8. Skills Work (Reading and Vocabulary, Listening and Writing, Listening and Speaking, Reading and Speaking, Speaking, Speaking and Writing, Reading and Listening, A mini Autobiography).
	Everyday English (Direction, Making Conversation – showing Interest, Going Sightseeing, Everyday Problems, Signs, Social Expression).

Indicative Contents
 	
المحتويات الإرشادية
	h. Parts of Speech
	  • What are the parts of speech?
	  • Noun
	  • Pronoun
	  • Verb
	  • Adjective
	  • Adverb
	  • Proposition
	  • Conjunction
	  • Interjection
	i. Preposition
	  • What is the preposition?
	  • Why does it use?
	  • How does it use?
	j. Your world (unit Two).
	  • How to know your world?
	  • How to communicate with each other?
	  • Knowing your Nationality.
	k. ALL ABOUT YOUR FAMILY AND FRIENDS
	  • Personal information
	  • Your family members.
	  • Relatives and extended family.
	  • Jobs.
	l. Everyday Life
	  • Sport.
	  • Food.
	  • Drinks.
	  • Activities.
	m. My favorite
	  • Questions words.
	  • Pronouns.
	  • Demonstratives.
	  • Adjectives.
	  • Favorites.
	n. Where do I live?

	- Rooms. - Kitchen Furniture. - Bedroom Furniture. - Living Room Furniture. - Bathroom. - Grammar (difference between SOME and ANY). - Directions. - Grammar (difference between BUT&AND). - Because and So. f. Report and Project - Report: Talking about family - Project: Unmanned Aircraft Systems Engineering Major

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The branch applies problem-based learning (new) and the student-active method, which help them getting the program outcomes., as listed below: 1- Providing the student with theoretical lectures. 2- Providing the student with various problems and introducing her/him to their solving mechanisms.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ **15** اسبوعا

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

Module Evaluation				
تقييم المادة الدراسية				
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10%	2, 4, 6, 7	LO # 2, 3, 4
	Homework	7	10%	2 - 8	LO # 2, 3, 4
	Assignments / Projects	9 / 1	10%	1 – 9 / 15	LO # 1, 2, 3, 4
	Report	1	10%	11	LO # 1
Summative assessment	Midterm Exam	1.5 hr	10%	10	LO # 1, 2, 3
	Final Exam	3 hr	50%	17	LO # 1, 2, 3, 4
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Parts of speech, Introduction of English language, Sentences
Week 2	Introduction (Report and Project)
Week 3	Countries
Week 4	Jobs
Week 5	Family
Week 6	The time
Week 7	preposition of time
Week 8	My favorites

Week 9	Rooms and furniture
Week 10	Mid-term Exam
Week 11	Question, Report
Week 12	Saying years, present continuous, Positive (present continuous)
Week 13	Unmanned Aircraft Systems Engineering Idioms
Week 14	Functions of Unmanned Aircraft's Parts
Week 15	Project Discussion

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	John and Liz Soars "New Headway Plus" Beginner Student's Book.	Yes
Recommended Texts	John and Liz Soars "New Headway Plus" Beginner Workbook without key	Yes
Websites	-	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	**A - Excellent**	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria

Fail Group	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0 – 49)	F – Fail	راسب	(0-44)	Considerable amount of work required

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

Module Information		
معلومات المادة الدراسية		
Module Title	**Advance Mathematics 1**	**Module Delivery**
Module Type	**Basic**	☒ Theory
Module Code	**ADMA213**	☐ Lecture ☐ Lab
ECTS Credits	**6**	☐ Tutorial ☐ Practical
SWL (hr/sem)	**150**	☐ Seminar
Module Level	1	**Semester of Delivery**	2
Administering Department	EMEN	**College**	EME
Module Leader	Lect. Mayada Taki Wazi	**e-mail**	Mayada.t.wazi @uotechnology.edu.iq
Module Leader's Acad. Title	Lecturer / MSc.	**Module Leader's Qualification**	MSC. applied sciences/applied mathematics
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	-	**Semester**	-
Co-requisites module	-	**Semester**	-

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives (Aims) أهداف المادة الدراسية	The students will learn the second part of the basic math 1. To develop problem solving skills and understanding of mathematical methods and theorems 2. To understand techniques of partial derivative 3. This course deals with the basic concept of multi integration, linear integration and applications of vectors 4. Understanding and using integration's mathematical methods.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	In this course, for students will learn: 1. Summarize the partial differentiation , multi integration ,linear Integration , and applications of vectors 2. Recognize techniques of integration by using Green theorem & stokes theorem 3. Discuss applications of partial derivative. 4. Describe some theories to solve multi integration ,linear Integration. 5. Define implicit partial derivative , chain rules .
Indicative Contents المحتويات الإرشادية	In this course, students will learn: • Partial differentiation (Derivative Definition, Techniques of Derivative, implicit partial derivative , Chain Rule , Applications) • Multi integration (double ,triple integtation) • Linear Integration (Definition, Techniques of Linear Integration) • Theories of Integration (Green theorem & stokes theorem) • Applications of Vectors.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The branch use a problem based learning which new and student active method. The method helps the student getting the program outcomes.

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	6	7.5% (7.5)	5 to 10	LO #1, #2 and #10, #11
	Assignments	5	7.5% (7.5)	2 to 12	LO #3, #4 and #6, #7
	Projects / Lab.				
	Report				
Summative	Midterm Exam	1.5hr	15% (15)	10	LO #1 - #10

assessment	Final Exam	3hr	70% (70)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Partial derivative Techniques of partial derivative
Week 2	High order partial derivative Chain rule
Week 3	Implicit Partial differentiation
Week 4	Directional Partial differentiation
Week 5	Applications of Partial differentiation
Week 6	Applications of Partial differentiation
Week 7	Multi Integration Double Integration , Techniques of integrations
Week 8	Multi Integration Double Integration , polar form , change order of integration
Week 9	Multi Integration Triple Integration , , Techniques of integrations
Week 10	Multi Integration Triple Integration , cylindrical form
Week 11	Mid-term Exam
Week 12	Linear Integration

Week 13	Green theorem
Week 14	Vectors
Week 15	Applications of vectors
Week 16	Stokes theorem

Learning and Teaching Resources مصادر التعلم والتدريس			

	Text	**Available in the Library?**
Required Texts	- Advanced Engineering Mathematics, H.K. DASS. 2009 -Thomas Calculus, George B. Thomas et al, 12th, edition, 2010, USA.	Yes
Recommended Texts	- Howard Anton and et all, calculus, 7th edition, 2002. -K.A.Stroud, Engineering mathematics,2nd edition, Hong Kong, 1983 - George B. Thomas, calculus & Analytic geometry, 4th edition, USA ,1974 - Mark Dugopolski , intermediate Algebra, 3rd edition, 2000 - John bird , "Higher Engineering Mathematics" , 5th edition, Britain, 2006	No
Websites	https://www.coursera.org/browse/ mathematical-science-and-engineering/ engineering mathematics	

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 Information
معلومات المادة الدراسية

Module Title	Computer Science II	Module Delivery	
Module Type	Support	☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	COSC214		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	2	Semester of Delivery	1
Administering Department	EMEU	College	EME
Module Leader	Yaser Ali	e-mail	50111@uotechnology.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	M.Sc.

Module Tutor	-		e-mail	-
Peer Reviewer Name	-		e-mail	-
Scientific Committee Approval Date	07/06/2023	Version Number	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Computer Science I	Semester	-
Co-requisites module	-	Semester	-

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The student will learn how to use the software and C++ language in her/his work.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• To familiarize the student with the C++ language. • Writing programs. • Learn programming in C++ professionally. • Graduating engineers with competence, skill and knowledge in the field programming.

Indicative Contents
 	
المحتويات الإرشادية
	The contents of this course are listed below:
	
	● Computer Hw (Memory, Input / Output Devices).
	● Computer Sw (Operating Systems / Types of Files and Directories).
	● Numbers representation (Binary, Decimal, Octal, Hexadecimal).
	● Algorithm & Flow Chart.
	● Programming in C++ Language.
	    o Mathematical operations.
	    o Statements.

	o Writing a report. o Repetition. o Functions. o Operators o Conditional Statements (IF, Switch Select Case) o One Dimensional Array o Two Dimensional Array o Variables of pointer type. o Files.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The branch applies problem-based learning (new) and the student-active method, which help them getting the program outcomes., as listed below: 3- Providing the student with theoretical lectures. 4- Providing the student with laboratory experiments. 5- Providing the student with various problems and introducing her/him to their solving mechanisms.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**60**	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	**4**
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	**40**	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	**4**
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
					تقييم المادة الدراسية
Formative assessment	**Quizzes**	4	10%	2, 4, 6, 7	LO # 1 , 2, 3
	Homework	7	10%	2 - 8	LO # 2, 3
	Lab.	13	10%	2 – 14	LO # 1 , 2, 3
	Report	1	10%	12	LO # 4
Summative assessment	**Midterm Exam**	1.5 hr	10%	10	LO # 1 , 2, 3
	Final Exam	3 hr	50%	17	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Computer Software Concepts.
Week 2	Binary Decimal Octal and Hexadecimal number systems.
Week 3	Algorithms & Flow Charts.
Week 4	Introduction to the C++ language.
Week 5	Variables used in the language.
Week 6	Mathematical operations used in the language.
Week 7	Programs' Applications.
Week 8	Statements.
Week 9	If & Switch instructions.

Week 10	Mid-term Exam.
Week 11	Repetition instructions: for, while, do-while, go to.
Week 12	Different commands: break, continue, ?, constant, Report.
Week 13	Functions.
Week 14	One-dimensional and Two-dimensional arrays.
Week 15	Pointer & Files.

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 2 and 3	Windows / operating systems.
Week 4 and 5	Binary Decimal Octal and Hexadecimal number system.
Week 6 and 7	Mathematical operations used in the language.
Week 8 and 9	If, Switch, for, while, and do-while instructions.
Week 10 and 11	Functions, arrays.
Week 12 and 13	Pointer.
Week 14 and 15	Files.

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

Required Texts	-	-
Recommended Texts	PROGRAMMING WITH C++	Yes
Websites	ftp://ftp.gunadarma.ac.id/pub/.multimedia/Schaum's%20Programming%20with%20C++.pdf	

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

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

Module Information

معلومات المادة الدراسية

Module Title	Electrical and Electronic Circuits	**Module Delivery**	
Module Type	Core	☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	ELEC215		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	**Semester of Delivery**	2
Administering Department	EMEU	**College**	EME
Module Leader	Hiba A. Najim	**e-mail**	eme.19.36@grad.uotechnology.edu.iq
Module Leader's Acad. Title	Assistant Lecturer	**Module Leader's Qualification**	MSc.
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	-	Semester	-
Co-requisites module	-	Semester	-

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The course introduces the basic concepts of electrical and electronic circuits, the basic electronic elements, introduces the theories of analyzing the operation of these circuits, in different working systems, and trains the student on practical applications in the field of forming these circuits from electronic elements (diodes, transistors(.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Bipolar Junction Transistors (BJTS) (Simplified Structure and Mode of operation, Type of transistor Connection-characteristic curve- load line-connection analysis of each type of connection, The BJT as an amplifier an as a switch) 2.Biasing in BJT Amplifier Circuits.- (BJT amplifier The basic structure- Characterizing BJT amplifier-CE amplifier- BC amplifier- Multistage amplifier- Differential amplifier. 3.Field Effect transistor (FET) Characteristic of JEFT and biasing circuits, COSFET, D-MONSFET, MOS-FET, C/CS of transistor MOSFET, amplifying circuits, Equivalent circuit, amplifier types CS, CD, CG. 4.Power Amplifiers class A, class B, class AB, class C 5.Oscillator Feedback loop and the oscillator criterion, the oscillator circuits, RC-oscillator circuits, LC- oscillator circuits, crystal oscillators. 6.Natural and Step Responses of First and Second Order Circuits.. Natural and step responses of an RL circuit.1, Natural and step responses of an RC circuit.1, Natural and step responses of a Parallel RLC circuit, Natural and step responses of a Series RLC circuit 7.Balanced Three-Phase Circuits(Balanced 3-phase voltages, Balanced WYE-WYE connection, Balanced WYE- Delta connection, Balanced Delta - Delta connection, Power in balanced 3-phase system). 8.Resonance Circuits (Series resonance, Parallel resonance, Transfer function, Decibel scale, Bode plots). 9.Two-Port Networks: (Impedance parameters, Admittance parameters, Hybrid 10.parameters, Transmission parameters).

	11.Transient in D.C. circuits
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: introduces the basic concepts of electrical and electronic circuits, the basic electronic elements, introduces the theories of analyzing the operation of these circuits, in different working systems, and trains the student on practical applications in the field of forming these circuits from electronic elements (diodes, transistors(.

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 **15** اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	75	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	50	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	1	5%	5	LO # 1 , 2, 3
	Assignments	1	5%	1--9	LO # 4 , 5
	Projects / Lab.		10%		
	Report	1	5 %	11	6
Summative assessment	**Midterm Exam**	1.5 hr	15%	10	LO # 1 - 6
	Final Exam	3 hr	60%	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Bipolar Junction Transistors (BJTS)
Week 2	Biasing in BJT Amplifier Circuits.-
Week 3	BJT amplifier
Week 4	Field Effect transistor (FET)
Week 5	Power Amplifiers
Week 6	Oscillator
Week 7	Natural and Step Responses of First Order Circuits..
Week 8	Natural and Step Responses of Second Order Circuits

Week 9	Balanced Three-Phase Circuits
Week 10	Resonance Circuits (Series resonance, Parallel resonance,).
Week 11	Resonance Circuits (Transfer function, Decibel scale, Bode plots)
Week 12	Two-Port Networks: Impedance parameters, Admittance parameters
Week 13	Two-Port Networks: (Hybrid parameters, Transmission parameters).
Week 14	Transient in D.C. circuits
Week 15	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1 and 2	Semiconductor materials and PN junctions
Week 3 and 4	Bipolar junction transistor (characteristics and bias)
Week 5 and 6	Frequency response
Week 7 and 8	Negative feedback
Week 9 and 10	Differential amplifier
Week 11 and 12	Differential amplifier
Week 13 and 14	final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Electronic Devices and Circuir Theory.	-

Recommended Texts	Electronic circuits & devices and circuits by Millman & Halkias.	-
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

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

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

Module Information		
معلومات المادة الدراسية		
Module Title	Aerodynamic I	Module Delivery
Module Type	Core	☒ Theory ☐ Lecture ☒ Lab
Module Code	AERO216	

ECTS Credits	5		Tutorial	
			☐ Practical	
SWL (hr/sem)	125		☐ Seminar	
Module Level	1	**Semester of Delivery**		1
Administering Department	EMEU	**College**	EME	
Module Leader	Prof .Dr Muhammad.A.R Yass	**e-mail**	50251 @uotechnology.edu.iq	
Module Leader's Acad. Title	Prof	**Module Leader's Qualification**		PhD
Module Tutor	-	**e-mail**	-	
Peer Reviewer Name	-	**e-mail**	-	
Scientific Committee Approval Date	23/05/2024	**Version Number**	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Flight Dynamics	**Semester**	3
Co-requisites module	UAV Design	**Semester**	4

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. To provide an understanding of methods for predicting lift in incompressible flow, including the effects of finite aspect ratio. 2. To provide an introduction to laminar and turbulent boundary layers and their importance in determining drag on an aircraft. 3. To bring these strands together in a broad discussion of the design of subsonic, civil aviation aircraft.

	4. To provide a general appreciation of the aerodynamics of transonic flow and understanding of means of estimating the extent of the transonic regime for any particular streamlined body.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1.Understand and be able to apply theories for predicting lift on finite aspect ratio wings in incompressible flow 2. Understand the physics of laminar and turbulent boundary layers and the prediction of viscous drag 3. Demonstrate a comprehensive understanding of the underlying theoretical basis of the methods used 4. Be able to predict the onset of compressibility effects and be aware of the general features of wing aerodynamics in the transonic regime 5. Understand and be able to apply this knowledge to the general design of subsonic, civil aircraft
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. • Standard Atmospheric • Mach No and Reynolds Number • Continuity Equation • Boundary Layers • Bernoulli's Equation • Navier Stokes Equation • Airfoils • Airplane Drag

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 **15** اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	66	**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**	1	5%	5	LO # 1 , 2, 3
	Assignments	1	5%	1--9	LO # 4 , 5
	Projects / Lab.		10%		
	Report	1	5 %	11	6
Summative assessment	**Midterm Exam**	1.5 hr	15%	10	LO # 1 - 6
	Final Exam	3 hr	60%	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	المنهاج الاسبوعي النظري
	Material Covered
Week 1	Standard Atmospheric
Week 2	Standard Atmospheric
Week 3	Mach No and Reynolds Number.
Week 4	Continuity Equation
Week 5	Boundary Layers
Week 6	Bernoulli's Equation
Week 7	Bernoulli's Equation
Week 8	Navier Stokes Equation
Week 9	Navier Stokes Equation
Week 10	Airfoils.
Week 11	Airplane Drag
Week 12	Airplane Lift
Week 13	Incompressible flow
Week 14	Compressible flow
Week 15	Shock Wave
Week 16	Final peppering

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1 and 2	Lab 1: Calculating Lift

Week 3 and 4	Lab 2: Calculating Drag
Week 5 and 6	Lab 3: Wing-Body Lift and Drag
Week 7 and 8	Lab 4: Interference Drag
Week 9 and 10	
Week 11 and 12	
Week 13 and 14	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1- 2-Aerodynamics /L J Clancy 2- Flight / John D. Anderson 3- Fundamentals Aerodynamics / John D. Anderson	No
Recommended Texts	Fundamentals Aerodynamics / John D. Anderson	No
Websites	https://www.google.com/search?q=Aerodynamics+of+airplane&rlz=1C1GGRV_enIQ968IQ968&oq=Aerodynamics++of+airplane&gs_lcrp=EgZjaHJvbWUyBggAEEUYOTIJCAEQABgTGIAEMgkIAhAAGBMYgAQyCggDEAAYExgWGB4yCggEEAAYExgWGB4yCggFEAAYExgWGB4yCggGEAAYExgWGB4yCggHEAAYExgWGB4yCggIEAAYExgWGB4yDAgJEAAYDxgTGBYYHtIBCjMxMzkyajBqMTWoAgiwAgE&sourceid=chrome&ie=UTF-8

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 Information معلومات المادة الدراسية				
Module Title	**Strength of Materials**		**Module Delivery**	
Module Type	**Core**		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	**STMA217**			
ECTS Credits	**5**			
SWL (hr/sem)	**125**			
Module Level		UGx11 1	**Semester of Delivery**	1
Administering Department		EMEU	**College**	EME
Module Leader		Huda Akram Al-Salihi	**e-mail**	50286@uotechnology.edu.iq

Module Leader's Acad. Title	Asst. Prof.		Module Leader's Qualification		Ph.D.
Module Tutor	-		e-mail		
Peer Reviewer Name	-		e-mail	-	
Scientific Committee Approval Date	07/06/2023		Version Number	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	• Physics II • Engineering Mechanics	Semester	1
Co-requisites module	Mathematics	Semester	1

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	This course specification provides the fundamental concepts of the mechanics of materials as well as the behavior of solid bodies under various loading types. How they react to applied forces, the deflections resulting and the stresses and strains set up within bodies are all considered in an attempt to provide sufficient knowledge to enable any component to be designed such that it will not fail within its service life. Typical components considered in detail in this course include bars, beams, shafts, cylinders, and tubes. And, in most simple loading cases, theoretical expressions are derived to cover the mechanical behavior of these components.
Module Learning Outcomes	After completing this course, students will be able • Introduces the fundamental concepts in the mechanics of materials by studying the behavior of solid bodies under loads and deflections. • Study the simple bending theory for different types of beams

مخرجات التعلم للمادة الدراسية	• Study the simple torsion theory for circular shafts (solid and hollow), and compound beams (circular, square, and rectangular cross-section).
Indicative Contents المحتويات الإرشادية	• Simple stress and strain • Bending Theory of the beam • Shearing force and bending moment diagrams • Stresses in Beams • Torsion Theory for Circle Shaft. • Composite Shafts Connection

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم
Strategies   The branch use problem-based learning which new and student-active method. The method helps the student get the program outcomes.

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ **15** اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	73	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل			

Module Evaluation				
تقييم المادة الدراسية				
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	7.5% (7.5)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	7.5% (7.5)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.				
	Report				
Summative assessment	Midterm Exam	1.5 hr	15% (15)	10	LO #1 - #10
	Final Exam	3hr	70% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	• **Simple Stress and Strain** • **Stress-Strain Curve**
Week 2	**Sign convention for direct stress and strain +Examples**
Week 3	• **Shear Stress and shear strain**

	• **Double shear**
Week 4	• **Poisson's Ratio** • **Thermal Expansion and Thermal Stress**
Week 5	**Tutorials + Quiz 1**
Week 6	**Shearing Force and Bending Moment Diagrams** • **Types of Beams**
Week 7	• **Shearing force and bending moment** • **Shearing force (S.F.) sign convention** • **Bending moment (B.M.) sign convention**
Week 8	**S.F. and B.M. Diagrams for beams carrying concentrated loads only + Example**
Week 9	**S.F. and B.M. diagrams for uniformly distributed loads +Example**
Week 10	**Stresses in Beams**
Week 11	**Tutorials + Quiz 2**
Week 12	**Torsion** • **Simple Torsion Theory** • **Torsional Shearing Stress, τ** • **Shearing Strain γ**
Week 13	**Simple Theory of Torsion:** • **Composite Shafts - Series Connection** • **Composite Shafts - Parallel Connection**

Week 14	Tutorials + Quiz 3
Week 15	Mid Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	● Mechanics of Materials I., E. J. HEARN, THIRD EDITION, 2007. ● Strength of materials, G. G. Jon, 2009. ● Mechanical vibration by S.S. Rao.	**Yes**
Recommended Texts	Materials Science and Engineering, An Introduction, William D Cllister and David G. Rethwisch, 10th Edition.	**Yes**
Websites		

Grading Scheme

مخطط الدرجات

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

(50 - 100)	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (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

SEMESTER 4

Module Information

Module Title	**Sports**		Module Delivery	
Module Type	**Support**		☒ **Theory**	
Module Code	**SPOR221**		☐ **Lecture**	
ECTS Credits	**2**		☐ **Lab** ☐ **Tutorial**	
SWL (hr/sem)	**50**		☐ **Practical** ☐ **Seminar**	
Module Level	1	**Semester of Delivery**		2
Administering Department	EMEU	**College**	EME	
Module Leader	Muaid Waleed Nafai	**e-mail**	10755@uotechnology.edu.iq	
Module Leader's Acad. Title	Assist Prof	**Module Leader's Qualification**		MSc
Module Tutor	-	**e-mail**	-	
Peer Reviewer Name	-	**e-mail**	-	
Scientific Committee Approval Date	07/06/2023	**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	It aims to teach sport and its various arts as well as to follow-up with the latest professional and technical developments in sport sciences in order to graduate a highly qualified generation who can practice the professional sport in its different fields. Physical Education and Sport sciences aims to achieve the following:

	A. Knowledge and Understanding Demonstrate an understanding of the principles and concepts related to a variety of physical Education.
	B. Movement Composition Students should be able to compose and communicate meaning and ideas through movement.
	C. Performance and Application Apply tactics, strategies and rules in individual and group situations, health and fitness principles effectively through a variety of physical Activity.
	D. Social Skills At the end of the course's students should be able to: Work cooperatively, respect themselves, support and encourage others and develop attitudes and strategies that enhance their relationship with others
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A. Knowledge and Understanding A1. Enabling student to get the knowledge and understanding of the theoretical principles of sport. A2. This knowledge includes an in-depth understanding of the skills, tactics and strategies required for effective training, practices and game-day decisions. A3. Helping the students for achieving a physical fitness Improvement, sports skills Acquisition and mental abilities Improvement .
Indicative Contents المحتويات الإرشادية	1. To offer a variety of sports activities including traditional sports, outdoor sports, fitness, lifetime sports, etc., visits to out of school institutions, 2. To offer a variety of training methods to enhance physical fitness components using circuit training, video and ICT tools for movement analysis, observation sheets, etc. 3. To promote the use of self-evaluation sheets, tests, competitions, demonstrations, video analysis, etc., 4. To provide knowledge of the organization of an element of a lesson/a competition/ a tournament; to create awareness of the student's role as a team player, coach, referee, assistant, journalist, observer, etc., 5. To encourage participation with fair play: respecting others, the rules, materials and equipment, cooperating with others, working for a common goal and supporting the teacher, 6. To offer different topics to link theory and practice, being presented by the students as small projects in class.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The learning/ teaching of the sport complementary course develops individual and group needs. It is based on the following didactic principles: 1. acquiring new motor skills and further developing motor skills learned before, 2. using a variety of approaches and teaching methods, 3. focusing on students' varied learning styles and pace of learning, 4. using differentiation in order to meet students' individual needs, 5. focusing on students' abilities to apply skills, tactics and creative ideas, 6. reinforcing social skills, 7. promoting student's autonomy through teaching and learning, 8. improving students' performance by feedback, evaluation and self-evaluation, 9. linking and integrating practical and theoretical components, 10. using a range of teaching and learning resources including ICT.

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	31	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem)	19	**Unstructured SWL (h/w)**	

الحمل الدراسي غير المنتظم للطالب خلال الفصل		الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل		**50**	

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	7.5% (7.5)	5 and 10	LO #1, #2 and #10, #11
	Assignments				
	Projects / Lab.				
	Report	2	7.5% (7.5)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	1.5hr	15% (15)	10	LO #1 - #10
	Final Exam	3hr	70% (70)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Sports - concept, benefits and types
Week 2	Fitness - the concept and elements of fitness
Week 3	Football - concept + history,

Week 4	Football - basic soccer skills
Week 5	Football Law - Article 1, 2
Week 6	Football Law - Articles 3, 4, 5
Week 7	Basketball - concept + history
Week 8	Basketball - basic basketball skills
Week 9	Volleyball concept and skills
Week 10	Mid-term Exam
Week 11	Muscular system - concept + muscle, injuries
Week 12	Sport and Circulatory System
Week 13	Scouting - concept + stages + scouting law
Week 14	Biorhythm - concept + benefits + historical overview
Week 15	Biorhythm cycles
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	(الكرة الطائرة (تاريخ-مهارات-خطط-ادارة المباراة-والتدريب السلسلة الرياضية/ اساسيات لعبة كرة السلة التدريب الرياضي وآفاق المستقبل تطبيقات في تربية الحركة الكشفية استراتيجيات طرائق وأساليب التدريب الرياضي	no

	قانون كرة القدم	
Recommended Texts		
Websites	https://www.s2s.net/home.php?P_hirek_azonosito=201 https://www.google.com/search?rlz=1C1GCEA_enIQ933IQ934&q https://ar.wikipedia.org/wiki/%D8%AA%D8%AF%D8%B1%D9%8A%D8%A8 https://www.7uah.com/search/label/%D8%A7%D9%84%D8%AA%D8%AF%D8%B1%D9%8A%D8%A8%20%D8%A7%D9%84%D8%B1%D9%8A%D8%A7%D8%B6%D9%8A	

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

Module Information
معلومات المادة الدراسية

Module Title	**Advance Mathematics II**		Module Delivery	
Module Type	**Basic**		☒ Theory	
Module Code	**ADMA222**		☐ Lecture	
			☐ Lab	
ECTS Credits	**6**		☐ Tutorial	
SWL (hr/sem)	**150**		☐ Practical	
			☐ Seminar	
Module Level	1	**Semester of Delivery**		2
Administering Department	**EMEU**	**College**	EME	
Module Leader	Lect. Mayada Taki Wazi	**e-mail**	Mayada.t.wazi @uotechnology.edu.iq	
Module Leader's Acad. Title	Lecturer / MSc.	**Module Leader's Qualification**	MSC. applied sciences/applied mathematics	
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	-	**Semester**	-
Co-requisites module	-	**Semester**	-

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives (Aims)	The students will learn the second part of the basic math
	5. To develop problem solving skills and understanding of mathematical methods

أهداف المادة الدراسية	and theorems
	6. To understand techniques of solving special functions
	7. Understanding and using Laplace transforms mathematical methods.
	8. How to use series in derivative and integration
	9. This course deals with the basic advance engineering concept of stability systems

Module Learning Outcomes	In this course, for students will learn:
	9. Recognize solving techniques of special functions
	10. Discuss Taylor series T.S. and Maclaurin Series M.S. & Fourier series.
مخرجات التعلم للمادة الدراسية	11. Describe some theories of Laplace transforms .
	12. Define singular & regular points ,equilibrium points.

Indicative Contents	In this course, students will learn:
المحتويات الإرشادية	• Special functions (gamma & beta)
	• Laplass transforms (Main properties, Laplace transforms theorems , some Techniques)
	• Power Series (Definition, Types)
	• Some Techniques of (singular & regular points ,equilibrium points) .

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The branch use a problem based learning which new and student active method. The method helps the student getting the program outcomes.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ **15** اسبوعا

Structured SWL (h/sem)	59	Structured SWL (h/w)	4
الحمل الدراسي المنتظم للطالب خلال الفصل		الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem)	91	Unstructured SWL (h/w)	

الحمل الدراسي غير المنتظم للطالب خلال الفصل		الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل		**150**	

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	6	7.5% (7.5)	5 to 10	LO #1, #2 and #10, #11
	Assignments	5	7.5% (7.5)	2 to 12	LO #3, #4 and #6, #7
	Projects / Lab.				
	Report				
Summative assessment	**Midterm Exam**	1.5hr	15% (15)	10	LO #1 - #10
	Final Exam	3hr	70% (70)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Special functions (gamma & beta) Gamma function Definition, properties,examples
Week 2	Special functions (gamma & beta) beta function Definition, properties ,examples + Quiz
Week 3	Laplace transforms Main properties

Week 4	Laplace transforms Laplace transforms theorems
Week 5	Laplace transforms Laplace Inverse transforms + Quiz
Week 6	Laplace transforms Fractional parts method
Week 7	Laplace transforms The cover up rule
Week 8	Laplass transforms Using Laplace transforms to solve differential equations * first order+ Quiz
Week 9	Laplass transforms Using Laplace transforms to solve differential equations * second order
Week 10	Mid Exam
Week 11	Power Series Taylor Series T.S
Week 12	Power Series Maclaurin Series M.S + Quiz
Week 13	Fourier series Even , Odd, Linear functions as types of Fourier series Drawing functions in Fourier term
Week 14	Fourier series Drawing functions in Fourier term + Quiz
Week 15	Same mathematical concept (singular & regular points)
Week 16	Same mathematical concept (equilibrium points + Quiz)

Learning and Teaching Resources

<div dir="rtl">مصادر التعلم والتدريس</div>

	Text	**Available in the Library?**
Required Texts	- Advanced Engineering Mathematics, H.K. DASS. 2009 -Thomas Calculus, George B. Thomas et al, 12th, edition, 2010, USA.	Yes
Recommended Texts	- Howard Anton and et all, calculus, 7th edition, 2002. -K.A.Stroud, Engineering mathematics,2nd edition, Hong Kong, 1983 - George B. Thomas, calculus & Analytic geometry, 4th edition, USA ,1974	No

	- Mark Dugopolski , intermediate Algebra, 3rd edition, 2000 - John bird , "Higher Engineering Mathematics" , 5th edition, Britain, 2006	
Websites	https://www.coursera.org/browse/ mathematical-science-and-engineering/ engineering mathematics	

<table>
<tr><th colspan="5">Grading Scheme
مخطط الدرجات</th></tr>
<tr><th>Group</th><th>Grade</th><th>التقدير</th><th>Marks %</th><th>Definition</th></tr>
<tr><td rowspan="5">**Success Group**
(50 - 100)</td><td>**A** - Excellent</td><td>امتياز</td><td>90 - 100</td><td>Outstanding Performance</td></tr>
<tr><td>**B** - Very Good</td><td>جيد جدا</td><td>80 - 89</td><td>Above average with some errors</td></tr>
<tr><td>**C** - Good</td><td>جيد</td><td>70 - 79</td><td>Sound work with notable errors</td></tr>
<tr><td>**D** - Satisfactory</td><td>متوسط</td><td>60 - 69</td><td>Fair but with major shortcomings</td></tr>
<tr><td>**E** - Sufficient</td><td>مقبول</td><td>50 - 59</td><td>Work meets minimum criteria</td></tr>
<tr><td rowspan="2">**Fail Group**
(0 – 49)</td><td>**FX** – Fail</td><td>راسب (قيد المعالجة)</td><td>(45-49)</td><td>More work required but credit awarded</td></tr>
<tr><td>**F** – Fail</td><td>راسب</td><td>(0-44)</td><td>Considerable amount of work required</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table>

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 Title	**Theory of Machines**		Module Delivery	
Module Type	Core		☒ **Theory**	
Module Code	**THMA223**		☐ **Lecture**	
ECTS Credits	**5**		☒ **Lab**	
SWL (hr/sem)	**125**		☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Level	UGx11 1	**Semester of Delivery**		1
Administering Department	EMEU	**College**	EME	
Module Leader	Prof. Dr. Hashim A. Hussein + Lecturer Zainab Basher	**e-mail**	50005@uotechnology.edu.iq Zainab.B.Abdullah@uotechnology.edu.iq	
Module Leader's Acad. Title	Prof.	**Module Leader's Qualification**	Ph.D.	
Module Tutor	-	**e-mail**		
Peer Reviewer Name	-	**e-mail**	-	
Scientific Committee Approval Date	07/06/2023	**Version Number**	1.0	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Develop and understanding of the fundamental laws and elements of A/C engines. 2. Learn the energy properties of electric elements and the techniques to measure A/C A/C Parameters of engines 3. Develop the ability to apply Thermodynamic analysis to A/C engines types
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After completing this course, students will have the ability to identify, formulate , and solve complex engineering problems by applying principles of engineering, science, and mathematics. The majority of the lectures and homework of this course deal with the derivations and application of linear mathematics and engineering theory for circuit analysis
Indicative Contents المحتويات الإرشادية	• Boosting students' interest through interactive lesson delivery improves learning. • Improving teacher and students relationship improves learning. • Encouraging students to participate freely in lesson delivery improves stude learning. • Provision of efficient laboratories and workshops makes students to improve in their learning.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم
Strategies
The branch use problem-based learning which new and student-active method. The method helps the student get the program outcomes.

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ **15** اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	73	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	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	7.5% (7.5)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	7.5% (7.5)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.				
	Report				
Summative assessment	**Midterm Exam**	1.5 hr	15% (15)	10	LO #1 - #10
	Final Exam	3hr	70% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	**Simple Stress and Strain** **Stress-Strain Curve**
Week 2	**Sign convention for direct stress and strain +Examples**
Week 3	**Shear Stress and shear strain** **Double shear**
Week 4	**Poisson's Ratio** **Thermal Expansion and Thermal Stress**
Week 5	**Tutorials + Quiz 1**
Week 6	**Shearing Force and Bending Moment Diagrams** **Types of Beams**
Week 7	**Shearing force and bending moment** **Shearing force (S.F.) sign convention** **Bending moment (B.M.) sign convention**
Week 8	**S.F. and B.M. Diagrams for beams carrying concentrated loads only + Example**
Week 9	**S.F. and B.M. diagrams for uniformly distributed loads +Example**
Week 10	**Stresses in Beams**
Week 11	**Tutorials + Quiz 2**

Week 12	**Torsion** • **Simple Torsion Theory** • **Torsional Shearing Stress, τ** • **Shearing Strain γ**
Week 13	**Simple Theory of Torsion:** • **Composite Shafts - Series Connection** • **Composite Shafts - Parallel Connection**
Week 14	**Tutorials + Quiz 3**
Week 15	**Mid Exam**

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	● Mechanics of Materials I., E. J. HEARN, THIRD EDITION, 2007. ● Strength of materials, G. G. Jon, 2009. ● Mechanical vibration by S.S. Rao.	**Yes**
Recommended Texts	Materials Science and Engineering, An Introduction, William D Cllister and David G. Rethwisch, 10th Edition.	**Yes**
Websites		

Grading Scheme

مخطط الدرجات

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

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

Module Information

معلومات المادة الدراسية

Module Title	**Measurements and Instrumentations**	Module Delivery
Module Type	**Core**	☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial
Module Code	**MEIN224**	
ECTS Credits	**4**	

SWL (hr/sem)		**100**		☐ **Practical** ☐ **Seminar**	
Module Level		UGx11 1	**Semester of Delivery**		1
Administering Department		EMEU	**College**	EME	
Module Leader	Lecturer Rasha Fahim Nadhim		**e-mail**	Rasha.f.nadhim@uotechnology.edu.iq	
Module Leader's Acad. Title		Lecturer	**Module Leader's Qualification**		Ph.D.
Module Tutor	-		**e-mail**		
Peer Reviewer Name		-	**e-mail**	-	
Scientific Committee Approval Date		07/06/2023	**Version Number**	1.0	

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Fundamentals of Electrical Engineering I	**Semester**	1
Co-requisites module	Fundamentals of Electrical Engineering II	**Semester**	2

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

Module Objectives أهداف المادة الدراسية	1. learn the definition of measurement . 2. learn the definition of the performance characteristics. 3. learn the units of measurement. 4. learn the types of errors in measurement. 5. learn about the electrical indicating instrument. 6. learn about the bridge and their application. 7. learn about the electronic analog measuring instrument. 8. learn about the transducer.

	9. learn about the signal analysis. 10. learn about the digital instrument. 11. learn about the electrical indicating instrument 12. learn about the measurement system for testing light remotely piloted aircraft
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Able to recognize the definition and properties the main parts of measurement instrument. 2. Able to Recognize and compute the performance characteristics 3. Able to drive the dimension of the measurement units. 4. Able to compute absolute and relative error. 5. Able to found the statistical analysis. 6. Able to recognize the method of measurement. 7. Able to compute combination of quantities with limiting error. 8. Able to compute the deflecting and controlling torque. 9. Able to design D.C. Ammeter by using direct and indirect method. 10. Able to design D.C. voltmeter by using direct and indirect method. 11. Able to find unknown resistance by D.c. bridge . 12. Able to find unknown impedance by types of A.c. bridge. 13. Able to recognize the types of transducer. 14. Able to recognize the types of digital instrument. 15. Able to recognize A measurement system for testing light remotely piloted aircraft
Indicative Contents المحتويات الإرشادية	• Part A – introduction to measurement • Definition of measurement, main elements of instrument, performance • characteristics, measurement units, errors in measurement [10 hrs.] • Part B - The electromechanical indicating instrument • The Essential of indicating instrument, moving coil instrument, PMMC, • mathematical representation of PMMC, design D.C. ammeter and voltmeter, • resistance and impedance measurement. [10 hrs.] • Part C - measurement instrument for Navigation and Guidance. • Transducer, digital instrument, A measurement system for testing light • remotely piloted aircraft. [10 hrs.]

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم
Strategies   The main strategy to be adopted in delivering this unit is for students to engage in solving exercises while improving their analysis, synthesis and reasoning skills.

	This will be achieved by solving various examples and linking them to applications on the ground. Homework assignments will also be given to the student and reports related to the scientific material will be prepared.

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ **15** اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	41	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative	**Quizzes**	2	10	6	LO #1, #2 and #10, #11

assessment	Assignments	5	10	2 and 13	LO #3, #4 and #6, #7
	Projects / Lab.	15	10	15	
	Report	1	10	15	
Summative assessment	Midterm Exam	2 hr	10	8	LO #1 - #10
	Final Exam	3hr	50	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري
Material Covered

	Material Covered
Week 1	**Introduction to measurement**
Week 2	**Measuring units**
Week 3	**Measurement error**
Week 4	**Statistical analysis**
Week 5	**Relative limiting error**
Week 6	**D.C. Bridges and their applications**
Week 7	**A.C. Bridges and their applications**
Week 8	**Design D.C ammeter**

Week 9	Design D.C voltmeter
Week 10	Indicating instrument
Week 11	Transducers (part 1)
Week 12	Transducers (part 2)
Week 13	Signal analysis
Week 14	Digital instrument
Week 15	A measurement system for testing light remotely piloted aircraft

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	● Mechanics of Materials I., E. J. HEARN, THIRD EDITION, 2007. ● Strength of materials, G. G. Jon, 2009. ● Mechanical vibration by S.S. Rao.	Yes
Recommended Texts	Materials Science and Engineering, An Introduction, William D Cllister and David G. Rethwisch, 10th Edition.	Yes
Websites		

Grading Scheme

مخطط الدرجات

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

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Module Information معلومات المادة الدراسية				
Module Title	**Composite Materials**		**Module Delivery**	
Module Type	**Core**		⊠ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**COMA225**			
ECTS Credits	**4**			
SWL (hr/sem)	**100**			
Module Level	UGx11 1	**Semester of Delivery**		2
Administering Department	**EMEU**	**College**	EME	

Module Leader	Huda Akram Al-Salihi	e-mail	50286@uotechnology.edu.iq
Module Leader's Acad. Title	Asst. Prof.	Module Leader's Qualification	Ph.D.
Module Tutor	-	e-mail	
Peer Reviewer Name	-	e-mail	-
Scientific Committee Approval Date	07/06/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**Strength of materials**	Semester	1
Co-requisites module	**Mathematics**	Semester	1

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	This course provides the fundamentals of composite materials and their components since they are often used in aerospace applications. Also, students will learn various composite structures and their mechanical properties at various loading directions.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After completing this course, students will be able 6. to characterize composite components and understand Individual constituents in composites. 7. Identify the interface between these components. 8. Develop the student's skills to realize mechanical behavior and subsequently design and process these materials with proper conditions
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Introduction to composite materials Classification and properties of the matrix and fibers Study micromechanical of Composite Strength and Stiffness

<table>
<tr><td colspan="2" align="center">**Learning and Teaching Strategies**

استراتيجيات التعلم والتعليم</td></tr>
<tr><td>**Strategies**</td><td>The branch use problem-based learning which new and student-active method. The method helps the student get the program outcomes.</td></tr>
</table>

<table>
<tr><td colspan="4" align="center">**Student Workload (SWL)**

الحمل الدراسي للطالب محسوب لـ **15** اسبوعا</td></tr>
<tr><td>**Structured SWL (h/sem)**

الحمل الدراسي المنتظم للطالب خلال الفصل</td><td align="center">45</td><td>**Structured SWL (h/w)**

الحمل الدراسي المنتظم للطالب أسبوعيا</td><td align="center">2</td></tr>
<tr><td>**Unstructured SWL (h/sem)**

الحمل الدراسي غير المنتظم للطالب خلال الفصل</td><td align="center">55</td><td>**Unstructured SWL (h/w)**

الحمل الدراسي غير المنتظم للطالب أسبوعيا</td><td align="center">4</td></tr>
<tr><td>**Total SWL (h/sem)**

الحمل الدراسي الكلي للطالب خلال الفصل</td><td colspan="3" align="center">**100**</td></tr>
</table>

<table>
<tr><td colspan="6" align="center">**Module Evaluation**

تقييم المادة الدراسية</td></tr>
<tr><td colspan="2"></td><td>**Time/Number**</td><td>**Weight (Marks)**</td><td>**Week Due**</td><td>**Relevant Learning Outcome**</td></tr>
<tr><td rowspan="3">**Formative assessment**</td><td>**Quizzes**</td><td>2</td><td>7.5% (7.5)</td><td>5 and 10</td><td>LO #1, #2 and #10, #11</td></tr>
<tr><td>**Assignments**</td><td>2</td><td>7.5% (7.5)</td><td>2 and 12</td><td>LO #3, #4 and #6, #7</td></tr>
<tr><td>**Projects / Lab.**</td><td></td><td></td><td></td><td></td></tr>
</table>

	Report				
Summative assessment	Midterm Exam	1.5 hr	15% (15)	10	LO #1 - #10
	Final Exam	3hr	70% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	**Introduction of Composite Materials and their components**
Week 2	**Classification and properties of the matrix (Primarily phase)**
Week 3	**Classification and properties of the reinforcement (Secondary Phase)**
Week 4	**Carbon Fiber–Reinforced Polymer (CFRP) Composites** **Glass Fiber–Reinforced Polymer (GFRP) Composites**
Week 5	**Micromechanical Analysis of Composite Strength and Stiffness** **Structural Composites** Laminar Composite Sandwich Panels
Week 6	**Fractions** Volume fraction Mass fraction **Density**
Week 7	**Tutorials + Quiz1**
Week 8	**Packing of Fibers in composites + Examples**

Week 9	**Stress-Strain Behavior of the Composite Materials**
Week 10	**Longitudinal Strength and Stiffness + Examples**
Week 11	**Transverse Modulus + Examples**
Week 12	**In-plane shear Modulus and Poisson's ratio + Examples**
Week 13	**Tutorials + Quiz 2**
Week 14	**Tutorials + Review**
Week 15	**Mid Exam**

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	**Materials Science and Engineering, An Introduction, William D Cllister and David G. Rethwisch, 10th Edition.**	**Yes**
Recommended Texts	**Introduction to Composite Materials, Tri-Dung Ngo** DOI: http://dx.doi.org/10.5772/intechopen.91285	**Yes**
Websites		

Grading Scheme

مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group **(50 - 100)**	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
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	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 Information معلومات المادة الدراسية			
Module Title	Aerodynamic II	**Module Delivery**	
Module Type	Core	☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	AERO226		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	1	**Semester of Delivery**	2

Administering Department	EMEU	College	EME	
Module Leader	Ahmed Adnan Shandookh	e-mail	Ahmed.A.Shandookh@uotechnology.edu.iq	
Module Leader's Acad. Title	Asst. Prof.	Module Leader's Qualification		PhD.
Module Tutor	-	e-mail	-	
Peer Reviewer Name	-	e-mail	-	
Scientific Committee Approval Date	25/05/2024	Version Number		1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Aerodynamic I	Semester	1, 1
Co-requisites module	Mathematics I, Mathematics II	Semester	1, 2

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

Module Objectives أهداف المادة الدراسية	1. To familiarize the student with the most important aircraft aerodynamics principles. 2. Familiarity with the parts of aircraft related to aerodynamics. 3. Know the different types of aircraft affecting its aerodynamics
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Criterion (1,4 and 7)
Indicative Contents	Indicative content includes the following.

المحتويات الإرشادية	Indicative content includes the following.
	• Standard Atmospheric
	• Mach No and Reynolds Number
	• Continuity Equation
	• Boundary Layers
	• Bernoulli's Equation
	• Navier Stokes Equation
	• Airfoils
	• Airplane Drag

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1- Asking inferential questions during the lecture and encouraging students by giving them extra marks when they answer. 2- Solve theorems in easier ways than existing methods. 3- Enhance explanations with practical examples.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	66	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	5

Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**			

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	15 %	4, 9, 13	(1,2,3),(4,5,6),(7,8,9)
	Assignments	5	15 %	2, 5, 7, 11, 14	(1,2),(3),(4,5),(6,7),(8,9)
	Projects / Lab.	2 hrs.	10%	all	all
	Report				
Summative assessment	**Midterm Exam**	1.5 hr.	10 %	8	1-6
	Final Exam	3 hrs.	50%	16	all
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to the Basic Aircraft
Week 2	Basic Aircraft Principles and Fundamentals
Week 3	Airfoil Shapes and Types affected upon aerodynamics
Week 4	Airfoil Shapes and Types affected upon aerodynamics
Week 5	Airfoil Shapes and Types affected upon aerodynamics
Week 6	Effect of Aircraft Shape on its Aerodynamics

Week 7	Effect of Aircraft Shape on its Aerodynamics
Week 8	**Midterm Exam**
Week 9	Effect of Aircraft Shape on its Aerodynamics
Week 10	Effect of Wing Shape and Design on Aircraft Aerodynamics
Week 11	Effect of Wing Shape and Design on Aircraft Aerodynamics
Week 12	Effect of Wing Shape and Design on Aircraft Aerodynamics
Week 13	Effect of Wing Shape and Design on Aircraft Aerodynamics
Week 14	Effect of Wing Shape and Design on Aircraft Aerodynamics
Week 15	Effect of Wing Shape and Design on Aircraft Aerodynamics
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1 and 2	Lab 1: Calculating Lift
Week 3 and 4	Lab 2: Calculating Drag
Week 5 and 6	Lab 3: Wing-Body Lift and Drag
Week 7 and 8	Lab 4: Interference Drag
Week 9 and 10	
Week 11 and 12	
Week 13 and 14	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Aerodynamics for Engineering Students	Yes

	E.L. Houghton P.W. Carpenter Steven H. Collicott Daniel T. Valentine		
Recommended Texts	**APPLIED AERODYNAMICS** Jorge Colman Lerner Ulfilas Boldes		Yes
Websites	no		

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 Information
معلومات المادة الدراسية

Module Title	Digital Electronics	Module Delivery	
Module Type	Core	☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	FEEN125		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	1	Semester of Delivery	2
Administering Department	EMEU	College	EME
Module Leader	Mohammed Qasim Mohammed	e-mail	50033 @uotechnology.edu.iq
Module Leader's Acad. Title	Asst. Prof.	Module Leader's Qualification	PhD.
Module Tutor	-	e-mail	-
Peer Reviewer Name	-	e-mail	-
Scientific Committee Approval Date	25/05/2024	Version Number	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Analog Electronic, Physics I	Semester	1, 1
Co-requisites module	Mathematics I, Mathematics II	Semester	1, 2

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives	1. To develop problem solving skills and understanding of the Fundamentals Digital Electronics. 2. To understand Numbers Systems and their conversions.

أهداف المادة الدراسية	3. Learn the signed binary number representation. 4. Study and analysis logic gates and their classifications. 5. Learn the mathematics of digital systems (Boolean algebra and their expressions). 6. Learn the logic simplification of digital circuits. 7. Learn to design the logic gates by using universal logic gates. 8. Study and learn the standard forms of Boolean expressions. 9. Learning simplifying Boolean expressions by using Karnaugh map.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	There are several outcomes students can get from this course: 1. Learn how to represent the logic (1, 0) as an electric voltage in a practical field. 2. Recognize the number systems and how to convert between them. 3. How to represent the sign (-, +) in a binary numbers. 4. Identify the logic gates and their classifications and types. 5. Learn how to solve the logic expressions by using Boolean algebra. 6. Learn how simplify digital circuits by using Boolean algebra and draw them as logic gates. 7. Design the basic and other logic gates by using universal logic gates. 8. Understand the standard forms of Boolean expressions and how to convert between them. 9. Using the Karnaugh map to simplify logic expressions.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. - Fundamental of digital electronics, Digital and Analog Quantities, Binary Digits, Logic Levels, and Digital Waveforms. - Binary Digits, Logic Levels, and Digital Waveforms, numbers conversions. - Signed binary number representation, sign-magnitude, 1's complement, and 2's complement. - Classification of Logic Gates 1) Basic logic gates (NOT, OR, AND) 2) Universal logic gates (NOR, NAND) 3) Other logic gates (EX-OR, EX-NOR) - Boolean algebra and logic simplification, Boolean Operations (Addition and Multiplication), DE Morgan's theorem وLaws of Boolean Algebra (Commutative, Associative and Distributive), and Rules of Boolean Algebra (12 basic rules).

	- Boolean Expression for a Logic Circuit and Simplification Using Boolean Algebra.
	- Implementation of Logic Functions Using Universal Logic Gates.
	- Standard Forms of Boolean Expression, sum-of-products (SOP) Form and products-of- sum (POS) Form.
	- Karnaugh map for simplifying Boolean expressions.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1- Asking inferential questions during the lecture and encouraging students by giving them extra marks when they answer.
	2- Solve theorems in easier ways than existing methods.
	3- Enhance explanations with practical examples.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	41	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	15 %	4, 9, 13	(1,2,3),(4,5,6),(7,8,9)
	Assignments	5	15 %	2, 5, 7, 11, 14	(1,2),(3),(4,5),(6,7),(8,9)
	Projects / Lab.	2 hrs.	10%	all	all
	Report				
Summative assessment	Midterm Exam	1.5 hr.	10 %	8	1-6
	Final Exam	3 hrs.	50%	16	all
Total assessment		100% (100 Marks)			

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Fundamentals Digital Electronics, Digital and Analog Quantities, Binary Digits, Logic Levels, and Digital Waveforms.
Week 2	Numbers Systems, Decimal Number System, Binary Number System, Hexadecimal Number System, Octal Number System, Binary Coded Decimal (BCD), and Digital Codes (Gray Code).
Week 3	Number Systems Conversions, Decimal to Binary conversion, Binary to Hexadecimal Conversion, and Hexadecimal to Binary Conversion
Week 4	Number Systems Conversions, Decimal to Hexadecimal Conversion, Decimal to Octal Conversion, Octal to Binary Conversion, and Decimal to BCD Conversion
Week 5	Number Systems Conversions, Binary to Gray Code Conversion, Gray to Binary Conversion, Signed binary number representation, sign-magnitude, 1's complement, and 2's complement.
Week 6	Logic gates, Basic logic gates (NOT, OR, AND), Universal logic gates (NOR, NAND), and Other logic gates (EX-OR, EX-NOR).
Week 7	Logic Expression for Logic gates, Operation with Waveform Input of Logic gates, Truth Table

	of Logic gates, Operation of Logic gates.
Week 8	**Midterm Exam**
Week 9	Boolean algebra and logic simplification, Boolean Operations (Addition and Multiplication), DE Morgan's theorem, Laws of Boolean Algebra (Commutative, Associative and Distributive).
Week 10	Boolean algebra, Rules of Boolean Algebra (12 basic rules), Explain and prove each of the 12 basic rules.
Week 11	Boolean Expression for a Logic Circuit and Simplification Using Boolean Algebra.
Week 12	Implementation of Logic Functions Using Universal Logic Gates, Implementation of Logic Functions Using Only NAND Gates, Implementation of Logic Functions Using Only NOR Gates,
Week 13	Implementation of Logic Functions Using AND and NOT Gates, Implementation of Logic Functions Using OR and NOT Gates, Using AND/OR/NOT Gates to Implement Ex-OR and EX-NOR Gates.
Week 14	Standard Forms of Boolean Expression, sum-of-products (SOP) Form and products-of- sum (POS) Form, The Standard SOP Form, Converting Product Terms to Standard SOP, The Standard POS Form, Converting Product Terms to Standard POS, Converting Standard SOP to Standard POS.
Week 15	Karnaugh map for simplifying Boolean expressions, The 3-Variable Karnaugh Map, The 4-Variable Karnaugh Map, Cell Adjacency, Karnaugh Map SOP Minimization, Karnaugh Map Simplification of SOP Expressions, Mapping Directly from a Truth Table, Karnaugh Map POS Minimization, Karnaugh Map Simplification of POS Expressions.
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

	Material Covered
Week 1 and 2	Lab 1: Binary Digits, Logic Levels, and Digital Waveforms.
Week 3 and 4	Lab 2: Basic logic gates (NOT, OR, AND).
Week 5 and 6	Lab 3: Universal logic gates (NOR, NAND).
Week 7 and 8	Lab 4: Other logic gates (EX-OR, EX-NOR).
Week 9 and 10	Lab 5: Design and implementation of comparator circuit.

| Week 11 and 12 | Lab 6: Design and implementation of adder/subtractor circuit. |
| Week 13 and 14 | Lab 7: Design and implementation of the register (Flip/Flop) circuit. |

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Digital Fundamentals", Thomas L. Floyd. 9th Edition	Yes
Recommended Texts	"Digital Design with an introduction to the Verilog HDL", M Morris Mano & Michael D. Ciletti. 5th Edition. "Digital Principles & Logic Design", A. Saba & N. Manna.	Yes
Websites	https://electronicworkbenchewb.com/#google_vignette https://www.digitalcircuitdesign.com/ https://circuitverse.org/	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
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	C - Good	جيد	70 - 79	Sound work with notable errors
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Semester 1 : 30 ECTS ; 1 ECTS = 25 hrs

Module Code	Module	SSWL	USSWL	ECTS	Module Type	Prerequisite
CBRI201	Crimes of the Baath Regime in Iraq	31	19	2.00	S	
ENGL212	English Language II	31	44	3.00	B	English Language I 1st Stage
ADMA213	Advanced Mathematics I	59	91	6.00	B	Mathematics I 1st Stage
COSC214	Computer Sciences II	59	41	4.00	S	Computer Sciences I 1st Stage
ELEC215	Electrical and Electronic Circuits	73	52	5.00	C	Fundamentals of Electrical Engineering I 1st Stage
AERO216	Aerodynamic I	59	66	5.00	C	Mechanics 1st Stage
STMA217	Strength of Materials	73	52	5.00	C	Physics 1st Stage

Semester 2 : 30 ECTS ; 1 ECTS = 25 hrs

Module Code	Module	SSWL	USSWL	ECTS	Module Type	Prerequisite
SPOR221	Sport	31	19	50	S	

ADMA222	Advanced Mathematics II	59	91	150	B	Mathematics II 1st Stage
THMA223	Theory of Machines	73	52	125	C	
MEIN224	Measurements and Instrumentations	59	41	100	C	Fundamentals of Electrical Engineering I 1st Stage
COMA225	Composite materials	45	55	100	C	Physics 1st Stage
AERO226	Aerodynamic II	59	66	125	C	