

URUK University جامعة اوروك



Sixth Cycle – Bachelor's Degree (B.Sc.) –

Department of Medical Instrumentation

Techniques Engineering

بكالوريوس - قسم هندسة تقنيات الاجهزة الطبية



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1. Overview

This catalogue is about the courses (modules) given by the program of Medical Instrumentations Techniques Engineering to gain the Bachelor of Science degree. The program delivers (xx) Modules with (6000) total student workload hours and 240 total ECTS. The module delivery is based on the Bologna Process.

2. Undergraduate Modules 2025-2026

Module	Module 1
Code	MITE1101
Course/Module Title	Fundamental of Electrical Engineering DC
ECTS	6
Semester	1
Class (hr./w)	3
Lect./Lab./Pr./Tutor	4
SSWL (hr./sem.)	79
USSWL (hr./w)	71
Description	
This course covers the basic concepts and principles of electrical networks and their applications. Students gain a comprehensive understanding of Electrical Engineering, including symbols, units, Ohm's law, methods and theories of network analysis, Delta-y transformations, circuit analysis. Topics include: DC networks (Kirchhoff's laws), conversion of delta-shaped connected resistors to Y and vice versa, power sources in parallel conduction, methods, and theories of circuit analysis, alternating current generation, sinusoidal current, average and effective values of current and voltages, radial diagrams, instantaneous and average power in alternating current, relative and apparent power, transition circuits, transition RC circuit, thr.ee-phase system, and magnetic circuits.	

Module	Module 2
Code	MITE1102
Course/Module Title	Computer Applications (IC3)
ECTS	3
Semester	1
Class (hr./w)	2
Lect./Lab./Pr. /Tutor	4
SSWL (hr./sem.)	49
USSWL (hr./w)	26
Description	
This module provides a foundation in computer hardware, software, operating systems, and peripherals. It covers understanding operating systems, computer hardware, power options, and utilizing the control panel. Learners will explore software types, Microsoft Office (Word, Excel, Power Point and Outlook), and popular applications like G-Suite (Docs, Sheets, Slides, Gmail, Calendar).	

Module	Module 3
Code	MITE1103
Course/Module Title	Differential Mathematics
ECTS	5
Semester	1
Class (hr./w)	3
Lect./Lab./Pr./Tutor	2
SSWL (hr./sem.)	78
USSWL (hr./w)	47
Description	
Differential mathematics is a branch of calculus that focuses on the concept of differentiation. It involves finding rates of change, slopes of curves, and optimizing functions. Differential equations are used to model various phenomena and solve problems in fields such as physics, and engineering.	

Module	Module 4
Code	MITE1104
Course/Module Title	Engineering Drawing
ECTS	5
Semester	1
Class (hr./w)	
Lect./Lab./Pr./Tutor	4
SSWL (hr./sem.)	63
USSWL (hr./w)	62
Description	
This course teaches engineering drawing fundamentals and AutoCAD usage, covering menus, toolbars, commands, and dimensioning techniques. Students learn to create accurate drawings following engineering drawing conventions and apply them in AutoCAD. They also explore the valuable utilities offered by AutoCAD for engineering drawing and study orthogonal projection in both traditional geometry and AutoCAD.	

Module	Module 5
Code	MITE1105
Course/Module Title	Democracy and Human Rights
ECTS	2
Semester	1
Class (hr./w)	2
Lect./Lab./Pr./Tutor	1
SSWL (hr./sem.)	33
USSWL (hr./w)	17
Description	
This course provides a comprehensive understanding of democracy as a way of life, its relationship with freedom, different public freedoms, and the traits, advantages, elements, and forms of democracy. It also covers election procedures and potential manipulation, Iraq's election laws, the development of democracy, constitutional and legal rights, human rights, and fostering a culture of dialogue and acceptance.	

Module	Module 6
Code	MITE1106
Course/Module Title	English Language (Beginner Level)
ECTS	2
Semester	1
Class (hr./w)	2
Lect./Lab./Pr./Tutor	1
SSWL (hr./sem.)	33
USSWL (hr./w)	17
Description	
The beginner English language course introduces essential language skills for beginners. It covers basic grammar, vocabulary, listening, speaking, reading, and writing exercises. The course focuses on developing foundational English proficiency and building confidence in using English in everyday situations.	

Module	Module 7
Code	MITE1107
Course/Module Title	Medical chemistry
ECTS	7
Semester	1
Class (hr./w)	2
Lect./Lab./Pr./Tutor	1
SSWL (hr./sem.)	94
USSWL (hr./w)	31
Description	
This course represents an introduction to the principles of chemistry, the definition of matter, systems of units of measurement, how to write chemical formulas and reaction equations and balance them for later use in mathematical calculations, in addition to the various ways to express the concentration of a substance and the decomposition constants of acids, bases, and poorly soluble salts as the theoretical basis for the qualitative and quantitative analysis of the Pr.tical approach. Moreover, focus on statistical treatments of the results of analyzes or to assess the efficiency of an analytical device or method. In addition to studying the interrelationship between chemistry and physics and the consequent laws, it also aims to study the states of matter and methods of conversion from one state to another with the properties of each of them and what is looking at the conversion of energy into work or vice versa, as well as the study of heat resulting from chemical reactions. The various working principles and components of devices used for analytical purposes in chemistry, with a focus on spectrophotometers	

Module	Module 8
Code	MITE1201
Course/Module Title	Medical Physics
ECTS	5
Semester	2
Class (hr./w)	2
Lect./Lab./Pr./Tutor	2
SSWL (hr./sem.)	64
USSWL (hr./w)	61
Description	
This module provides physics background for medical instrumentation engineers, covering forces in the body, physics of the skeleton, energy, work, and power. It explores the physics behind organ functions like respiratory, urinary, and cardiovascular systems, and introduces related instruments. It also includes the physics of hearing and highlights radiation therapy.	

Module	Module 9
Code	MITE1202
Course/Module Title	Fundamentals of Electrical Engineering (AC)
ECTS	6
Semester	2
Class (hr./w)	2
Lect./Lab./Pr./Tutor	2
SSWL (hr./sem.)	79
USSWL (hr./w)	71
Description	
This module provides a foundation in AC circuit theory, covering voltage, current, power calculations, and Kirchhoff's laws. It includes analysis of AC circuits, network theorems, and sinusoidal waveforms	

Module	Module 10
Code	MITE1203
Course/Module Title	Mechanics
ECTS	4
Semester	2
Class (hr./w)	2
Lect./Lab./Pr./Tutor	1
SSWL (hr./sem.)	48
USSWL (hr./w)	52
Description	
This module covered the fundamental concepts and principles of mechanics, and their applications in statics loads. Students comprehensively understand mechanics, including their forces, result of force, stress and strain, moment of force, friction, bending force, selective of materials, welding joint, and load distribution in trusses and bridge. They learn mechanical design, development, and various mechanical tests. Topics include mechanics/statics basics, mechanical properties, and mechanical test of materials.	

Module	Module 11
Code	MITE1204
Course/Module Title	Integral Mathematics
ECTS	5
Semester	2
Class (hr./w)	3
Lect./Lab./Pr./Tutor	2
SSWL (hr./sem.)	78
USSWL (hr./w)	47
Description	
Integral mathematics is a branch of calculus that deals with the concept of integration. It involves finding the area under curves, calculating accumulated quantities, and solving differential equations. Integrals are used to analyze continuous functions and provide a framework for solving a wide range of mathematical and real-world problems.	

Module	Module 12
Code	MITE1205
Course/Module Title	Engineering Workshops
ECTS	5
Semester	2
Class (hr./w)	1
Lect./Lab./Pr./Tutor	4
SSWL (hr./sem.)	63
USSWL (hr./w)	62
Description	
The Mechanical, Electrical and Electronic Workshop module aims to provide students with hands-on experience and theoretical knowledge in mechanical and electrical engineering. Overall, this module aims to provide students with Practical skills and a theoretical understanding of Mechanical, Electrical and Electronic engineering, enabling them to work with machinery, manipulate metals, and work with electronic components and circuits.	

Module	Module 13
Code	MITE1206
Course/Module Title	Arabic Language
ECTS	2
Semester	2
Class (hr./w)	2
Lect./Lab./Pr./Tutor	1
SSWL (hr./sem.)	33
USSWL (hr./w)	17
Description	
The course introduces the basic rules of the Arabic language, which can be used in the academic environment. The module involves teaching the concept of the Arabic language as a tool and means of communication between individuals. Introducing the student to the method of forming sentences using the tools of the Arabic language. Enabling the student to write using correct and basic linguistic and grammatical rules and their scientific applications.	

Module	Module 14
Code	MITE1207
Course/Module Title	Computer Programming and Applications I
ECTS	3
Semester	2
Class (hr./w)	2
Lect./Lab./Pr./Tutor	4
SSWL (hr./sem.)	49
USSWL (hr./w)	26
Description	
The course aims to introduce fundamental problem-solving and programming skills using C++, focusing on logic design, syntax, functions, and debugging	

Module	Module 15
Code	MITE2101
Course/Module Title	Laboratory Medical Instrumentation I
ECTS	6
Semester	3
Class (hr./w)	2
Lect./Lab./Pr./Tutor	3
SSWL (hr./sem.)	74
USSWL (hr./w)	106
Description	
This module covers the fundamental concepts and principles of medical instrumentation. The topics explained in this module: Definition of medical instruments, Introduction to medical instruments and Classification of medical instrumentation. Explain the Design of hospitals and the design of operating rooms. One of the most important topics is Patient Safety. Medical Laboratory Instruments and Tools. Calibration of Medical Laboratory Instruments. Introduction to Balance. Balance and their types. Wax bath and Water bath.	

Module	Module 16
Code	MITE2102
Course/Module Title	Electronics Circuits I
ECTS	6
Semester	3
Class (hr./w)	2
Lect./Lab./Pr./Tutor	3
SSWL (hr./sem.)	74
USSWL (hr./w)	106
Description	
This module covers various topics related to electrical circuits and semiconductor devices. Students learn about sinusoidal excitation, semiconductor materials, diode applications, bipolar junction transistors (BJTs), DC biasing of BJTs, field-effect transistors (FETs) and MOSFETs, FET biasing, BJT AC analysis, and small-signal AC analysis of BJT amplifiers. The module equips students with the knowledge and skills to design and analyze electronic circuits and devices.	

Module	Module 17
Code	MITE2103
Course/Module Title	Electrical Machines
ECTS	5
Semester	3
Class (hr./w)	2
Lect./Lab./Pr./Tutor	3
SSWL (hr./sem.)	74
USSWL (hr./w)	76
Description	
This course covers the basic concepts and principles of electricity technology and its applications. Where students understand and help them know the types of transformers, their applications, and designs, as well as the designs of electrical machines such as generators and motors, with direct current and alternating current and their components. It also deals with the methods of finding the appropriate design for the places used and their applications in medical devices and the results of mathematical quantities in designs through solving mathematical and mathematical problems for various applications. The students were also able to develop their capabilities in dealing with electrical parts in medical devices and methods of checking, maintaining, and repairing them.	

Module	Module 18
Code	MITE2104
Course/Module Title	Engineering Mathematics
ECTS	5
Semester	3
Class (hr./w)	3
Lect./Lab./Pr./Tutor	2
SSWL (hr./sem.)	73
USSWL (hr./w)	77
Description	
Engineering mathematics is the application of mathematical principles and techniques to solve engineering problems. It encompasses various mathematical topics, including calculus, differential equations, linear algebra, probability theory, and numerical methods. Engineering mathematics provides a foundation for analyzing and designing engineering systems, from structures to electrical circuits.	

Module	Module 19
Code	MITE2105
Course/Module Title	Anatomy & Physiology
ECTS	5
Semester	3
Class (hr./w)	2
Lect./Lab./Pr./Tutor	2
SSWL (hr./sem.)	74
USSWL (hr./w)	76
Description	
In this course, the student is prepared to study and understand medical devices by explaining the physiological changes, especially the electrical ones, that occur when the body various organs perform their function and their relationship to the devices used to measure and diagnose various phenomena and diseases. Moreover, the module prepares the student to study and understand medical devices by clarifying the physiological changes, especially the electrical ones, that occur when the body various organs perform their function and their relationship to the devices used to measure and diagnose various phenomena and diseases.	

Module	Module 20
Code	MITE2106
Course/Module Title	Computer Programming and Applications (MATLAB-beginner)
ECTS	3
Semester	3
Class (hr./w)	1
Lect./Lab./Pr./Tutor	2
SSWL (hr./sem.)	46
USSWL (hr./w)	44
Description	
This module covers the fundamental concepts of MATLAB programming language environment. The students will understand and learn how to use MATLAB as an effective programming language to solve different mathematical and engineering problems as well as using plotting functions and design projects using codes or GUI. Students will acquire the knowledge of basic MATLAB syntax such as: variables, input, output, vectors, matrices, functions, plotting, and GUI, and these topics will be illustrated using some examples. The students will gain the necessary skills to design and implement appropriate algorithms that solve problems dealing with different mathematical and engineering applications.	

Module	Module 21
Code	MITE2201
Course/Module Title	Electronics Circuits II
ECTS	6
Semester	4
Class (hr./w)	2
Lect./Lab./Pr./Tutor	3
SSWL (hr./sem.)	74
USSWL (hr./w)	106
Description	
The Electronics Circuits II course delves into advanced concepts in electronic circuits. Topics covered include amplifiers, oscillators, feedback systems, filters, and analog integrated circuits. Students learn to analyze, design, and optimize complex electronic circuits for applications in communication systems, audio amplification, and signal processing, furthering their understanding of electronic circuit theory and Practical implementation.	

Module	Module 22
Code	MITE2202
Course/Module Title	Laboratory Medical Instrumentation II
ECTS	6
Semester	4
Class (hr./w)	2
Lect./Lab./Pr./Tutor	3
SSWL (hr./sem.)	74
USSWL (hr./w)	106
Description	
This module covers the fundamental concepts and principles of medical instruments and their classification. The main topics: introduction to the laboratory Design and part from laboratory devices like centrifuges, the definition of microscopes, and Types of Microscopes. Polymerase chain reaction (pcr), definition of Laboratory incubators, types of Laboratory Incubators, ovens, and their medical application. Autoclave and its medical application. Water distillation, definition of the Rehabilitation System. Classification of Medical Rehabilitation System.	

Module	Module 23
Code	MITE2203
Course/Module Title	Digital Electronics
ECTS	5
Semester	4
Class (hr./w)	2
Lect./Lab./Pr./Tutor	3
SSWL (hr./sem.)	74
USSWL (hr./w)	76
Description	
This module covers the basic concepts and fundamental principles of digital electronic circuits. The students understand comprehensively the applications of digital electronic circuits; including the work principles of medical instruments, which include these digital circuits. Furthermore, they can learn how to design, to develop, and to maintain these instruments. The subject of digital electronic circuits covers numbers of systems, digital codes, arithmetical processes, flip-flop circuits and arithmetical circuits. In addition, students learn designing of electronic counters and their work principles, shift-registers, and conversion process from digital to analog.	

Module	Module 24
Code	MITE2204
Course/Module Title	Clinical Chemistry Instrumentation
ECTS	5
Semester	4
Class (hr./w)	2
Lect./Lab./Pr./Tutor	2
SSWL (hr./sem.)	60
USSWL (hr./w)	90
Description	
This module covers the introduction of clinical chemistry and studies the chemical and biochemical mechanism of the human body in relation to disease. Students comprehensively understand clinical chemistry instrumentation: spectrophotometer types, Auto-analyzer types, Electrophoresis, Elisa, Body mass index. They learn to explain their principal work, operation, maintenance, and faults. Topics include protein, fats, minerals, enzymes, and their importance in the human body. They understand the immunology concept and their effects on the human body.	

Module	Module 25
Code	MITE2205
Course/Module Title	Biomedical Transducers and Sensors
ECTS	5
Semester	4
Class (hr./w)	2
Lect./Lab./Pr./Tutor	2
SSWL (hr./sem.)	60
USSWL (hr./w)	90
Description	
The Biomedical Transducers and Sensors course explores the principles and applications of transducers and sensors in the biomedical field. Topics covered include sensor technologies, signal conditioning, measurement techniques, and the interface between sensors and biological systems. Students learn to select, design, and analyze biomedical sensors for accurate and reliable data acquisition in healthcare and research settings.	

Module	Module 26
Code	MITE2206
Course/Module Title	English Language (Intermediate Level)
ECTS	3
Semester	4
Class (hr./w)	2
Lect./Lab./Pr./Tutor	1
SSWL (hr./sem.)	45
USSWL (hr./w)	45
Description	
The intermediate English language course, based on the New Headway Plus, develops language skills at an intermediate level. It covers grammar, vocabulary, listening, speaking, reading, and writing exercises. The course emphasizes building a solid foundation in English communication, comprehension, and expression, fostering confidence in everyday conversations and interactions.	

Module	Module 27
Code	MITE3101
Course/Module Title	Medical Diagnostic Instrumentation I
ECTS	7
Semester	5
Class (hr./w)	2
Lect./Lab./Pr./Tutor	3
SSWL (hr./sem.)	74
USSWL (hr./w)	136
Description	
This module covers the fundamental concepts and principles of many medical diagnostic equipment and instrumentations that are used in hospitals and clinics. Students will understand the different parts of medical diagnostic instrumentation and the idea behind these parts as well as their operation. The student will be able to get the necessary knowledge to diagnose faults, manage repairs, and propose alternatives in emergencies. Covers a wide range of devices including ECG, EEG, VCG, and others. Also introduces measurement and analysis techniques.	

Module	Module 28
Code	MITE3102
Course/Module Title	Microprocessor
ECTS	6
Semester	5
Class (hr./w)	2
Lect./Lab./Pr./Tutor	4
SSWL (hr./sem.)	88
USSWL (hr./w)	92
Description	
This module covers the fundamental concepts and principles of microprocessors and their applications. Students learn to design, develop, and program microprocessor-based systems, including I/O interfacing, instruction sets, timing, and memory architecture.	

Module	Module 29
Code	MITE3103
Course/Module Title	Electromagnetic Fields
ECTS	6
Semester	5
Class (hr./w)	2
Lect./Lab./Pr./Tutor	3
SSWL (hr./sem.)	74
USSWL (hr./w)	106
Description	
The electromagnetic fields course explores electrostatics, magnetostatics, electromagnetic waves, Maxwell's equations, and their application in engineering problems such as telecommunications, antennas, and electromagnetic compatibility.	

Module	Module 30
Code	MITE3104
Course/Module Title	Signals and systems
ECTS	4
Semester	5
Class (hr./w)	2
Lect./Lab./Pr./Tutor	2
SSWL (hr./sem.)	60
USSWL (hr./w)	60
Description	
The signals and systems course introduces fundamental concepts and mathematical tools for analyzing continuous and discrete-time signals and systems. Topics covered include signal representation, Fourier analysis, convolution, Laplace and Z-transforms, and system characterization. The course focuses on understanding the behavior and properties of signals and systems in both time and frequency domains.	

Module	Module 31
Code	MITE3105
Course/Module Title	Computer Programming and Applications (C++ programming)
ECTS	4
Semester	5
Class (hr./w)	2
Lect./Lab./Pr./Tutor	2
SSWL (hr./sem.)	60
USSWL (hr./w)	60
Description	
This module introduces beginners to computer programming and applications using the C++ programming language. Students learn the basics of C++ syntax, data types, control structures, functions, and object-oriented programming concepts. They gain hands-on experience through coding exercises and projects to develop Practical programming skills and problem-solving abilities.	

Module	Module 32
Code	MITE3106
Course/Module Title	English Language (Advanced Level)
ECTS	3
Semester	5
Class (hr./w)	2
Lect./Lab./Pr./Tutor	1
SSWL (hr./sem.)	45
USSWL (hr./w)	45
Description	
The advanced English language course enhances language proficiency at an advanced level. It covers complex grammar structures, vocabulary expansion, idiomatic expressions, and advanced reading and writing skills. The course focuses on improving fluency, accuracy, and communication abilities in English.	

Module	Module 33
Code	MITE3201
Course/Module Title	Medical Diagnostic Instrumentation II
ECTS	7
Semester	6
Class (hr./w)	2
Lect./Lab./Pr./Tutor	3
SSWL (hr./sem.)	74
USSWL (hr./w)	136
Description	
Covers modern imaging systems, telemedicine technologies, and performance analysis of diagnostic equipment. Includes X-ray, CT, MRI, ultrasound, and thermal imaging systems.	

Module	Module 34
Code	MITE3202
Course/Module Title	Medical Electronic Systems
ECTS	6
Semester	6
Class (hr./w)	2
Lect./Lab./Pr./Tutor	3
SSWL (hr./sem.)	74
USSWL (hr./w)	106
Description	
Explores principles, technologies, and design of electronic systems in healthcare. Topics include amplifiers, filters, data acquisition, and regulatory compliance.	

Module	Module 35
Code	MITE3203
Course/Module Title	Medical Communication Systems
ECTS	6
Semester	6
Class (hr./w)	2
Lect./Lab./Pr./Tutor	2
SSWL (hr./sem.)	60
USSWL (hr./w)	120
Description	
Covers communication techniques such as public speaking, business writing, and nonverbal skills for professional healthcare interaction.	

Module	Module 36
Code	MITE3204
Course/Module Title	Power Electronics
ECTS	5
Semester	6
Class (hr./w)	2
Lect./Lab./Pr./Tutor	3
SSWL (hr./sem.)	74
USSWL (hr./w)	76
Description	
Topics include rectifiers, inverters, UPS, converters, and switch-mode power supplies. Covers application in various biomedical devices.	

Module	Module 37
Code	MITE3205
Course/Module Title	Project I
ECTS	3
Semester	6
Class (hr./w)	1
Lect./Lab./Pr./Tutor	1
SSWL (hr./sem.)	60
USSWL (hr./w)	90
Description	
Students define and plan a solution to a biomedical problem. Emphasis on teamwork, critical thinking, and design documentation.	

Module	Module 38
Code	MITE3206
Course/Module Title	Project Management
ECTS	3
Semester	6
Class (hr./w)	2
Lect./Lab./Pr./Tutor	
SSWL (hr./sem.)	45
USSWL (hr./w)	45
Description	
Covers planning, scheduling, cost estimation, and feasibility for medical engineering projects using international standards.	

3. Contact

Program Manager:

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**Ministry of Higher Education and Scientific Research
Scientific Supervision and Evaluation Authority
Quality Assurance and Academic Accreditation Department
Accreditation Division**



Guide to Academic Program and Course Description

2025-2026

Academic Program Description Form

University Name: URUK University
College / Institute: Engineering Technical College
Department: Medical Instrumentation Techniques Engineering
Academic or Professional Program Name: Bachelor's Degree
Final Degree Name: Bachelor's Degree in Medical Instrumentation Techniques Engineering
Study System: Annual (Fourth Level)
Date of Preparation of Description: 16-3-2026
Date of File Completion: 11-4-2026

Signature:



Head of Department Name: Lect. Dr. Fadhil
Abbas Al-Qrimli

Date: 11/4/2026

Signature:



Scientific Associate Name: Asst. Prof. Dr. Falih
Hamza Edan

Date: 11/4/2026



File Reviewed by

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Lect. Dr. Saadiyah Hasan Halos

Date: 11/4/2026

Signature:



Authentication by the Dean:

Prof. Dr. Waleed Ameen Al-Jawher

12/4/2026

1. Program Vision

Leadership and excellence in preparing medical device engineers through the provision of high-quality technical education that keeps pace with scientific and technological advancements, contributing to the improvement of healthcare through highly competent graduates and sustainable innovation.

2. Program Mission

To prepare specialized engineering personnel who possess the scientific and practical skills in diagnosing, maintaining, and developing medical devices, with a focus on creativity, adherence to international standards, and strengthening academic and community partnerships to ensure the quality of education and achieve continuous development in the field.

3. Program Objectives

- Graduate Specialized Engineering Competencies: Graduates will possess exceptional scientific and practical skills in diagnosing faults and repairing medical devices, enabling them to work efficiently in this vital field.
- Prepare Creative Engineers: Equipped with the ability to keep pace with rapid advancements in the medical device field, while acquiring the necessary skills to continuously develop and update these devices.
- Master Medical Device Installation and Operation: This includes both electronic and electromechanical devices, whether diagnostic or therapeutic, ensuring their optimal performance.
- Effectively Manage Maintenance and Calibration: Contributing to the maintenance of medical devices and supervising the necessary calibration processes to ensure their accuracy and efficiency.
- Design and Develop Alternative Solutions: Finding alternatives for certain parts related to medical devices, enhancing innovation and ensuring the continued excellent performance of the devices.
- Organize and Schedule Maintenance Work: Through programming and systematically managing regular maintenance work to ensure the devices operate at high efficiency.
- Enhance Performance Standards: By applying international standards in technical education and working on improving the quality of academic and professional outcomes.
- Stay Updated with Academic Developments: Regularly updating curricula to ensure students are equipped with the latest knowledge and skills in their field.
- Strengthen Community Engagement: By building strong and sustainable

relationships with various segments of the community to enhance cooperation and promote the academic program.

- **Foster Connections with Scientific Institutions:** Through continuous communication with local and international scientific institutions to keep up with the latest developments and innovations in the field.

4. **Program Accreditation**

The Department seeks to obtain Programmatic accreditation

5. **Other External Influences**

Twinning agreement between the Department of Medical Instrumentation Techniques Engineering / College of Technical Engineering / URUK University with the Middle Technical University / College of Electrical Engineering Technology / Baghdad /Iraq

6. **Program Structure**

Program Structure	Number of Courses	Credit Units	Percentage	Notes *
Institutional Requirements	2	4	3.05%	
College Requirements	16	42	32.06%	
Department Requirements	21	85	64.89%	
Summer Training	2	No Units		Training for the second and third years
Other				

7. **Program Description**

Year / Level	Course Code	Course Name	Credit Hours	
			Theoretical	Practical
Fourth Year	MITE401	Medical Devices/3	3	2
	MITE402	Control Systems	2	2
	MITE403	Radiation Devices Engineering	2	2
	MITE404	Medical Laser Systems	2	2
	MITE405	Advanced Digital Design	2	2
	MITE406	Project Management	-	2
	MITE407	Computer Applications	2	1

	MITE408	English Language/4	1	-
	MITE409	Professional Ethics	-	2
	MITE410	Project	-	6

8. Expected Learning Outcomes of the Program

Knowledge		
1	Understanding the fundamental principles of medical device design.	The ability to apply concepts of medical device design and operation in real-world work environments.
2	Acquiring extensive knowledge of biological systems and modern medical technologies.	The ability to comprehend and interpret biological systems and utilize modern medical technologies to enhance healthcare.
3	The ability to analyze medical data and derive conclusions.	The ability to interpret and analyze medical data results and provide precise scientific recommendations.
4	Studying the impact of medical devices on humans and the environment.	The ability to assess the effects of medical devices and propose solutions to mitigate any negative impacts
skills		
1	Developing skills in the use and maintenance of medical devices.	The ability to efficiently maintain and operate medical devices in real-world work environments.
2	The ability to conduct tests and scientific experiments on medical devices.	The ability to design and execute experiments and performance tests for medical devices to ensure their quality.
3	Developing programming and engineering analysis skills for medical devices.	The ability to effectively program and analyze the electronic systems of medical devices.
4	Applying theoretical knowledge to solve practical technical problems.	The ability to utilize skills and theoretical knowledge to solve complex engineering problems in medical devices.
Values		
1	Enhancing ethical and professional values in engineering practices.	The ability to practice medical engineering according to the highest ethical and professional standards.
2	Promoting awareness of the importance of safety and quality in design and maintenance.	The ability to ensure that engineering projects are executed with a focus on safety and work quality.

3	Developing a sense of social and environmental responsibility in engineering work.	The ability to apply engineering solutions that benefit society and preserve the environment.
4	Promoting commitment to ethical and professional standards in engineering projects.	The ability to work in accordance with ethical and professional standards throughout all years of the engineering project.

9. Teaching and Learning Strategies

1. **Faculty Staff:** Use of academically and practically qualified faculty members to deliver high-quality lectures.
2. **Lectures by Faculty Members:** Delivery of theoretical scientific content using innovative educational tools to engage students.
3. **College Library:** Providing scientific sources and academic references to support learning.
4. **Electronic Library:** Enabling students to access scientific references and research journals online.
5. **Textbooks:** Using approved textbooks that provide specialized scientific content aligned with educational objectives.
6. **Supplementary Books:** Providing additional books to support understanding and enhance practical application.
7. **Websites and Internet:** Utilizing the internet and educational websites to support self-research and learning through educational platforms.

10. Evaluation Methods

1. **Continuous Assessment (Formative Assessment)**
2. **Theoretical Tests**
3. **Practical Tests**
4. **Research Projects**
5. **Group Assessment**
6. **Interactive Assessment (Collaborative Assessment)**
7. **Simulation-Based Assessment**
8. **Technological Assessment**
9. **Final Assessment (Summative Assessment)**
10. **Self-Assessment and Peer Assessment**

11. Faculty

Full Name	Academic Title	Specialization		Requirements/Specific Skills (if any)	Faculty Preparation	
		General	Specialized		Staff	Lecturer
Fadhel Abbas Mahdi Al-Qrimli	Lecturer, PhD	Electrical and Electronic Engineering	Power Electronics		Staff	
Abdul Kareem Abdul Amir Abdul Razzaq	Assistant Professor, PhD	Mathematics	Differential Equations		Staff	
Falih Hamzah Eidan	Assistant Professor, PhD	Mechanical Engineering	Materials Engineering		Staff	
Mayada Salih Abdullah Mustafa	Assistant Professor, PhD	Communications Engineering	Communications Engineering		Staff	
Balsam Abdul Jabbar Mustafa	Lecturer (PhD)	Computer Science	Software Engineering		Staff	
Mohammed Safa Al-Din Taher	Lecturer (PhD)	Mechanical Engineering	Applied Mechanics		Staff	
Saadiyah Hasan Halos	Lecturer (PhD)	Physical Sciences	General Physics		Staff	
Saja Basim Lutfi	Lecturer (PhD)	Family Medicine	None		Staff	
Hussein Kasab Hashim	Assistant Lecturer	Physics	Materials Physics		Staff	

Zainab Abdul Kareem Abbas	Assistant Lecturer	Laser Science	Laser Technology & Applications		Staff	
Hawraa Fadhil Abbas	Assistant Lecturer	Control & Systems Engineering (MSc)	Computer Control Engineering			
Yusra Raed Mohammed	Assistant Lecturer	Physical Sciences	General Physics			Lecturer
Amna Jawad Kazim	Assistant Lecturer	Chemical Engineering	Industrial Units		Staff	
Duha Salam Jasim	Assistant Lecturer	Computer Science	Artificial Intelligence		Staff	
Noor Mohammed Jaafar	Assistant Lecturer	Chemical Engineering	Industrial Process Modeling		Staff	
Widad	Assistant Lecturer	Arabic Language	Arabic Language			Lecturer
Kamal Hassan Jawad	Assistant Lecturer	English Language	Linguistics			Lecturer
Farah Hasnain Basim	---	Medical Engineering	Medical Engineering		Staff	
Huda Jasim Muslim Mahdi	---	Physics	Medical Physics		Staff	
Nabil Khalil Ibrahim	---	Electrical Engineering	Electrical Engineering		Staff	
Eraheed Aram Hazim	---	Electrical Engineering	Electrical Engineering		Staff	
Marwa Adnan Tamer	---	Computer Communications Engineering	Computer Communications Engineering		Staff	
Maryam Razzaq Kazim	---	Biomedical Engineering	Biomedical Engineering		Staff	

12. Professional Development

Orientation for New Faculty Members

The college adopts a comprehensive approach for orienting new faculty members. A thorough orientation program is provided to facilitate their integration into the academic and administrative environment. This program includes focused introductory sessions that familiarize new members with the organizational structure, teaching and learning strategies employed by the college, academic and administrative systems, as well as campus services. Academic mentors are assigned to guide new faculty members individually, focusing on continuous support and answering their inquiries to ensure their swift adaptation to the academic work environment. For visiting and full-time faculty members, detailed information is provided about their expected academic tasks and available resources to ensure the highest levels of success and effectiveness in performing their duties.

Professional Development for Faculty Members

The college aims to enhance the continuous professional growth of faculty members through a comprehensive plan focused on developing teaching strategies, innovating teaching and learning methods, and evaluating learning outcomes in line with the latest global academic trends. The plan includes organizing regular workshops and training courses covering various topics such as improving teaching efficiency, utilizing modern technologies in education, innovative assessment methods, and developing research skills. The college also encourages participation in local and international academic conferences and seminars to promote the exchange of experiences and specialized knowledge. In addition, a comprehensive evaluation mechanism is implemented to assess the performance of faculty members, including feedback from students and colleagues, which contributes to offering tailored training opportunities based on individual needs. In this context, the college ensures to provide a learning environment that supports continuous professional development and contributes to improving academic performance quality.

13. Admission Criteria

The student is accepted into the college through the central admission process of the Ministry of Higher Education and Scientific Research.

14. Main Sources of Information about the Program

1. Faculty staff in the college.
2. Lectures by faculty members.
3. College library.
4. Electronic library.
5. Textbooks.
6. Supplementary books.
7. Websites and the internet.

15. Program Development Plan

1. Presence of E-Learning
2. Training in Hospitals and Medical Equipment Companies
3. Academic Training in Hospitals
4. Preparation of Graduation Projects, Following Up, and Discussing Them in a Manner that Simulates University Theses and Dissertations to Strengthen the Research Skill Aspect of the Student

Program Skills Diagram

Program skills plan															
Education outputs required from the program															
Skills				Values				Knowledge				Essential or optional	Name of Rapporteur	Symbol of decision	Phase
D4	D3	D2	D1	C4	C3	C2	C1	A4	A3	A2	A1				
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Specialized	Medical equipment/3	MITE401	Fourth
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Specialized	Systems of control	MITE402	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Specialized	Engineering of radiation devices	MITE403	
			✓		✓	✓	✓	✓	✓	✓	✓	Specialized	Medical Laser Systems	MITE404	
	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Specialized	Advanced digital design	MITE405	
			✓	✓	✓	✓	✓	✓	✓	✓	✓	general	Management of projects	MITE406	
			✓	✓	✓	✓	✓	✓		✓	✓	Assistance	Applications of Calculation	MITE407	
	✓	✓	✓			✓	✓			✓	✓	Assistance	English and 4	MITE408	
✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	Specialized One Semester	Ethics of profession	MITE409	
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Specialized	The project	MITE410	

Description of the courses

Course Description (1)	
1. Course Name or Topic:	Medical Devices/3
2. Course Code:	MITE401
3. Semester / Year:	Fourth year
4. Date of Preparation:	5/2/2026
5. Available Attendance Formats:	In-person
6. Total Hours:	150
7. Course Instructor(s):	
8. Course Objectives: Understanding Medical Devices: Study of the medical device as a purely electronic device and understanding its differences from other electronic devices. Practical Training: Training on the internal electronic circuits of medical devices, their operation, and maintenance methods.	
9. Teaching and Learning Strategies: ○ Interactive Lectures: Theoretical explanation supported by practical examples. ○ Laboratory Practical Training: Hands-on use of surgical devices. ○ Simulation and Virtual Experiments: Training on devices using simulation software. ○ Problem-Based Learning: Studying clinical cases to identify the type of devices required. ○ Field Visits: Visiting hospitals and surgical centers to see devices in action.	
10. Course Structure	
Week	Topic
1st-2nd	General Systems and Specialized Tools in General Surgery
3rd-5th	Specialized Systems and Tools
6th-7th	Surgical Instruments for Ophthalmology
8th-9th	Cardiovascular Surgery
10th	Heart-Lung Machine
11th-12th	Dialysis Machine
13th-14th	Surgical Diathermy
15th-17th	Prosthetic Organs (Internal and External)
18th-20th	Dental Systems
21st-22nd	Surgical Instruments for Gynecology
23rd-24th	Ultrasound-Assisted Devices
25th-26th	Hearing Surgery Systems
27th-28th	Anesthesia Units
29th-30th	Intensive Care Units

11. Assessment Method: Practical exams, theoretical exams, reports

12. Learning and Teaching Resources

Assigned Books (Curricular) if any):

- "Surgical Instrumentation: An Interactive Approach" – Renee Nemitz
- "Biomedical Instrumentation and Devices" – Anthony Y. K. Chan

Main References (Sources)

- "Medical Instrumentation: Application and Design" – John G. Webster
- "Handbook of Biomedical Instrumentation" – R. S. Khandpur

Supporting Books and References (Scientific Journals, Reports...):

- Published research in IEEE Transactions on Medical Devices
- Articles on modern surgical device technologies

Electronic References and Websites:

- PubMed
- ScienceDirect
- Specialized training courses on Coursera and edX

Course Description (2)																													
1. Course Name or Topic:	Control Systems																												
2. Course Code:	MITE402																												
3. Semester / Year:	Fourth year																												
4. Date of Preparation:	5/2/2026																												
5. Available Attendance Formats:	In-person																												
6. Total Hours:	120																												
7. Course Instructor(s):																													
8. Course Objectives:	Understanding control circuit components: Getting familiar with the components of control circuits, types of controllers, and their uses. Practical applications: Studying the practical circuits of controllers and how they are used in various systems.																												
9. Teaching and Learning Strategies:	○ Interactive lectures: Presenting basic concepts with practical examples. ○ • Problem-solving training: Practical mathematical application to solve control problems. ○ • Simulation using software: Such as MATLAB and Simulink to analyze control systems. ○ • Case study analysis: Analyzing control systems used in medical and industrial applications. ○ • Project-based learning: Designing and implementing control systems using microcontrollers.																												
10. Course Structure	<table> <tr> <th>Week</th><th>الموضوع</th></tr> <tr> <td>1st</td><td>Introduction to linear control engineering</td></tr> <tr> <td>2nd, 3rd</td><td>Mathematical background; lap lace transform, complex variable, matrices</td></tr> <tr> <td>4th, 5th, 6th</td><td>Transfer function, block diagram representation and reduction, signal flow diagram</td></tr> <tr> <td>7th, 8th, 9th</td><td>Time domain analysis, steady – state transient analysis</td></tr> <tr> <td>10th, 11th</td><td>Stability analysis; Routh, Nyquist</td></tr> <tr> <td>12th, 13th</td><td>Root locus technique</td></tr> <tr> <td>14th, 15th, 16th</td><td>Frequency domain analysis, Epimarginal, phase margin and bode plot</td></tr> <tr> <td>17th, 18th</td><td>Frequency domain synthesis, phase lead</td></tr> <tr> <td>19th, 20th</td><td>Compensation, phase – lag compensation lag – lead compensation</td></tr> <tr> <td>21st, 22nd, 23rd, 24th</td><td>PID controllers design</td></tr> <tr> <td>25th, 26th, 27th</td><td>State space representation and analysis</td></tr> <tr> <td>28th, 29th</td><td>State diagram; analogue computer</td></tr> <tr> <td>30th</td><td>Block diagram representation</td></tr> </table>	Week	الموضوع	1st	Introduction to linear control engineering	2nd, 3rd	Mathematical background; lap lace transform, complex variable, matrices	4th, 5th, 6th	Transfer function, block diagram representation and reduction, signal flow diagram	7th, 8th, 9th	Time domain analysis, steady – state transient analysis	10th, 11th	Stability analysis; Routh, Nyquist	12th, 13th	Root locus technique	14th, 15th, 16th	Frequency domain analysis, Epimarginal, phase margin and bode plot	17th, 18th	Frequency domain synthesis, phase lead	19th, 20th	Compensation, phase – lag compensation lag – lead compensation	21st, 22nd, 23rd, 24th	PID controllers design	25th, 26th, 27th	State space representation and analysis	28th, 29th	State diagram; analogue computer	30th	Block diagram representation
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30th	Block diagram representation																												
11. Assessment Method:	Practical exams, theoretical exams, reports																												
12. Learning and Teaching Resources	Assigned Books (Curricular) if any): • "Modern Control Engineering" – Katsuhiko Ogata • "Automatic Control Systems" – Benjamin C. Kuo Main References (Sources): • "Control Systems Engineering" – Norman S. Nise • "Linear System Theory and Design" – Chi-Tsong Chen Supporting Books and References (Scientific Journals, Reports...): • IEEE research on control systems • Articles on control systems in medical and industrial devices Electronic References and Websites: • MIT Open Courseware – Control Systems • MATLAB Documentation • Coursera – Control Systems																												

Course Description (3)

1. Course Name or Topic:	Radiation Device Engineering																														
2. Course Code:	MITE403																														
3. Semester / Year:	Annual																														
4. Date of Preparation:	5/2/2026																														
5. Available Attendance Formats:	In-person																														
6. Total Hours:	120																														
7. Course Instructor(s):																															
8. Course Objectives:	Understanding atomic structure and radiation: Study of atomic structure, nuclear radiation, and their effects on the human body. Uses of radiation in medical devices: Learning how radiation is used in various medical devices.																														
9. Teaching and Learning Strategies:	○ Delivering theoretical lectures to explain the basic principles of radiation. ○ Conducting practical experiments in medical physics laboratories. ○ Analyzing medical cases involving the use of radiation in treatment and diagnosis. ○ Small research projects on modern radiation technologies. ○ Computer simulations to study the effects of radiation on tissues.																														
10. Course Structure	<table> <tr> <th>Week</th><th>الموضوع</th></tr> <tr> <td>1st, 2nd</td><td>Atomic structure and atomic radiation</td></tr> <tr> <td>3rd, 4th</td><td>The nuclear and nuclear radiation</td></tr> <tr> <td>5th, 6th</td><td>Interaction of radiation with matter</td></tr> <tr> <td>7th, 8th, 9th</td><td>Radiation detection & engineering of radiation detectors</td></tr> <tr> <td>10th, 11th, 12th</td><td>Engineering of radiation dosimetry and dosimeters</td></tr> <tr> <td>13th, 14th</td><td>Radiation protection</td></tr> <tr> <td>15th, 16th</td><td>Engineering of body scanners</td></tr> <tr> <td>17th, 18th</td><td>Production of X – rays</td></tr> <tr> <td>19th, 20th</td><td>Clinical radiation generators</td></tr> <tr> <td>21st, 22nd</td><td>Dose distribution and scatter analysis</td></tr> <tr> <td>23rd, 24th</td><td>A system of dosimetry calculations</td></tr> <tr> <td>25th, 26th</td><td>Treatment planning</td></tr> <tr> <td>27th, 28th</td><td>Engineering of electron beam therapy</td></tr> <tr> <td>29th, 30th</td><td>Brachy therapy</td></tr> </table>	Week	الموضوع	1st, 2nd	Atomic structure and atomic radiation	3rd, 4th	The nuclear and nuclear radiation	5th, 6th	Interaction of radiation with matter	7th, 8th, 9th	Radiation detection & engineering of radiation detectors	10th, 11th, 12th	Engineering of radiation dosimetry and dosimeters	13th, 14th	Radiation protection	15th, 16th	Engineering of body scanners	17th, 18th	Production of X – rays	19th, 20th	Clinical radiation generators	21st, 22nd	Dose distribution and scatter analysis	23rd, 24th	A system of dosimetry calculations	25th, 26th	Treatment planning	27th, 28th	Engineering of electron beam therapy	29th, 30th	Brachy therapy
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29th, 30th	Brachy therapy																														
11. Assessment Method:	Practical exams, theoretical exams, reports																														
12. Learning and Teaching Resources	Assigned Books (Curricular) if any): • Introduction to Radiological Physics and Radiation Dosimetry - Frank Herbert Attix Main References (Sources): • The Physics of Radiology - Harold Elford Johns Supporting Books and References (Scientific Journals, Reports...): • IEEE articles and research on medical radiation technology. Electronic References and Websites: • International Atomic Energy Agency (IAEA) – www.iaea.org • Radiology Info – www.radiologyinfo.org																														

Course Description (4)	
1. Course Name or Topic:	Medical Laser Systems
2. Course Code:	MITE404
3. Semester / Year:	Fourth year
4. Date of Preparation:	5/2/2026
5. Available Attendance Formats:	In-person
6. Total Hours:	120
7. Course Instructor(s):	
8. Course Objectives: Understanding Laser Generation: Study how different types of lasers are generated. Laser Transmission and Reception: Learn the methods of laser transmission and reception. Using Lasers in Medical Devices: Understand how lasers are used in various medical devices.	
9. Teaching and Learning Strategies: ○ Lectures: Theoretical sessions to explain the basic principles of laser operation and optical fibers. ○ Practical Experiments: Conduct experiments on laser generation and its propagation through optical fibers. ○ Medical Applications Analysis: Study medical applications of lasers for diagnosis and treatment. ○ Mini Research Projects: Investigate the latest laser technologies in medicine. ○ Computational Simulation: Use computer simulations to analyze the effects of different parameters on light transmission in fibers. ○ .	
10. Course Structure	
Week	topic
1st, 2nd	Laser generation
3rd, 4th	Types of Lasers
5th, 6th, 7th	Light and light propagation in glass fiber
8th, 9th, 10th	Optical fiber wave guide, bandwidth distance product, dispersion and pulse spreading, maximum allowable data rate, fiber power losses
11th, 12th	Transmitter device and circuits (communication LEDs)
13th, 14th	Injection lasers, modulators
15th, 16th	Receiver devices and circuits, photo diode light detector
17th	PIN photo diodes, photo multiplier
18th, 19th	Avalanche photo diode (APD), receiver circuits
20th, 21st	Transmission technology, fiber technology, connectors
22nd, 23rd	Splices, couplers
24th, 25th, 26th, 27th	Types of medical applications of laser
28th- 29th- 30th	Laser hazards, the standard level for a safe working environment, lab safety
11. Assessment Method: Practical exams, theoretical exams, reports	
12. Learning and Teaching Resources	
Assigned Books (Curricular) if any): • Principles of Lasers - Orazio Svelto	
Main References (Sources): • Fiber-Optic Communication Systems - Govind P. Agrawal	
Supporting Books and References (Scientific Journals, Reports...): • Laser Physics - Peter W. Milonni	
Electronic References and Websites: • Laser Institute of America – www.lia.org • Optical Society of America – www.osa.org	

Course Description (5)	
1. Course Name or Topic:	Advanced Digital Design
2. Course Code:	MITE405
3. Semester / Year:	Fourth year
4. Date of Preparation:	5/2/2026
5. Available Attendance Formats:	In-person
6. Total Hours:	120
7. Course Instructor(s):	
8. Course Objectives:	Understanding Artificial Intelligence: Developing the ability to understand and design artificial intelligence systems. Microprocessor Technologies: Acquiring skills in microprocessor technology and VLSI systems.
9. Teaching and Learning Strategies:	○ Applying theoretical concepts in the medical field: Encouraging students to apply the theoretical concepts they study to solve medical problems and design medical devices. ○ Teamwork and scientific research: Encouraging students to work together in scientific research projects and solve problems related to the course materials. ○ Using practical examples: Using practical examples to explain theoretical concepts and connect them to medical applications. ○ Continuous assessment: Continuously assessing students through practical and theoretical tests and research projects. ○ Encouraging creativity and innovation: Encouraging students to think critically and creatively in solving problems and developing new ideas in the field of medical device technology engineering..
10. Course Structure	
Week	Topic
1	Artificial Intelligence
2	Simulation and Modeling
3	Control System
4	Image Processing and Communications
5	Real-Time System
6	Microelectronics Technology
7	VLSI System
8	Topics in Electrical/Electronic Engineering
9	Advanced Computer Architecture
10	Topics in Computer Architecture
11	Robotics and Automation
12	Topics in Digital System
13	Advanced Logic Design
14 - 15	Topics in Computer Science
16 - 17	Digital Control System
18	Engineering Economic Analysis
19	Signal Processing
20	CAD/CAM
21	Reliability Engineering
22	Fault Diagnosis
23	Microcomputer System Design

24	Software Engineering
25	Parallel Processing
26	Operating System
27	Advanced Electronics
28	Maintenance Management
29	Nuclear & Radiation Equipment
30	Instruments & Operation Control

11. Assessment Method: Practical exams, theoretical exams, reports	
12. Learning and Teaching Resources Assigned Books (Curricular) if any): • "Introduction to Artificial Intelligence" ↓ Stuart Russell و Peter Norvig. • "Simulation Modeling and Analysis" ↓ Averill M. Law. • "Modern Control Engineering" ↓ Katsuhiko Ogata. Main References (Sources): • Artificial Intelligence: A Modern Approach". • "System Simulation: Theory and Applications". • "Control Systems Engineering Supporting Books and References (Scientific Journals, Reports...): • Scientific journals like "Journal of Artificial Intelligence Research." • • Research reports on applications of course topics. • • "IEEE Transactions on Control Systems Technology." Electronic References and Websites: • Websites like "AI Magazine." • "arXiv.org." • "Control Tutorials for MATLAB and Simulink)	

Course Description (6)	
1. Course Name or Topic:	Project Management
2. Course Code:	MITE406
3. Semester / Year:	Fourth year
4. Date of Preparation:	5/2/2026
5. Available Attendance Formats:	In-person
6. Total Hours:	60
7. Course Instructor(s):	
8. Course Objectives: Acquiring essential skills: Learning how to design, plan, execute, and monitor projects. Problem-solving: The ability to identify project issues and find appropriate solutions using project management tools and methods.	
9. Teaching and Learning Strategies: ○ Using case studies to analyze real-world projects. ○ Applying collaborative learning through workgroups to solve scheduling and control problems. ○ Conducting hands-on simulations using software like Microsoft Project or Primavera.	
10. Course Structure	
Week	Topic
1	Introduction to project management: Objectives and trade-offs (Cost – Schedule – Performance).
2	Planning and control in projects: Planning, Scheduling, Controlling.
3	Scheduling methods.
4	Gantt chart.
5	Network methods.
6	Constant-time network.
7-8	PERT network.
9-10	Critical Path Method (CPM).
11	Precedence Diagramming Method.
12-13	Project phases: Choice of project location.
14	Process design.
15	Choice of technology.
16	Financial analysis: Purchase of new machine, Machine replacement.
17	Layout of facilities.
18	Managing the workforce in projects: Who manages the workforce?
19	Principles in decision-making for workforce management.
20	Japan's workforce management.
21	New approaches to performance evaluation.
22	Materials handling: Concepts of MRP system.
23	Elements of MRP system.
24	MRP vs. Order-point system, MRP vs. Just-in-Time system.
25	Activities in projects: Coordination of project activities, Activity breakdown.
26	Measuring project progress tools.

27	Methods study.
28	Types of work measurement.
29	Time study.
30	Time management.

11. Assessment Method: Practical exams, theoretical exams, reports

12. Learning and Teaching Resources

Assigned Books (Curricular) if any):

- "Project Management: A Systems Approach to Planning, Scheduling, and Controlling" - Harold Kerzner.
- "A Guide to the Project Management Body of Knowledge (PMBOK Guide)" - PMI.

Main References (Sources):

- "Effective Project Management: Traditional, Agile, Extreme" - Robert K. Wysocki.
- "Managing Projects: A Team-Based Approach" - Karen Brown, Nancy Lea Hyer.

Supporting Books and References (Scientific Journals, Reports...):

- Journals such as "International Journal of Project Management."
- Reports from organizations like PMI (Project Management Institute).
- Books on scheduling techniques such as CPM and PERT.

Electronic References and Websites:

- PMI website (www.pmi.org) for project management resources.
- Online courses on LinkedIn Learning or Udemy on project management.
- Coursera website: Project Management courses (such as Google Project Management Certificate)

Course Description (7)							
1. Course Name or Topic:	Applications of Calculators						
2. Course Code:	MITE407						
3. Semester / Year:	Fourth year						
4. Date of Preparation:	5/2/2026						
5. Available Attendance Formats:	In-person						
6. Total Hours:	90						
7. Course Instructor(s):							
8. Course Objectives:	Creating and formatting presentations. Creating and formatting text documents. Analyzing data and creating graphs. Creating, analyzing, and managing databases.						
9. Teaching and Learning Strategies:	○ Practical Application: Focus on implementing presentations and hands-on training with software. ○ Interactive Lectures: Presenting the material theoretically supported by explanatory presentations to simplify concepts. ○ Project-Based Learning: Assigning students to create presentations or practical projects using the discussed software. ○ Self-Training: Encouraging students to explore the features of the software independently and experiment with its different tools. ○ Discussions and Problem-Solving: Engaging students in discussions about the challenges they may face while using the software in practice.						
10. Course Structure	<table> <tr> <th>Week</th><th>Topic</th></tr> <tr> <td>1st – 10th</td><td> PowerPoint Program: Concept of the program and its benefits, how to run it, and its components. • Creating a New Presentation: Using templates provided by the program or working directly, saving the presentation, making edits, and saving changes. • Slide Layout: Adding a new slide (Slide) with text (Text) or graphics (Graphics), adding notes, and adding main titles. • Adding Drawings: Using available drawing tools to add graphics, modifying text, and controlling slide layout. • Controlling Slide Colors and Backgrounds. • Adding Clip Art: Methods for resizing, cutting, and controlling images, adding photos and controlling them, adding charts from Excel, or data sheets from Access databases. • Using Presentation Commands: Timing settings, slide transitions, animation effects, and adding sound effects for narration. </td></tr> <tr> <td>11th – 30th</td><td>Advanced Customization Applications for CAD-CAM:</td></tr> </table>	Week	Topic	1 st – 10 th	PowerPoint Program: Concept of the program and its benefits, how to run it, and its components. • Creating a New Presentation: Using templates provided by the program or working directly, saving the presentation, making edits, and saving changes. • Slide Layout: Adding a new slide (Slide) with text (Text) or graphics (Graphics), adding notes, and adding main titles. • Adding Drawings: Using available drawing tools to add graphics, modifying text, and controlling slide layout. • Controlling Slide Colors and Backgrounds. • Adding Clip Art: Methods for resizing, cutting, and controlling images, adding photos and controlling them, adding charts from Excel, or data sheets from Access databases. • Using Presentation Commands: Timing settings, slide transitions, animation effects, and adding sound effects for narration.	11 th – 30 th	Advanced Customization Applications for CAD-CAM:
Week	Topic						
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11 th – 30 th	Advanced Customization Applications for CAD-CAM:						
11. Assessment Method:	Practical exams, theoretical exams, reports						
12. Learning and Teaching Resources	Assigned Books (Curricular) if any): • Microsoft PowerPoint Guide – Official guide for Microsoft PowerPoint. • CAD-CAM: Principles and Applications – A book on advanced applications in computer-aided design and manufacturing. Main References (Sources): • The Complete Guide to Microsoft PowerPoint" – A comprehensive book on all functions of the program. • "CAD/CAM Theory and Practice" – A main reference outlining the fundamentals and software of CAD-CAM. Supporting Books and References (Scientific Journals, Reports...): • Specialized scientific journals in Information Technology.						

- Research reports on the development of software in presentations and engineering design.

Electronic References and Websites:

- The official Microsoft website for updates and tutorials on PowerPoint.
- Educational courses on platforms like Coursera and Udemy to learn presentation techniques and CAD-CAM software.
- Specialized websites like ResearchGate and IEEE Xplore for accessing recent research on computer-aided design applications.

Course Description (8)

1. Course Name or Topic:		English /4
2. Course Code:		MITE408
3. Semester / Year:		Fourth year
4. Date of Preparation:		5/2/2026
5. Available Attendance Formats:		In-person
6. Total Hours:		30
7. Course Instructor(s):		
8. Course Objectives: Developing English language skills in the field of biomedical engineering to facilitate effective communication in academic and industrial work environments. Equipping students with the essential medical and engineering terminology used in medical devices and healthcare technologies. Enhancing students' abilities in technical writing and scientific reports related to medical devices and modern technologies. Improving speaking and presentation skills through presenting projects and presentations on biomedical engineering topics. Introducing students to modern scientific and technological resources that support scientific research and practical applications in biomedical engineering.		
9. Teaching and Learning Strategies: ○ Interactive learning – using presentations and classroom discussions to enhance understanding and comprehension. ○ Project-based learning – assigning students practical projects related to medical devices and modern technologies. ○ Problem-based learning – analyzing case studies and technical challenges to solve engineering and medical problems. ○ Self-learning and research assignments – encouraging students to explore scientific resources and provide analytical reports. ○ Simulation and practical training – using software and virtual models to demonstrate the operation of medical devices and their technologies.		
10. Course Structure		
Week	Topic	Details
1st, 2nd	Review of Technical English & Research Writing	Revisiting key biomedical terms, technical writing basics, and academic reading strategies.
3rd, 4th	Advanced Scientific Writing	Structuring research papers, writing abstracts, and citing sources properly.
5th, 6th	Medical Device Regulations & Standards	Understanding FDA, ISO, and CE regulations related to biomedical devices.
7th, 8th	Patent Writing and Intellectual Property	Learning how to write and analyze patents for biomedical inventions.
9th, 10th	Literature Review & Research Methodology	Techniques for conducting literature reviews and summarizing key findings.
11th, 12th	Clinical and Technical Documentation	Writing clinical reports, user manuals, and technical specifications for devices.
13th, 14th	Ethics in Biomedical Engineering	Understanding bioethics, patient safety, and ethical considerations in research.
15th, 16th	Scientific Presentation & Public Speaking	Developing and delivering professional research presentations.
17th, 18th	Biomedical Case Studies & Innovations	Analyzing real-world case studies in medical device development.

19th, 20th	Regulatory Compliance and Risk Assessment	Writing risk analysis reports and regulatory compliance documents.
21st, 22nd	Data Analysis & Interpretation in Research	Understanding statistical reports, graphs, and interpreting experimental results.
23rd, 24th	Medical Research Proposal Writing	Structuring and writing research proposals for funding applications.
25th, 26th	Professional Communication & Industry Reports	Writing professional emails, reports, and business proposals in the biomedical industry.
27th, 28th	Peer Review & Scientific Criticism	Analyzing and critiquing scientific papers effectively.
29th, 30th	Final Research Paper & Oral Defense	Preparing the final research paper and practicing for oral defense presentations.

11. Assessment Method: Practical exams, theoretical exams, reports

12. Learning and Teaching Resources

Assigned Books (Curricular) if any):

- English for Medical and Engineering Purposes
- Technical English for Biomedical Engineers
- Medical Terminology for Health Professions

Main References (Sources):

- Handbook of Biomedical Engineering
- Introduction to Biomedical Technology
- Engineering in Medicine: Principles and Applications

Supporting Books and References (Scientific Journals, Reports...):

- Scientific journals: IEEE Transactions on Biomedical Engineering
- Reports: World Health Organization (WHO) reports on medical devices
- Research: Research published in PubMed and ScienceDirect

Electronic References and Websites:

- Educational websites: Coursera, edX (Courses on biomedical engineering and technical English)
- Scientific databases: PubMed, ScienceDirect, IEEE Xplore
- Academic platforms: ResearchGate, Google Scholar

Course Description (9)	
1. Course Name or Topic:	Professional Ethics
2. Course Code:	MITE409
3. Semester / Year:	Fourth year
4. Date of Preparation:	5/2/2026
5. Available Attendance Formats:	In-person
6. Total Hours:	60
7. Course Instructor(s):	
8. Course Objectives: Understanding the Concept and Importance of Ethics: Students learn the concept of ethics and its significance in both professional and personal life. Applying Ethics in the Workplace: Students acquire skills to apply professional ethics in their work environment.	
9. Teaching and Learning Strategies: ○ problem-Based Learning: Encouraging students to analyze ethical dilemmas in medical and engineering professions and develop practical solutions to uphold ethical values in workplaces. ○ Interactive Learning: Using group discussions and presentations to enhance communication among students on ethical issues in engineering and medical fields. ○ Experiential Learning: Implementing simulations of real work environments to familiarize students with daily professional challenges and ethical decision-making. ○ Project-Based Learning: Assigning group projects focused on promoting and applying professional ethics in engineering and medical fields. ○ Self-Directed Learning: Encouraging students to conduct independent research on ethical topics relevant to their field through case studies and academic articles.	
10. Course Structure	
week	Details of the Topics:
1 – 2	The concept of ethics and its origin. - General rules of ethics. - Sources of ethics. - Ethical values. - The importance of ethics for individuals and society.
3 – 4	Unit Two - Work and Profession. - Work and its importance. - Work behaviors. - The concept of profession. - Definition of profession. - The difference between the concepts of work, profession, and craftsmanship. - The foundations upon which a profession should be built.
4 – 5	Unit Three - Professional Ethics. - The nature of professional ethics. - The positive outcomes of adhering to professional ethics. - Characteristics of work ethics. - Attributes of professional ethics. - Steps to achieving an acceptable level of professional ethics.
5 – 6	Unit Four - Values and Professional Ethics. - Honesty. - Advising. - Justice. - Good conduct. - Work proficiency.
7 – 10	Unit Five - Unethical Behavior Patterns in the Profession. - Bribery. - The concept of bribery. - Types of bribery. - The difference between gifts and bribery. - The reasons and motivations behind bribery. - Fraud. - The concept of fraud. - The nature of fraud in the workplace. - Manifestations of fraud in job performance. - Administrative corruption. - Definition of administrative corruption. - Types of administrative corruption. - Unethical administrative behavior.
10- 13	Unit Six - Professional Ethics. - How to enhance ethical behavior at work according to (Kreiner & Kinicki). - Considerations when drafting a professional ethics charter. - Means and methods of establishing professional ethics. - Levels of building and reinforcing professional ethics. - Methods of instilling professional ethics values.
14 – 18	Unit Seven - Ethics of Arab Engineers. - The importance of fundamental pillars of the engineering profession charter. - The relationship of the engineer with their institution and engineering work. - The relationship of the engineer with the employer. - The

	relationship of the engineer with the engineering world and the engineering association they belong to. - The role of the engineer and their relationship with society. - The engineer's relationship with the environment, sustainable development, health, and public safety. - The engineer's relationship with laws, regulations, labor laws, and workers' rights. - The engineer's relationship with national, regional, and humanitarian issues.
19 – 22	Unit Eight - Engineering Professional Ethics (specific to technical engineering colleges). - The importance of engineers in society. - Definition of engineering ethics. - Conditions for a professional engineer. - Attributes of a professional engineer. - Examples of certain provisions of the engineering profession practice regulation in the Engineers' Syndicate. - The Islamic perspective on professional ethics compared to Western and American views.
23 – 24	Unit Nine - Ethics of Practicing the Engineering Profession. - The importance of engineers in society. - Definition of engineering ethics. - Conditions for a professional engineer. - Attributes of a professional engineer. - Examples of certain provisions of the engineering profession practice regulation in the Engineers' Syndicate. - The Islamic perspective on professional ethics compared to Western and American views.
24 – 25	Unit Nine - Ethics of Practicing the Medical Profession (specific to the College of Health and Medical Technology). - Characteristics and attributes of a medical technician. - Duties of the medical technician towards their profession, patients, and society.
26 – 27	Patient Rights. - Justice and equality. - Maintaining patient confidentiality. - Informed consent. - Comprehensive care. - Placing the patient's interest above all considerations. - Effective communication with patients. - The right to access medical records.
28 – 29	Professional Relationships: The relationship of the medical technician with colleagues in the healthcare institution. - Respect, cooperation, avoiding criticism in front of patients, accuracy, and honesty in performance.
30	Ethics and Medical Research: - Ethics of conducting medical experiments in Iraqi healthcare institutions. - The Helsinki Agreement on medical experiment ethics. - Ethics of writing medical research. - Ethics of teaching and learning through patients.

11. Assessment Method: Practical exams, theoretical exams, reports

12. Learning and Teaching Resources

Assigned Books (Curricular) if any):

- Ethics in the Medical and Engineering Professions – A textbook covering the principles of ethics in medical and engineering fields.
- Work and Profession in Medical Engineering – A book explaining the differences between work and profession in the engineering and medical contexts.
- Medical Professional Ethics – A guide addressing the ethical aspects of medical practice

Main References (Sources):

- Handbook of Medical Ethics – A primary reference on medical ethics.
- Engineering Ethics: Concepts and Cases – A key book explaining engineering ethics with case studies.
- The Ethics of Healthcare Technologies – A reference linking ethics and medical technology.

Supporting Books and References (Scientific Journals, Reports...):

- IEEE Transactions on Biomedical Engineering – Specialized journals in scientific research and ethics in biomedical engineering.
- Ethics in Medicine Journal – Professional journals focusing on ethical topics in medicine.
- World Health Organization (WHO) Reports – Periodic reports on healthcare ethics at the international level.

Electronic References and Websites:

- PubMed – A research database in medicine and medical ethics.
- IEEE Xplore – An academic library for scientific research in biomedical engineering.
- Google Scholar – An academic search engine for papers and research related to ethics in

Course Description (10)	
1. Course Name or Topic:	project 1
2. Course Code:	MITE410
3. Semester / Year:	Fourth year
4. Date of Preparation:	5/2/2026
5. Available Attendance Formats:	In-person
6. Total Hours:	180
7. Course Instructor(s):	
8. Course Objectives: Self-Reliance: Developing self-reliance skills to demonstrate scientific competence. Setting and Analyzing Goals: The ability to identify key project goals and analyze work steps. Teamwork: Learning how to collaborate with a group of students to support teamwork.	
9. Teaching and Learning Strategies: - Project-Based Learning: Encourages students to apply acquired skills and knowledge while implementing practical projects, enhancing critical thinking and problem-solving. - Collaborative Learning: Through cooperation with supervisors and peers, knowledge and feedback are exchanged to improve the project. - Self-Directed Learning: Students conduct independent research and use electronic resources and prescribed books to obtain additional information supporting their project. - Hands-On Learning: By conducting experiments and testing models practically, students enhance their understanding of theoretical materials and achieve real-world results. - Continuous Assessment: Evaluating students at each stage of the project, allowing them to adjust and improve their projects based on feedback.	
10. Course Structure	
Week	Vocabulary
1	Assigning projects to students, reviewing with the supervising professor, and starting library research. Collecting information about the project, beginning theoretical study, and preparing the necessary designs.
2	Starting the implementation of proposed designs practically, conducting experiments and tests to obtain the practical model.
3	Conducting practical experiments, testing final board transfers, and obtaining final project results.
4	Discussing practical results, their alignment with real-world outcomes, and identifying necessary modifications to improve the phenomenon.
5	Organizing sections of the written report for each stage of the project in preparation for the final report. Submitting the final report in detail: - Project name. - Student's name. - Supervisor's name. - Chapter One: Introduction. - Chapter Two: Theoretical section. - Chapter Three: Practical section and results. - Chapter Four: Discussion of results, conclusions, and recommendations. - References.
6	Delivering the practical project model along with the final report for final testing and evaluation.
11. Assessment Method: Theoretical exams, reports.	
12. Learning and Teaching Resources Recommended Textbooks (if available): Scientific Research References: Books focusing on the fundamentals of scientific research and precise project preparation.	

- Guide to Writing Academic Reports: A book explaining how to professionally structure and write scientific project reports.
-
- Books on Engineering Project Design and Implementation: Including resources on designing medical devices, testing them, and analyzing results.

Main References (Sources):

- Scientific Research in Biomedical Engineering: A reference explaining how to conduct scientific research in the field of medical devices.
- The Complete Guide to Writing Research Reports: A primary resource for writing scientific research reports.
- Practical Engineering Projects in Biomedical Engineering: A reference highlighting how to apply designs in the field of medical devices.

Supporting Books and References (Journals, Reports, etc.):

- IEEE Transactions on Biomedical Engineering: Provides scientific research papers related to biomedical engineering technologies.
- Journal of Medical Engineering & Technology: A journal specializing in biomedical engineering technologies and related research.
- World Health Organization Reports: Reports that contribute to understanding health and technical issues that may impact engineering projects.

Electronic References and Websites:

- PubMed: A database offering research papers in medicine and biomedical engineering.
- IEEE Xplore: An academic library containing scientific articles and research related to biomedical engineering.
- Google Scholar: An academic search engine that students can use to find scientific papers and articles on biomedical engineering topics

URUK University

جامعة اوروك



Sixth Cycle – Bachelor's Degree (B.Sc.) –

Department of Medical Instrumentation

Techniques Engineering

بكالوريوس - قسم هندسة تقنيات الاجهزة الطبية



Academic Program Description Form

University Name: URUK University

College / Institute: Engineering Technical College

Department: Medical Instrumentation Techniques Engineering

Academic or Professional Program Name: Bachelor's Degree

Final Degree Name: Bachelor's Degree in Medical Instrumentation Techniques Engineering

Study System: Bologna (First Level + Second Level +Third Level)

Date of Preparation of Description: 16-3-2026

Date of File Completion: 11-4-2026

Signature:



Signature:



Head of Department Name: Lect. Dr. Fadhil
Abbas Al-Qrimli

Date: 11/4/2026

Scientific Associate Name: Asst. Prof. Dr. Falih
Hamzah Edan

Date: 11/4/2026



File Reviewed by

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Lect. Dr. Saadiyah Hasan Halos

Date: 11/4/2026

Signature:



Authentication by the Dean:

Prof. Waleed Ameen Al-Jawher

12/4/2026

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1. Mission & Vision Statement

Vision Statement

The vision of the Department of **Medical Instrumentation Techniques Engineering** is to prepare students to become applied engineers familiar with contemporary medical equipment engineering technology. Moreover, it offers the latest study programs to keep pace with the scientific departments corresponding to the Department of medical equipment technology engineering in respected Arab and international universities, as well as the academic environment and community services that keep pace with the rapid development in the field of medical devices.

Mission Statement

Through cutting-edge educational programs and curricula that highlight the importance of this discipline, the Department of technical engineering of medical devices aims to provide students with an educational, technical and research environment. Providing practical and scientific methods and advanced applied research to imitate the requirements of the labor market, acceptance of medical facilities, and help improve the health status at the global and regional level.

2. Program Specification

Program code:	BSc- MITE	ECTS	240
Duration:	4 levels, 8 Semesters	Method of Attendance:	Full Time

Specifications of the Medical Instrumentations Techniques Engineering program pour into the field of knowledge and skills necessary for the profession of installation, calibration, and maintenance of medical instruments. This program focuses on the development of technical expertise in the medical

device sector, new medical technologies, hospital management, and Medical Device Maintenance. The program consists of classroom lectures, practical training, and on-site work. In addition to developing technical skills such as electrical circuit design, computer-aided design, microprocessor programming and medical project management. The program also aims to provide graduates with the necessary skills to work as medical device engineers, medical engineering team leaders, medical device inspectors, cost estimators, and other technical positions in the field of medical technical engineering

3. Program Goals

1. Giving program graduates the scientific and practical abilities required to identify biomedical device failures.
2. Educate students to comprehend medical device components and handle them effectively while staying up to date with industry technical advancements.
3. Giving students a thorough understanding of contemporary technologies utilized in medical device engineering.
4. Improving the graduates' capacity to update and develop medical gadgets in accordance with the requirements of healthcare facilities.
5. The department aims to meet academic quality criteria that are appropriate for the resources at hand.

4. Student Learning Outcomes

Students who successfully complete the MITE program will have a strong foundation in medical devices and be ready for a range of careers. Graduates have expertise in the creation, design, testing, and upkeep of medical devices and equipment. Additionally, they can determine the critical impact that medical technology advancements have played in the development of the modern healthcare system. They can obtain accurate and pertinent content for presentations, reports, etc. which use information, internet, and communication technologies to fulfill academic needs. They can converse in a second language. Additionally, they can write and speak to a wide range of audiences. Furthermore, the capacity for transparent and engaging communication with non-experts.

Outcome 1

Understanding of allied knowledge

Graduates will be able to demonstrate a deep understanding of the knowledge, capabilities and competence that the market needs. They are also familiar with developments in technology and business.

Outcome 2

Oral and Written Communication

Graduates will be able to use their oral and written communication abilities to professionally convey the results of medical device troubleshooting.

Outcome 3

Technical and cognitive skills

Graduates can create applications to examine or control the results and construct circuits for medical equipment based on predetermined parameters.

Outcome 4

Critical thinking and analytical skills

Graduates will be able to recognize new issues and attempt to address them utilizing modeling, designing, and forecasting techniques based on logical and critical thinking.

Outcome 5

Appropriate research tools and techniques

Graduates will be able to use basic research techniques to carry out a variety of scientific applications. To achieve the intended outcomes, the graduate might adjust and pick up new abilities.

Outcome 6

Communications and IT skills

In order to identify the best solution, graduates can exchange information with the technical team. They can also make use of communication, information, and internet technology. Graduates can read and understand instructions and user manuals for a variety of medical devices. They use a variety of medical phrases in English to interact with non-experts while demonstrating understanding of varied informational levels and viewpoints.

Outcome 7

Group/team leadership

Graduates will be self-driven, collaborate well with professionals from various fields, backgrounds, and interests to solve issues, work clearly under pressure in perplexing situations, and exhibit knowledge of and dedication to adhering to safety protocols for both themselves and others

Outcome 8

Own professional development

Graduates can plan, solve problems, make decisions, and maintain current professional knowledge.

5. Academic Staff

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6. Credits, Grading and GPA

Credits

URUK University 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 30 hrs. student workload, including structured 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 failed a course. The grading system is defined as follows:

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:				
Number 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.				

Calculation of the Cumulative Grade Point Average (CGPA)

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

CGPA of a 4-year B.Sc. degree:

$$\text{CGPA} = [(1^{\text{st}} \text{ module score} \times \text{ECTS}) + (2^{\text{nd}} \text{ module score} \times \text{ECTS}) + \dots] / 240$$

7. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hr.

No.	Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
1	MITE1101	Fundamentals of Electrical Engineering (DC)	79	71	6	C	
2	MITE1102	Computer Applications	49	26	3	B	
3	MITE1103	Differential Mathematics	78	47	5	B	
4	MITE1104	Engineering Drawing	63	62	5	B	
5	MITE1105	Democracy and Human Rights	33	17	2	S	
6	MITE1106	English Language 1	33	17	2	S	
7	MITE1107	Medical chemistry	94	81	7	S	

Semester 2 | 30 ECTS | 1 ECTS = 25 hr.

No.	Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
1	MITE1202	Fundamentals of Electrical Engineering (AC)	79	71	6	C	Fundamentals of Electrical Engineering (DC)
2	MITE1201	Medical Physics	64	61	5	B	
3	MITE1203	Mechanics	48	52	4	B	
4	MITE1204	Integral Mathematics	78	47	5	B	Differential Mathematics
5	MITE1205	Engineering Workshops	63	62	5	B	
6	MITE1206	Arabic Language	33	17	2	S	
7	MITE1207	Computer Programming and Applications I	49	26	3	s	

Semester 3 | 30 ECTS | 1 ECTS = 30 hr.

No.	Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
1	MITE2101	Laboratory Medical Instrumentation I	74	106	6	C	
2	MITE2102	Electronics Circuits I	74	106	6	C	Fundamentals of Electrical Engineering
3	MITE2103	Electrical Machines	74	76	5	C	Fundamentals of Electrical Engineering
4	MITE2104	Engineering Mathematics	73	77	5	B	Integral Mathematics
5	MITE2105	Anatomy and Physiology	74	76	5	B	
6	MITE2106	Computer Programming and Applications (MATLAB-beginner)	46	44	3	B	

Semester 4 | 30 ECTS | 1 ECTS = 30 hr.

No.	Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
1	MITE2201	Electronics Circuits II	74	106	6	C	Electronics Circuits I
2	MITE2202	Laboratory Medical Instrumentation II	74	106	6	C	Laboratory Medical Instrumentation I
3	MITE2203	Digital Electronics	74	76	5	C	Electronics Circuits I
4	MITE2204	Clinical Chemistry Instrumentation	60	90	5	C	
5	MITE2205	Biomedical Transducers and Sensors	60	90	5	C	Fundamentals of Electrical Engineering
6	MITE2206	English Language (Intermediate Level)	45	45	3	B	English Language (Beginner Level)

Semester 5 | 30 ECTS | 1 ECTS = 30 hr.

No.	Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
1	MITE3101	Medical Diagnostic Instrumentation I	74	136	7	C	Anatomy and Physiology
2	MITE3102	Microprocessor	88	92	6	C	Digital Electronics
3	MITE3103	Electromagnetic Fields	74	106	6	C	Engineering Mathematics
4	MITE3104	Signal and Systems	60	60	4	C	Engineering Mathematics
5	MITE3105	Computer Programming and Applications (C++ Programming)	60	60	4	B	
6	MITE3106	English Language (Advanced Level)	45	45	3	B	English Language (Intermediate Level)

Semester 6 | 30 ECTS | 1 ECTS = 30 hr.

No.	Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
1	MITE3201	Medical Diagnostics Instrumentation II	74	136	7	C	Medical Diagnostic Instrumentation I
2	MITE3202	Medical Electronic Systems	74	106	6	C	Electronics Circuits II
3	MITE3203	Medical Communication Systems	60	120	6	C	Signals and Systems
4	MITE3204	Power Electronics	74	76	5	C	Electronics Circuits I
5	MITE3205	Project I	30	60	3	C	
6	MITE3206	Project Management	45	45	3	S	

8.Contact

Program Manager:

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نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Fundamentals of Electrical Engineering (DC)		Module Delivery
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE1101		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGI	Semester of Delivery	
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. To develop knowledge on standard units of electricity and understanding of DC circuit theorems. 2. To understand voltage, current and power of DC circuits. 3. To learn the basic concept of DC electrical circuits connections. 4. To explain the DC electrical circuits. 5. To understand basic laws of electricity. 6. To perform DC-network theorem. 7. To perform DC-circuit analysis methods. 8. To understand independent sources and dependent sources.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize how electricity works in electrical circuits. 2. List the various terms associated with electrical circuits. 3. Summarize what is meant by a basic electric circuit. 4. Describe electrical power, voltage, and current. 5. Define Ohm's law and define the relation between voltage, resistance, and current. 6. Identify the basic circuit elements and their applications. 7. Discuss the operations of power and energy in electric circuit. 8. Discuss the various properties of resistors connections. 9. Explain the two Kirchhoff's laws used in circuit analysis. 10. Identify the implementation of resistor circuit's connection. 11. Learn measurements of voltage and current. 12. Practical Identification of resistance based on color code.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. DC circuits – Current and voltage definitions, and circuit elements, Combining resistive elements in series and parallel. Kirchhoff's laws and Ohm's law, Network reduction, Introduction to mesh and nodal analysis. [20 hrs.] Conversion of delta – connected resistance into an equivalent Wye connection & Vice versa. [10 hrs.] Fundamentals of the Power sources connected in parallel, Thevenin and Norton equivalent circuits, current and voltage division, Loop current method, Super position method, maximum power transfer, non-linear direct current circuit [20 hrs.] Independent sources and dependent sources [10 hrs.] source transformation [5 hrs.] Revision problem classes [5 hrs.]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

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

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, LO# 10 and 11
	Online Assignments	2	10% (10)	2, 12	LO # 3, 4, LO# 6, 7
	Projects	1	6% (6)	Continuous	LO# 1-12
	lab	10	10% (10)	Continuous	LO# 1-12
	Report	1	4% (4)	13	LO # 5, 8, 9, 12
Summative assessment	Midterm Exam	3 hr	10% (10)	7	LO # 1-7
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Symbols and abbreviations, Units, Electric circuits, and its elements.
Week 2	The direct-current network (Ohm's law, Kirchhoff's voltage and current laws & their use in network).
Week 3 Week 4	Series elements and Voltage Division Parallel elements and Current Division
Week 5	Power sources are connected in parallel,
Week 6 Week 7	Circuit analysis methods: 1- Node voltage method. 2- Loop current method.
Week 8	Mid-term exam
Week 9	Conversion of delta-connected resistance into an equivalent Wye connection & Vice versa
Weeks 10-13	Circuit analysis Theorems: 1. Superposition 2. Thevenin 3. Norton 4. Maximum power
Weeks 14-15	Independent sources and Dependent sources, source transformation and preparation for final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Introduction to electrical elements, sources, and measuring devices related to electrical circuits.
Week 2	Resistance measurement based on AVO meter readings and color code identification.
Week 3	Verification of Ohm's Law
Weeks 4-5	Verification of KVL and KCL
Weeks 6-7	Verification of Thevenin's and Norton's theorems
Weeks 8-9	Verification of the superposition theorem
Week 10	Verification of the maximum power transfer theorem
Week 11	Verification of the Nodal Voltage Theorem
Week 12	Verification of the Mesh Theorem
Weeks 13-14	practical implementation of independent sources and Dependent sources
Week 15	Preparation for Final exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamentals of Electric Circuits, C.K. Alexander and M.N.O Sadiku, McGraw-Hill Education	Yes
Recommended Texts	Electric Circuits Seventh Edition, Schaum's Outline Series	No
Websites	https://www.youtube.com/watch?v=SfKw8bHk7-o (for practical implementation of Independent sources and Dependent sources, Weeks 13-14)	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Engineering Drawing		Module Delivery
Module Type	Support		☐ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	EETC102		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGI	Semester of Delivery	
Administering Department	MITE	College	ETC
Module Leader			e-mail
Module Leader's Acad. Title			Module Leader's Qualification
Module Tutor			e-mail
Peer Reviewer Name			e-mail
Scientific Committee Approval Date			Version Number 1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims	The module aims for the Basics of Engineering Drawing courseware is to teach the student the basic commands necessary for professional 2D drawing, design, and drafting using AutoCAD. Upon completion of the course, the student will: • Become familiar with the AutoCAD user interface. • Understand the fundamental concepts and features of AutoCAD. • Use the precision drafting tools in AutoCAD to develop accurate technical drawings. • Present drawings in a detailed and visually impressive manner. • Develop a level of comfort and confidence with AutoCAD through hands-on experience.
Module Learning Outcomes	Upon completion of the course, students should be able to: 1. The student will describe key terms and concepts associated with drafting and the drafting profession. • Identifying software drafting tools (e.g. AutoCAD, Micro station, SolidWorks, and Google Sketch Up). 2. The student will identify elements of the AutoCAD software interface. • Starting the AutoCAD program from the start menu. • Using existing AutoCAD templates to create drawing documents. • Identifying file extensions (such as .dwg, .dxf, .dwt, and .bak) and file locations. • Creating, formatting, editing and saving an Auto CAD drawing. 3. The student will demonstrate an understanding of the skills necessary to create basic 2D AutoCAD drawings. • Drawing lines, curves, circles, ellipses, rectangles, polygons, and donuts. • Modifying a drawing using the Erase tool. • Identifying and using the various types of Object Snaps and Auto tracking. • Using the offset tool, drawing points, construction lines and rays. 4. The student will demonstrate the ability to modify an AutoCAD drawing. • Creating and managing multiple layers that define line color, line width, line type, etc. • Identifying and using object editing tools (such as fillet, chamfer, break, join, trim, extend, lengthen, and scale). • Arranging and patterning objects with move, copy, mirror, rotate, align, and array. 5. The student will demonstrate an understanding How to assign: Dimension - Linear, Aligned, Radius, Diameter, Center Mark, Angle, Arc length, Continuous, Baseline, Tolerance, Dimension Space. 6. The student will demonstrate an understanding Dealing with: Text, Style, M text, Scale text, Spell, 7. The student will demonstrate the Object viewing. • Zooming techniques

	• Panning techniques 8. The student will demonstrate the ability to output drawings in AutoCAD. 9. Drawing 3d modeling. 10. Drawing the Exercises.
Indicative Contents	Indicative content includes the following. Basic Drawing & Editing Commands • Drawing Lines • Erasing Objects • Drawing Lines with Polar Tracking • Drawing Rectangles • Drawing Circles • Undo and Redo Actions [20 hrs.] Making Changes in Your Drawing • Selecting Objects for Editing • Moving Objects • Copying Objects • Rotating Objects • Scaling Objects • Mirroring Objects • Editing with Grips [4 hrs.] Display Control • Zoom • Pan • Redraw • Clean Screen. [4 hrs.] Adding Dimensions • Dimensioning Concepts • Adding Linear Dimensions • Adding Radial and Angular Dimensions • Editing Dimensions [4 hrs.] Hatching • Hatching • Editing Hatches [4hrs] Printing Your Drawing • Printing Layouts • Print and Plot Settings [4 hrs.] 3D MODELLING, Convert 2D to 3D, Solid Editing [19 hrs.]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies

When it comes to learning and teaching engineering drawing using AutoCAD, there are several strategies that can be effective. Here are some recommendations:

1. Familiarize with the Software: Before diving into engineering drawing concepts, it's important to become familiar with the AutoCAD software. This includes understanding the user interface, basic tools, and commands. Start with introductory tutorials or online resources that cover the basics of AutoCAD.

2. Start with Fundamentals: Begin by teaching the fundamental concepts of engineering drawing, such as orthographic projection, isometric projection, dimensioning, and tolerancing. Explain the principles and techniques used in creating accurate and clear technical drawings.

3. Hands-on Practice: Engineering drawing is a practical skill, so provide ample opportunities for hands-on practice. Assign exercises and projects that require students to create different types of drawings using AutoCAD.

Encourage them to explore and experiment with various tools and commands.

4. Step-by-Step Instructions: Break down complex drawing tasks into smaller, manageable steps. Provide step-by-step instructions and demonstrations using AutoCAD, showing students how to execute each step effectively. This approach helps students understand the workflow and build their confidence.

5. Visual Aids and Examples: Utilize visual aids, such as slides, diagrams, and examples, to reinforce concepts. Show real-world engineering drawings and explain how they were created using AutoCAD. Visual representations can enhance understanding and make abstract concepts more tangible.

6. Group Activities and Collaboration: Promote collaboration among students by assigning group activities or projects. This allows them to work together, share knowledge, and learn from one another. Encourage students to discuss their approaches and problem-solving techniques related to engineering drawing in AutoCAD.

7. Provide Feedback: Regularly provide constructive feedback on students' drawings. Highlight areas for improvement, suggest alternative methods, and point out common mistakes. This feedback loop is crucial for students to refine their skills and develop a deeper understanding of engineering drawing principles.

8. Stay Updated with AutoCAD Features: AutoCAD is regularly updated with new features and enhancements. Stay up to date with these changes to ensure you're teaching the latest tools and workflows. Familiarize yourself with new capabilities that can improve efficiency and accuracy in engineering drawing.

9. Online Resources and Communities: Encourage students to explore online resources, tutorials, and communities dedicated to AutoCAD and engineering drawing. There are numerous websites, forums, and YouTube channels that offer valuable content and support for learning AutoCAD.

10. Project-Based Learning: Incorporate project-based learning into the curriculum, where students can apply their engineering drawing skills to real-world scenarios. Assign projects that simulate industry-related tasks, such as creating architectural plans, mechanical assemblies, or electrical schematics using AutoCAD.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب ل 15 أسبوع

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعي	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعي	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	20% (20)	5, 12	(LO #3,4) (LO #5,6)
	Online Assignments	3	6% (6)	Continuous	(LO # 3-5) (LO # 6-10)
	Projects	1	10% (10)	13	All
	Onsite assignment	4	1% (1)	4, 5, 10, 11	LO # 3-9
Summative assessment	Midterm Exam	2 hr.	10% (10)	7	LO # 1-5
	Final Exam	3 hr.	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Introduction to Autodesk AutoCAD - Starting the Software - User Interface - Working with Commands - Cartesian Workspace - Opening an Existing Drawing File - Saving a Drawing File
Week 2	Basic Drawing & Editing Commands - Drawing Lines - Erasing Objects - Drawing Lines with Polar Tracking

	• Drawing Rectangles • Drawing Circles • Undo and Redo Actions
Week 3	Projects - Creating a Simple Drawing • Create a Simple Drawing • Create Simple Shapes
Week 4	Drawing Precision in AutoCAD • Using Running Object Snaps • Using Object Snap Overrides • Polar Tracking at Angles • Object Snap Tracking • Drawing with Snap and Grid
Week 5	Making Changes in Your Drawing • Selecting Objects for Editing • Moving Objects • Copying Objects • Rotating Objects • Scaling Objects • Mirroring Objects • Editing with Grips
Week 6	Advanced Object Types • Drawing Arcs • Drawing Polylines • Editing Polylines • Drawing Polygons • Drawing Ellipses
Week 7	Advanced Editing Commands • Trimming and Extending Objects • Stretching Objects • Creating Fillets and Chamfers • Offsetting Objects • Creating Arrays of Objects
Week 8	Mid-term exam
Week 9	Adding Dimensions • Dimensioning Concepts • Adding Linear Dimensions • Adding Radial and Angular Dimensions

	•Editing Dimensions Text •Working with Annotations •Adding Text in a Drawing •Modifying Multiline Text •Formatting Multiline Text •Adding Notes with Leaders to Your Drawing
Week 10	Hatching •Hatching •Editing Hatches
Week 11	3D modeling
Week 12	Convert 2D To 3D.
Week 13	Exercises drawing
Week 14	Printing Your Drawing •Printing Layouts •Print and Plot Settings
Week 15	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	D. A. Madsen, D. P. Madsen, and J. E. Briesacher, Engineering Drawing and Design, 5th ed., Clifton Park, NY: Delmar Cengage Learning, 2011.	Yes
Recommended Texts	F. E. Giesecke, A. Mitchell, H. C. Spencer, I. L. Hill, and J. T. Dygdon, Technical Drawing with Engineering Graphics, 15th ed., Upper Saddle River, NJ: Pearson, 2016.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Differential Mathematics		Module Delivery
Module Type	Support		☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE1103		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGI	Semester of Delivery	
Administering Department	MITE	College	ETC
Module Leader			e-mail
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor			e-mail
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. To develop problem solving skills and understanding of Differential calculus through a broad range of Differentiation techniques. 2. To understand limits and theory of derivative and apply it on various types of functions. 3. This is the basic subject for all engineering fields. 4. Demonstrate basic knowledge and understanding of a core of plane analytical geometry, algebra and applied mathematics. 5. Introduce students to Derivatives of trigonometric functions and their inverses.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recall basic concepts of calculus: functions, variables, limits, and continuity. 2. Use the limit laws to evaluate the limit of a function. 3. Discuss continuity at a point and continuity over an interval. 4. Understand transcendental functions and how a function and its inverse are related. 5. Define Plane analytical geometry and identify how conic sections are formed in addition to define both in words and in algebraic formulae, a circle and its center and radius, and an ellipse and its foci. 6. Learn how to convert rectangular coordinates to polar coordinates and vice versa, as well as plot points using polar coordinates. 7. Differentiate algebraic and transcendental functions Midterm 8. Discuss Chain rules and applications of the derivatives. 9. Define determinants and understand their relation to matrices · Also explain the methodology for finding a determinant. 10. Learn how to solve Linear equations by Cramer's rule.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1. Limits and Continuity, Trigonometric functions, and their inverses. Hyperbolic and inverse hyperbolic functions, Exponential function and logarithmic function. Plane analytical geometry, parabola & ellipse, hyperbola. [25 hr.] 2. Polar coordinates, Theory and rules of derivatives, Implicit Differentiation and Chain rules, Derivatives of trigonometric functions and their inverses. Derivatives of Transcendental functions and their inverses. [33 hr.] 3. Properties of determinants, Solution of Linear equations by Cramer's rule. [10 hrs] 4. Revision problem classes [5 hr.]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The major approach used to offer this module will be to promote student engagement in the exercises while also enhancing and broadening their critical thinking abilities. Classes and interactive lessons will be used to achieve this.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	6 and 10	LO #2, #7, #9, and #10
	Online assignments	2	10% (10)	4 and 12	LO #1 - #5 and #6 - #10
	Report	1	10% (10)	14	LO #1 - #8
	OnSite assignments	2	10% (10)	2 and 5	LO #1 - #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	LO #1 - #10
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Limits and Continuity
Week 2	Transcendental functions- trigonometric functions, and their inverses.
Week 3	Transcendental functions-Hyperbolic and inverse hyperbolic functions
Week 4	Transcendental functions-Exponential function and logarithmic function.
Week 5	Plane analytical geometry, parabola & ellipse, hyperbola.
Week 6	Polar coordinates.
Week 7	Mid-term Exam
Week 8	Theory and rules of derivatives
Week 9	Implicit Differentiation and Chain rules.
Week 10	Derivatives of trigonometric functions Derivatives of inverse trigonometric functions.
Week 11	Derivatives of the exponential and natural logarithms functions.
Week 12	Derivatives of Hyperbolic and inverse hyperbolic functions.
Week 13	Applications of the derivatives.
Week 14	Determinants and properties of determinants.
Week 15	Solution of Linear equations by Cramer's rule. + Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Engineering Mathematics I (pdf)	No
Recommended Texts	Thomas 'Calculus (pdf) Fourteenth edition Based on the original work by GEORGE B. THOMAS, JR.	No
Websites	https://elearningatria.files.wordpress.com/2013/10/differential-calculus-1-23.pdf http://dl.konkur.in/post/Book/Paye/Thomas-Calculus-14th-Edition-%5Bkonkur.in%5D.pdf	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	MEDICAL CHEMISTRY		Module Delivery
Module Type	Support		☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE1107		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	UGI	Semester of Delivery	
Administering Department	MITE	College	ETC
Module Leader			e-mail
Module Leader's Acad. Title			Module Leader's Qualification
Module Tutor			e-mail
Peer Reviewer Name			e-mail
Scientific Committee Approval Date			Version Number
			1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1- To write and balance chemical equation which many calculations depend on. 2- To convert chemical formula to components composition percent or to conclude empirical formula depending upon composition percent. 3-To predict about the economic pathway for specific reaction to happen depending upon stoichiometric calculations of balanced chemical equations. 4-To Know how to prepare buffers with different ranges of pH using acids with suitable dissociation constant of acid. 5- To understand the effect of common ions on equilibrium of reversible reactions. 6-To focus on theoretical working principles of spectrophotometric instruments. 7- to discuss the importance of isotopes in diseases treatment and diagnosis.
	At ending of course, the student will: 1- Able to give chemical compounds their systematic names and to write their chemical formulae. 2- Know how to calculate concentrations of chemicals and to express them in various concentration terms. In addition to convert one term to another. 3- Calculate the compound composition percent according to chemical formula or know empirical formula depending on compounds composition percent. 4- Write chemical equations of different reactions and balance them and predict the limiting reactant in addition to the expected weight of products. 5-Estimate the reaction direction according to calculation of equilibrium constant of reversible reactions. 6-Know how to prepare buffers and how buffer work? 7- Understand importance and wide application of slightly soluble salts. 8- Perform the statistical treatment of analytical results and source of errors. 9- Recognize the importance of galvanic cells in current generation and role of electrolytic cells in metallic electroplating. 9-Consider zero, 1st and 2nd laws of thermodynamic processes, and evaluate thermodynamic functions of work, enthalpy, heat, internal energy and giving judgment of spontaneous process or not by entropy and Gibbs free energy. 10- List the components of photometric determination techniques, in addition to principals of their works. 11- Identify the photometric instrumentations such as FIS, FT-IR spectrophotometer,

	and mass spectrophotometry. 12- Emphasize the vital role of isotopes in diagnosis and diseases treatment.
Indicative Contents المحتويات الإرشادية	Isotopes, Chemical formula, Units conversion (5 hr.) Normality, Formality, Molarity, Molality, Mole fraction, Mill equivalent, ppm, ppb, mass percent, mass/vol percent. (10 hr.) Stoichiometry (4 hr.) Chemical equilibrium (4 hr.) dissociation constant (5 hr.) pH (4 hr.) Buffers (5 hr.) common ion (4 hr.) Solubility product constant (4 hr.) Statistical treatment, average, range, standard deviation, variance, Absolute error, relative error. (6 hr.) Redox reactions, Electrochemistry, electrolytes, Nernst equation, cell potential (6 hr.). 1 st law of thermodynamic, Reversible and irreversible process, Heat capacities, adiabatic process, Isothermal processes (6 hr.). 2nd law of thermodynamic, entropy, Gibbs free energy (4 hr.). Photochemistry, electromagnetic spectrum, Beer Lambert law (6 hr.). IR Spectrophotometer, mass spectroscopy, FIS, FES (6 hr.). Potentiometer, conductive meter, pH-meter (5 hr.).

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Homework assignments, written exam, Quizzes, seminars, reports, practical tests and Online tests

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	15min/ 2 times	20% (20)	5 th , 12 th	LO# 1 st – 5 th LO# 10 th – 12 th
	Online Assignments	5min/ 2 times	10% (10)	6 th , 13 th	LO# 1 st LO# 10 th
	Lab.	Each lab/ 5 times	5% (5)	3 rd , 4 th , 5 th , 6 th , 7 th	LO# 1 st - 2 nd , LO# 3 rd LO# 4 th LO# 5 th LO# 6 th – 7 th
	Seminar	10min/ One time	5% (5)	6 th	LO# 2 nd – 5 th
Summative assessment	Midterm Exam	180 min/ one time	10%	8 th	LO# 1 st – 10 th
	Final Exam	240min/ one time	50%	16 th	
Total assessment			100%		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction, Units conversion, Isotopes, Chemical formula and chemical equation
Week 2	Methods of expressing analytical concentrations: Normality, Formality, Molarity, Molality, Mole fraction, Mill equivalent, ppm, ppb, wt. and vol. percent ratio.
Week 3	Stoichiometry
Week 4	Chemical equilibrium
Week 5	Acid-Base dissociation constant
Week 6	pH-scale, buffer solution+ Solubility of precipitations, common ion effect
Week 7	Mid-term Exam
Week 8	Errors & statistical treatment of analytical data sources of errors, types of errors, average mode, range, average derivation, standard deviation, relative standard deviation, variance, method of expressing accuracy, Absolute error, relative error.
Week 9	Redox reactions, balancing of redox equation
Week 10	Electrochemistry: electrochemical cells, types of electrodes, electrolytes, Nernst equation, cell potential
Week 11	Thermodynamic, Zero and first law of thermodynamic, Reversible and irreversible expansion, Heat capacities, adiabatic expansion, Isothermal processes.
Week 12	Second law of thermodynamic: spontaneous processes, entropy and Gibbs free energy.
Week 13	Photochemistry (spectrophotometer analysis), Regions of electromagnetic spectrum, Absorption and emission of electromagnetic spectrum, Beer Lambert law, instrumentations components of spectrophotometer.
Week 14	IR Spectrophotometer, mass spectroscopy, flame ionization spectrophotometry.
Week 15	Potentiometer, conductive meter, pH-meter and some other applications of chemical sensors+ Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Principals of qualitative analysis.
Week 2	Qualitative analysis of cations of 1 st and 2 nd groups.
Week 3	Qualitative analysis of cations of 3 rd and fifth groups.
Week 4	Introduction to Quantitative (volumetric) analysis and types of standard substance in titration, principles and calculations of titration.
Week 5	How to prepare solution of primary standard materials and to standardize secondary standard substance of HCl, (acid-base titration)
Week 6	Standardization secondary standard substance of NaOH and its application by determination of vinegar acidity.
Week 7	Determination of residual chloride in tape water by titration against silver nitrate (precipitation titration).

Learning and Teaching Resources

مصادر التعلم والتدريس

Required Texts		
Recommended Texts	1- ESSENTIALS OF GENERAL CHEMISTRY By EBBING GABBON RAGSDALE 2- CHEMICAL PRINCIPLES By Steven S Zumdahl - 4th edition	No
Websites		

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	English Language 1		Module Delivery
Module Type	Basic		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MTU1002		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	UGI	Semester of Delivery	
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims

أهداف المادة الدراسية

The module aims of English Language (1) are designed to help learners at the beginner – pre-intermediate level develops their English language skills and achieve specific learning objectives, By the end of this course, students will:

1. Grammar Mastery: Develop a strong command of grammar rules, including possessive forms, question words, pronouns, prepositions, present simple, past simple, present continuous, past continuous, comparative and superlative adjectives, verb patterns, modal verbs (have/got to, should, must), time and conditional clauses, present perfect, past perfect, reported statements, and more.
2. Vocabulary Expansion: Expand their vocabulary in various contexts, covering numbers, family members, rooms and furniture, locations in and out of town, food and dining, parts of speech, synonyms, antonyms, and phrasal verbs.
3. Everyday English Proficiency: Develop practical language skills for everyday communication, including greetings, introductions, short answers, conversations, and expressions commonly used in daily life.
4. Reading Comprehension: Improve their reading comprehension skills through the analysis of diverse texts, including stories, articles, and informative content on a wide range of topics.
5. Writing Competence: Enhance their writing abilities by composing informal letters, using linking words, writing reviews of books or films, and crafting stories.
6. Critical Thinking and Analysis: Develop critical thinking skills by analyzing and discussing texts, comparing and contrasting information, and drawing conclusions from reading materials.
7. Cultural Awareness: Gain cultural insights through readings and discussions about various cultures and places around the world, fostering a broader worldview.
8. Effective Communication: Improve their ability to express ideas clearly and confidently in both spoken and written forms, making them effective communicators in English.
9. Language Assessment: Prepare for assessments, including a midterm exam, by reviewing and demonstrating their understanding of grammar, vocabulary, and reading comprehension.
10. Independent Learning: Develop independent learning skills, enabling them to continue improving their English language proficiency beyond the course.
11. Language Fluency: Work towards achieving fluency in English, allowing them to engage in conversations, express thoughts, and write coherently with ease.
12. Cultural Competency: Build cultural competence and sensitivity through exposure to diverse texts and discussions about different cultures and lifestyles.

These course goals reflect the overarching objectives of the English class and provide a clear direction for student learning and language development throughout the 15-week course.

Module Learning Outcomes

مخرجات التعلم للمادة
الدراسية

The learning outcomes for English (1) 15-week English class syllabus:

1. Students will comprehend and discuss texts on different topics
2. Students will expand their vocabulary related to various topics
3. Students will acquire vocabulary related to Various topics
4. Students will be able to write letters, and reviews.

	5. Students will be able to use possessive forms correctly in sentences, indicating ownership. 6. Students will master question words, pronouns, and prepositions. 7. Students will distinguish between present simple and past simple tenses. 8. Students will learn about the present continuous, present simple vs. continuous, and have & have got. 9. Students will study the past continuous and quantity and articles. 10. Students will understand comparative and superlative adjectives. 11. Students will focus on verb patterns, future intentions, and present perfect and past simple tenses. 12. Students will study modal verbs (have/got to, should, must). 13. Students will learn about time and conditional clauses. 14. Students will cover present perfect continuous, present perfect simple vs. continuous, past perfect for clarification, and reported statements
Indicative Contents المحتويات الإرشادية	Beginners book: Grammar: Possessive (CH1,2,4) Vocabulary – numbers – (CH1, 2, 5) -- the family (Ch4) Every day English-all (Ch1,3) Reading- where are they (Ch2), The Chairty Walk, (Ch3) , My best Friend, (Ch4)..... (2 hours) Grammar: Question words (CH 7) – Pronouns (Ch7) – Prepositions (Ch8) Vocabulary – Rooms and Furniture –(CH8) – in and out of Town (Ch4), Saying Years (ch9) Every day English-all (Ch 9) Reading- A Postcard from San Francisco (Ch7) , Vancouver, the best city in the world, (Ch8), It is a Jacksin Pollock, (Ch9) (2 hours) Grammar: Present Simple (Ch5,6)- Past Simple (Ch9,10) Vocabulary – shopping, food, in a restaurant (ch12) Every day English-all (Ch 14) Reading- The internet (Ch11), You are what you eat (Ch12) , This week is different (Ch13), Life's big events (Ch14) (2 hours) Pre-intermediate book: Grammar: - Vocabulary – Parts of speech (ch1,3, 7) Every day English-Social expressions (Ch 1) Reading- People the great communicators (Ch1) Writing- A letter to a pen friend (informal) (Ch1)..... (2 hours) Grammar: - Present continuous – Present simple vs. continuous- have & have got (ch2) Vocabulary – Every day English-Making conversation (Ch 2) Reading- Living in the USA (Ch2) Writing- Linking words (Ch2,3) (2 hours) Grammar: - Past continuous (ch3) – Quantity and Articles (Ch4) Vocabulary – Every day English- Reading- The burglar's friend – The thief, his mother and 2 billion – Sherlock Holmes the three students (Ch3) Writing..... (2 hours) Grammar: - comparative and superlative adj (ch6) Vocabulary – synonyms and antonyms (ch6) Every day English- Reading- Markets around the world (Ch4) Writing..... (2 hours) Grammar:

	Vocabulary: Every day English: Reading- Hollywood Kids (Ch5) – A tale of two millionaires (ch6) Writing..... (2 hours) Grammar: Verb Patterns (Ch5) – Future intentions (Ch5)- Present Perfect and Past simple (ch7) Vocabulary: Every day English: Reading: Writing: Relative clauses (ch6,7) (2 hours) Grammar: have (got)to, should, must (ch8) Vocabulary: - Every day English: Short Answers (ch7) – At the doctors (ch8) Reading- Celebrity interview from Hi (Ch7) Writing..... (2 hours) Grammar: Time and conditional clauses (ch9) Vocabulary: - Every day English: In a hotel (ch9) Reading- Problem page (Ch8) Writing- Formal letter (ch8) (2 hours) Grammar: Vocabulary: - Every day English: Exclamation (ch11) – saying goodbye (ch14) Reading- The world's first megalopolis (Ch9) Writing- writing a review of a book or a film (ch11) (2 hours) Grammar: Vocabulary: Phrasal verbs (ch12)- word formation (ch3) Every day English: Social expressions (ch12) Reading- Super volcano (Ch12) Writing- writing a story (ch14)..... (2 hours) Grammar: present perfect continuous (ch13) - Present perfect simple vs continuous (ch13)- Past perfect for clarification (ch14) – Reported statement (ch14) Vocabulary: Every day English: Reading- A funny way to earn a living (Ch13) Writing..... (2 hours)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The learning and teaching strategies for the English Language (Beginner) module may include: 1. Interactive Language Practice: Engage learners in communicative activities that promote active participation and language practice. This can include pair work, group discussions, role-plays, and language games. 2. Authentic Materials: Incorporate authentic materials such as videos, audio recordings, and reading texts that reflect real-life language use. This helps learners develop their listening, speaking, reading, and writing skills in authentic contexts. 3. Task-Based Learning: Design tasks and projects that require learners to use the target language to accomplish specific goals or solve problems. This promotes meaningful language use and encourages critical thinking and problem-solving skills.

	4. Visual Aids and Multimedia: Utilize visual aids, charts, diagrams, and multimedia resources to support language learning and comprehension. Visuals can enhance understanding, aid in vocabulary acquisition, and provide context for language use. 5. Error Correction and Feedback: Provide timely and constructive feedback on learners' language production to help them identify and correct errors. Encourage self-correction and peer correction to foster a supportive learning environment.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

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

Module Evaluation

تقييم المادة الدراسية

		Time/N umber	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	3, 12	LO #1-6 and 1,2,4,10-12
	Assignments	2	10% (10)	4, 10	LO # 1-7 and 1- 11
	Discussion	2	10% (10)	continuous	1-14
	Onsite assignment	5	10% (10)	continuous	1-14
Summative assessment	Midterm Exam	2 hours	10% (10)	7	LO # 1-9
	Final Exam	3 hours	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Grammar: Possessive (CH1,2,4) Vocabulary – numbers – (CH1, 2, 5) -- the family (Ch4) Every day English-all (Ch1,3) Reading- where are they (Ch2), The Chairty Walk, (Ch3), My best Friend, (Ch4)
Week 2	Grammar: Question words (CH 7) – Pronouns (Ch7) – Prepositions (Ch8) Vocabulary – Rooms and Furniture –(CH8) – in and out of Town (Ch4), Saying Years (ch9) Every day English-all (Ch 9)

	Reading- A Postcard from San Francisco (Ch7), Vancouver, the best city in the world (Ch8), It is a Jackson Pollock (Ch9)
Week 3	Grammar: Present Simple (Ch5,6)- Past Simple (Ch9,10) Vocabulary – shopping, food, in a restaurant (ch12) Every day English -all (Ch 14) Reading- The internet (Ch11), You are what you eat (Ch12), This week is different (Ch13), Life's big events (Ch14)
Week 4	Vocabulary – Parts of speech (ch1,3, 7) Every day English -all (Ch 1) Reading- People the great communicators (Ch1) Writing- A letter to a pen friend (informal) (Ch1)
Week 5	Grammar: - Present continuous – Present simple vs. continuous- have & have got (ch2) Every day English -Making conversation (Ch 2) Reading- Living in the USA (Ch2) Writing- Linking words (Ch2,3)
Week 6	Grammar: - Past continuous (ch3) – Quantity and Articles (Ch4) Reading- The burglar's friend – The thief, his mother and 2 billion – Sherlock Holmes the three students (Ch3)
Week 7	Midterm
Week 8	Grammar: - comparative and superlative adj (ch6) Vocabulary – synonyms and antonyms (ch6) Reading- Markets around the world (Ch4)
Week 9	Reading- Hollywood Kids (Ch5) – A tale of two millionaires (ch6)
Week 10	Grammar: Verb Patterns (Ch5) – Future intentions (Ch5)- Present Perfect and Past simple (ch7) Writing: Relative clauses (ch6,7)
Week 11	Grammar: have (got)to, should, must (ch8) Every day English: Short Answers (ch7) – At the doctors (ch8) Reading- Celebrity interview from Hi (Ch7)
Week 12	Grammar: Time and conditional clauses (ch9) Every day English: In a hotel (ch9) Reading- Problem page (Ch8) Writing- Formal letter (ch8)
Week 13	Every day English: Exclamation (ch11) – saying goodbye (ch14) Reading- The world's first megalopolis (Ch9) Writing- writing a review of a book or a film (ch11)
Week 14	Vocabulary: Phrasal verbs (ch12)- word formation (ch3) Every day English: Social expressions (ch12) Reading- Super volcano (Ch12) Writing- writing a story (ch14)
Week 15	Grammar: present perfect continuous (ch13) - Present perfect simple vs continuous (ch13)- Past perfect for clarification (ch14) – Reported statement (ch14) Reading- A funny way to earn a living (Ch13)

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Soars, J., Soars, L. (2014). New Headway Plus: Beginner Student's Book. United Kingdom: Oxford University Press.	Yes

	• Soars, J., Soars, L. (2006). New Headway Plus: Pre-intermediate. United Kingdom: Oxford University Press.	
Recommended Texts	Audio CDs or Online Audio: Recordings of listening exercises, dialogues, and pronunciation practice. Beginner workbook Pre-intermediate Workbook	No
Websites		

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Computer Principles		Module Delivery
Module Type	Basic		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MTU1004		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	UGI	Semester of Delivery	
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. To understand operating system, be familiar with its types. 2. To be familiar with the desktop. 3. To be familiar and manage files and folders. 4. To be familiar with the basic concepts of hardware components of the computer. 5. To be able to use the basic functions in control panel. 6. To recognize software types. 7. To be able to understand the basic similarities and differences among (MS Office) applications. 8. To be able to use MS Word program. 9. To be able to use MS Excel program. 10. To be able to use MS PowerPoint program. 11. To be able to use MS Outlook. 12. To be familiar with search engines and the World Wide Web. 13. To be able to use Google apps. 14. To be introduced to AI tools.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Demonstrate understanding of operating systems, including their types. 2. Navigate and utilize the desktop effectively. 3. Manage files and folders proficiently. 4. Identify hardware components of a computer system. 5. Utilize the control panel efficiently. 6. Differentiate software types and their applications. 7. Effectively utilize essential applications such as MS Office. 8. Demonstrate proficiency in using the MS Word program. 9. Demonstrate proficiency in using the MS Excel program. 10. Demonstrate proficiency in using the MS PowerPoint program. 11. Utilize MS Outlook for email and scheduling purposes. 12. Navigate search engines and utilize the World Wide Web effectively. 13. Utilize Google apps for various tasks. 14. Basic Use of AI tools.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Introduction to Operating Systems: Definition, functions, and capabilities of an operating system. Types of operating systems (e.g., Windows, macOS, Linux) with examples. Differences between operating systems and software applications. Power options: computer power on/off and power settings. (3 hrs.) Exploring the Desktop: Navigating the desktop environment. Using the start button and working with applications. Understanding the relationship between software and hardware, their differences, importance, and influence on each other. Introduction to software updates. Exploring the taskbar. (6 hrs.) Files and Folders: Understanding the typical window and file management. Introduction to the Recycle Bin. Understanding file names and common extensions.

	(6 hrs.) Computer Hardware: Identifying various computer types. Exploring components inside a computer, such as the microprocessor, system memory, and storage systems. Recognizing input/output devices and their interaction. (6 hrs.) Familiarity with the control panel and its categories and usage. (6 hrs.) Software Overview: Understanding software requirements and their implications for hardware. Introduction to different types of application software + Dealing with viruses and malwares (2 hrs.) Main Screen Features: Common features found in word processing, spreadsheet, and presentation software. Understanding the ribbon, tabs, and status bar, and their specific functions in each application. (3 hrs.) MS Office Basics: Definitions and key concepts in MS Office applications and Usage. (9 hrs.) Google apps and Gmail (3hrs) Digital Citizenship: Identifying ethical issues in the digital realm, including intellectual property, copyright, and licensing. Protecting data and computers from software threats and understanding viruses. Ensuring online privacy and security. And basic understanding and usage for AI tools (3 hrs.)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Incorporate a mix of theoretical study, hands-on practice, experimentation, and real-world applications to reinforce understanding and proficiency in each of the desired learning outcomes. Seek feedback, engage in discussions, and actively participate in exercises to enhance learning and address any gaps in knowledge.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 14 أسبوعاً

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	49	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	26	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 9	LO #1, #2, #3 and #6, #7
	Assignments	2	10% (10)	4 and 6	LO #4 ,#8, #12 and #5, #12
	Projects / Lab.	5	15% (15)	10,11,12, 13 and 14,	LO #7, #12, #13 and #8 , #12, #13 and #9, #12, #13 and #10, #12, #13 and #11, #12, #13
	Report	1	5% (5)	6	LO #12, #7, #8 and #12
Summative assessment	Midterm Exam	3hr	10% (10)	8	LO #1 - #6
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction to operating system and its types, the differences between operating systems and software applications; Common operating system features.
Week 2	Looking and navigation of the desktop; start button components; Understanding Taskbar, Software and hardware relationship.
Week 3	Software updates+, Files and folders looking at typical window. + Understanding files and folders+ Libraries
Week 4	understanding Recycle bin; understanding file name and common extensions. View options + Computer hardware identifying computers
Week 5	Looking inside a computer (microprocessor, system memory, storage systems) + recognizing input/output devices + understanding how it works together.
Week 6	Understanding control panel categories + Understanding Ease of access + Understanding User account rights
Week 7	What is software, application software + Avoiding and dealing Viruses and malwares
Week 8	Mid Term
Week 9	MS office common features and differences

Week 10	Basic concepts and Usage of MS Word + Basic concepts and Usage of MS Power Point
Week 11	Basic concepts and Usage of MS Excell + Basic concepts and Usage of MS Outlook
Week 12	Introduction to Google apps
Week 13	Digital citizenship identifying ethical issues; protecting your data or computer
Week 14	Basic understanding and usage for AI tools
Week 15	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Getting to know computer hardware + turn on and shut down options +looking at the desktop + using mouse (Menu, pointing, selecting, dragging, scrolling and execution) + using start button
Week 2	Lab 2: Create a folder (and file), Rename, Copy, Cut, find, shortcut +Recycle bin; using task bar
Week 3	Lab 3: looking at a typical window +control buttons + move, resize a window+ view options+ select files + file options +using taskbar.
Week 4	Lab 4: Install, open, close, and (control panel- Programs) uninstall applications (internet and other sources); Control Panel (power options), Control Panel (add a device or printer), Control Panel (Project)
Week 5	Lab 5: Personalization (background and color) + (User Account (create a standard account, change password, picture and name) Control Panel- Clock and region (change date, time, and region) + Ease of Access (Narrator, Magnifier, on screen keyboard)).
Week 6	Lab 6: MS Office (word, Excel, Power point, outlook) Starting each program and identify the main screen in details as title bar, main ribbons, etc.
Week 7	Lab 7: MS Word (Home Tab, Insert Tab, Layout Tab, View Tab + Watermark, Page boarder and Page color).
Week 8	Lab 8: Mid Term
Week 9	Lab 9: MS Excel (Home Tab, Insert, Page layout, Formula, Data).
Week 10	Lab 10: MS Power Point (Home Tab, Insert, Design, Transition, Animation).

Week 11	Lab 11: MS outlook (Home Tab, send and receive) + Calendar
Week 12	Lab 12: Google apps Vs MS office.
Week 13	Lab 13: Creating Gmail+ basic e-mail functions+ using google class. Using internet (Google scholar + finding courses and materials, Khan academy and finding resources).
Week 14	Lab 14: Using AI tools

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Internet and Computing Core Certification	No
Recommended Texts		
Websites	https://alison.com/tag/microsoft Share and Discover Knowledge on SlideShare https://support.microsoft.com/en-us/training https://support.google.com/a/users https://edu.gcfglobal.org/en/topics/googleapps/# https://edu.gcfglobal.org/en/subjects/office/# https://chat.openai.com	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Democracy and Human Rights		Module Delivery	
Module Type	Basic		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MTU1006			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	UGI	Semester of Delivery		
Administering Department	MITE	College	ETC	
Module Leader			e-mail	
Module Leader's Acad. Title			Module Leader's Qualification	
Module Tutor			e-mail	
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date			Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. التطور التاريخي لحقوق الإنسان: دراسة التطور التاريخي لفهم حقوق الإنسان من الحضارات القديمة إلى العصور الحديثة. 2. حقوق الإنسان في الشرائع السماوية: التركيز على حقوق الإنسان في الإسلام وكيف تم تضمينها في الشريعة الإسلامية. 3. اعتراف إقليمي بحقوق الإنسان: فحص اعتراف الأقاليم الأوروبي، الأمريكي، الإفريقي، الإسلامي، والعربي بحقوق الإنسان. 4. دور المنظمات غير الحكومية: دراسة دور المنظمات مثل اللجنة الدولية للصليب الأحمر ومنظمة العفو الدولية في حماية حقوق الإنسان. 5. الإطار القانوني الدولي والإقليمي: التركيز على المواثيق الدولية والإقليمية، مثل الإعلان العالمي لحقوق الإنسان. 6. تحليل حقوق الإنسان في التشريعات الوطنية: دراسة كيفية ترجمة حقوق الإنسان في التشريعات الوطنية، مع التركيز على الدستور العراقي. 7. تصنيف حقوق الإنسان وضماناتها: فهم مختلف أشكال حقوق الإنسان والضمانات الدستورية والقضائية والسياسية لحمايتها.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. القدرة على وصف وتحليل التطور التاريخي لحقوق الإنسان منذ الحضارات القديمة حتى العصور الحديثة. 2. القدرة على فحص حقوق الإنسان في حضارة وادي الرافدين وغيرها لفهم التأثير الثقافي على تطورها. 3. تفسير حقوق الإنسان في الإسلام وفهم كيف تم تضمينها في الشريعة الإسلامية. 4. القدرة على تحليل تطور حقوق الإنسان خلال العصور الوسطى والحديثة. 5. الفهم الشامل لاعتراف الأقاليم الأوروبي، الأمريكي، الإفريقي، الإسلامي، والعرب بحقوق الإنسان. 6. القدرة على تقييم دور منظمات مثل اللجنة الدولية للصليب الأحمر ومنظمة العفو الدولية في حماية حقوق الإنسان. 7. القدرة على دراسة وتحليل المواثيق الدولية والإقليمية، بما في ذلك الإعلان العالمي لحقوق الإنسان. 8. القدرة على فحص كيف تم ترجمة حقوق الإنسان في التشريعات الوطنية، مع التركيز على مثال الدستور العراقي. 9. القدرة على تصنيف حقوق الإنسان إلى أشكال فردية وجماعية، وأجيال مثل الحقوق المدنية والسياسية والاقتصادية والاجتماعية. 10. القدرة على تحليل الضمانات الدستورية والقضائية والسياسية لحقوق الإنسان على الصعيدين الوطني والدولي والإقليمي.
Indicative Contents المحتويات الإرشادية	فهم التاريخ التطوري لحقوق الإنسان (3 س) تحليل حقوق الإنسان في الحضارات القديمة (3 س) فهم حقوق الإنسان في الشرائع السماوية (3 س) تحليل حقوق الإنسان في العصور الوسطى والحديثة (3 س) فهم الاعتراف الإقليمي بحقوق الإنسان (3 س) تقدير دور المنظمات غير الحكومية (3 س) فهم لإطار القانوني لحقوق الإنسان (3 س)

تحليل حقوق الإنسان في التشريعات الوطنية (3 س) فهم أشكال وأجيال حقوق الإنسان (3 س)
تحليل ضمانات حقوق الإنسان (3 س)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	تشجيع الطلاب على المشاركة في مناقشات تفاعلية حول تطور حقوق الإنسان عبر التاريخ. مشروعات بحثية: توجيه الطلاب في إعداد مشروعات بحثية تستكشف تطور حقوق الإنسان في فترات تاريخية محددة. استخدام التكنولوجيا: تضمين وسائل تكنولوجية لتعزيز تفاعل الطلاب وتقديم المعلومات بشكل أكثر تفاعلية، ورش العمل والتمثيل العملي: إجراء ورش عمل تفاعلية وأنشطة تمثيل لفهم أعمق لمفاهيم حقوق الإنسان. تقديم تقييم مستمر: تقديم تقييم مستمر لفحص تقدم الطلاب وفهمهم لتطور حقوق الإنسان على مر العصور.

Student Workload (SWL)

الحمل الدراسي للطالب

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

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

الأسبوع الأول	التطور التاريخي لحقوق الإنسان حقوق الإنسان في الحضارات القديمة (حضارة وادي الرافدين، والحضارات القديمة الأخرى)
الأسبوع الثاني	حقوق الإنسان في الشرائع السماوية مع التركيز على حقوق الإنسان في الإسلام. حقوق الإنسان في العصور الوسطى والحديثة.
الأسبوع الثالث	الاعتراف الإقليمي بحقوق الإنسان على الصعيد الأوروبي الأمريكي، الأفريقي، الإسلامي، العربي
الأسبوع الرابع	المنظمات غير الحكومية ودورها في حقوق الإنسان اللجنة الدولية للصليب الأحمر، منظمة العفو الدولية، منظمة مراقبة حقوق الإنسان المنظمة العربية لحقوق الإنسان
الأسبوع الخامس	حقوق الإنسان في المواثيق الدولية والإقليمية والتشريعات الوطنية. حقوق الإنسان في المواثيق الدولية الإعلان العالمي لحقوق الإنسان العهد الدولي الخاصين بحقوق الإنسان
الأسبوع السادس	حقوق الإنسان في المواثيق الإقليمية) الاتفاقية الأوروبية لحقوق الإنسان الاتفاقية الأمريكية لحقوق الإنسان الميثاق الأفريقي لحقوق الإنسان الميثاق العربي لحقوق الإنسان
الأسبوع السابع	امتحان منتصف الفصل الدراسي
الأسبوع الثامن	حقوق الإنسان في التشريعات الوطنية) الدستور العراقي
الأسبوع التاسع	أشكال وأجبال حقوق الإنسان: أشكال حقوق الإنسان الحقوق الفردية، الحقوق الجماعية أجبال حقوق الإنسان الجيل الأول الحقوق المدنية والسياسية، (الجيل الثاني الحقوق الاقتصادية والاجتماعية)، (الجيل الثالث: حقوق الإنسان الحديثة، الوعي الأمني والبيئي
الأسبوع العاشر	ضمانات حقوق الإنسان وحمايتها على الصعيد الوطني الضمانات الدستورية والقضائية والسياسية
الأسبوع الحادي عشر	ضمانات حقوق الإنسان وحمايتها على الصعيدين الإقليمي والدولي) دور الأمم المتحدة، دور المنظمات الإقليمية جريمة الإبادة الجماعية.
الأسبوع الثاني عشر	تصنيف الحريات العامة الحريات الأساسية والفردية حرية الأمن والشعور بالأطمئنان حرية الذهاب والإياب، الحرية الشخصية
الأسبوع الثالث عشر	الحريات الفكرية والثقافية حرية الرأي حرية المعتقد حرية التعليم حرية الصحافة حرية التجمع حرية تشكيل الجمعيات
الأسبوع الرابع عشر	الحريات الاقتصادية والاجتماعية حرية العمل، حرية التملك حرية التجارة والصناعة
الأسبوع الخامس عشر	الاستعداد لامتحان النهائي

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. "حقوق الإنسان في العالم العربي: القضايا والتحديات"، تأليف: علي حجازي وجمال شعت. الطبعة: الطبعة الثانية، العام: 2017. مبادئ حقوق الإنسان: المفاهيم والقضايا الحديثة"، تأليف: أحمد المجال "و. غسان حمدان. الطبعة: الطبعة الأولى، العام: 2019	Yes

Recommended Texts	1. "حقوق الإنسان والديمقراطية"، تأليف: مصطفى كامل محمود. الطبعة: الطبعة الأولى، العام: 2015. 2. "تاريخ حقوق الإنسان في العصور القديمة والوسطى"، تأليف: نبيل رزق. الطبعة: الطبعة الثالثة، العام: 2012. 3. "حقوق الإنسان في العراق: الواقع والتحديات"، تأليف: سعد الله عباس. الطبعة: الطبعة الأولى، العام: 2014. 4. "حقوق الإنسان في العراق: المفهوم والتطور"، تأليف: عبد الكريم السامرائي الطبعة: الطبعة الأولى، العام: 2018. "حقوق الإنسان في العراق: التحديات والآفاق"، تأليف: محمد السامرائي لقاء الحرب الطبعة: الطبعة الأولى، العام: 2020.	No
Websites	The Collage E-Library	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Engineering Workshops		Module Delivery
Module Type	Support	☐ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	EETC1001		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGI		
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. To explain the lathe workshop: various measuring devices and how to use them. How to operate the lathe and use different tools and cutting tools. 2. To explain the welding and gas welding processes and familiarize yourself with the devices and equipment used. Point welding, familiarization with the devices and equipment used, and carrying out a simple exercise. 3. To understand the electrical transformers and their types: magnetic circuits; electrical circuits; measuring the wire diameters of the transformer. 4. To understand the drawing of a circuit for establishing (the lamp ladder) two roads using a two-way switch—a practical application of the circuit. 5. To learn how to use the different measuring devices in the workshop (such as a multimeter, oscilloscope, etc.). 6. To learn how to use caustics, soldering irons, and various printed electronic circuits, identify how to install them, and install various electronic components on them. 7. To understand different types of coils and methods of checking them. Different types of capacitors differ in terms of the type of insulator used between the capacitor plates and the methods of checking them. The different types of resistors, in terms of the material they are made of and the capacity they can withstand, how to read the values of the resistors in different ways Variable and special resistors: how to check them. 8. To understand the different types of switches used in electronic devices and their examination methods. Different types of fuses There are different types of resistors in terms of the material they are made of. Types of semiconductor diodes and transistors and finding the equivalents Semiconductor check, diode check, and transistor check. 9. To understand how to read the electronic map and how to track faults on the electronic map How to install and solder electronic components on the printed board Implementation of a simple electronic circuit on the printed board integrated electronic circuits: identify the types of these circuits.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon completion of the course, students should be able to: 1. Recognize the methods of work on the lathe. 2. Cuts metals with a cutting and punching machine. 3. Install some simple structures. 4. Providing the student with manual experience and scientific proficiency in it. 5. Learn about electronic components. 6. Electronic components exchange is used to build and solder simple circuits. 7. Examine electronic circuits and their components.

	8. Read the electronic map and learn how to track faults on the electronic map. 9. How to install and solder electronic components on the printed board. 10. Implementation of a simple electronic circuit on the printed board. 11. Removing solder from circuits for the purpose of lifting and replacing. 12. How to design electronic circuits on the printed board. 13. Methods of soldering integrated circuits.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: Lathe workshop, measuring devices, different tools, cutting tools, welding, gas welding, and point welding. [7 hrs.]. Electrical transformers, magnetic circuit, and electrical circuits. [6 hrs.]. Different measuring devices in the workshop (such as an ovometer, oscilloscope, power supply, etc.) [8 hrs.]. Soldering iron and printed electronic circuits [4 hrs.]. Coils, capacitors, and resistors [6 hrs.]. Switches and fuses [4 hrs.]. Semiconductor diode, and transistor [6 hrs.]. Electronic map, faults on the electronic map, and design electronic circuits on the printed board [8 hrs.]. Implemented a simple electronic circuit on the printed board [4 hrs.]. Integrated electronic circuits [4 hrs.].

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Daily assessment - weekly assessment - quarterly assessment - objective questions - general questions - practical tests.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Lathe workshop: various measuring devices and how to use them. How to operate the lathe and use different tools and cutting tools
Week 2	Lab 2: Welding and gas welding, and familiarization with the devices and equipment used. Point welding, familiarization with the devices and equipment used, and carrying out a simple exercise.
Week 3	Lab 3: Electrical transformers: their types magnetic circuits; electrical circuits; opening transformers; taking information from the old transformer for primary and secondary coils measuring the wire diameters of the transformer; measuring the plastic coil template rewinding primary and secondary coils.
Week 4	Lab 4: Drawing a circuit for establishing two roads using a two-way switch is a practical application of the circuit. Identifying electrical collectors-their types, their use, thermal follow-ups, and time position.
Week 5	Lab 5: Training on making electrical installations (establishing inside tubes).Pipe cutting process: dental work, pipe bending, using drag springs.
Week 6	Lab 6: How to use the different measuring devices in the workshop (such as a multimeter, oscilloscope, etc.).
Week 7	Lab 7: How to use caustics: types of caustics used in the workshop; caustic welding training. Types of solder used: auxiliary materials for soldering; soldering some wires with each other

	and with some components. How to use a soldering iron and a soldering absorbent kit such as a solder sucker or solder remover, training on some electronic components, and lifting them from the printed plate. Various printed electronic circuits, identifying how to install them, and the installation of various electronic components on them. Lab 8- Coil types, methods of checking them, electrical transformers, types, checking, auto-transformer, the difference between an auto-transformer and an ordinary transformer. The different types of capacitors in terms of the type of insulator used between the capacitor plates, the effort that the capacitor bears, and reading the values of the capacitors using the different methods used in coding How to check the amplifiers and how to switch them. Making connections of the capacitors in parallel, series, and mixed on the printed board with the examination.
Week 8	Midterm- Exam
Week 9	Lab 9: The different types of switches used in electronic devices and their examination methods, the current that each switch bears, and the use of each type. Types of fuses used in electronic circuits, types and diameters of wires used and diameters of wires used in fuses, the current that each type bears, and how to repair fuses
Week 10	Lab 10: The different types of resistors, in terms of the material they are made of and the capacity they can withstand, How to read the values of the resistors in different ways Variable and special resistors (VDR-PYC-NTC) how to check them. Make a circuit to connect the resistors in series, make a circuit to connect the resistors in parallel, make a circuit to connect the resistors in series and parallel, and check the circuit.
Week 11	Lab 11: Types of semiconductor diodes and transistors and finding the equivalents. Semiconductor check, diode check, transistor check
Week 12	Lab 12: How to read the electronic map and track faults on the electronic map. Introduce the student to how to design electronic circuits on the printed board.
Week 13	Lab 13: How to install and solder electronic components on the printed board. Implementation of a simple electronic circuit on the printed board.
Week 14	Lab 14: Integrated electronic circuits: identify the types of these circuits. Cautery for soldering integrated circuits, the correct method of soldering integrated circuits, and removing solder from circuits for the purpose of lifting and replacing.
Week 15	Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Recommended Texts	1- Encyclopedia of Electronic Components Volume 1 (Charles Platt). 2- Encyclopedia of Electronic Components Volume 2 (Charles Platt). 3- Encyclopedia of Electronic Components Volume 3 (Charles Platt). 4- Encyclopedia of Electronic Components Volume 4 (Charles Platt). 5- Encyclopedia of Electronic Components Volume 5 (Charles Platt).	NO
Websites	https://www.electricaltechnology.org/2013/03/how-to-remember-direction-of-pnp-and.html	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Mechanics		Module Delivery
Module Type	Support		☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE 1203		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	UGI	Semester of Delivery	
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. To understand mechanics theory through the application of motion. 2. To determine the forces, stress and strain under force effected. 3. To determine the reaction forces under load applied. 4. To understand the friction basic under mechanic applied 5. To understand the newton laws in motion. 6. To understand and solve problems in forces analysis. 7. To determine the materials properties and selective of materials.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Identifying the basic of forces results in applications of structures. 2. Identify the basics of Equilibrium force system. 3. Recognize how phenomena motion in mechanic's subject. 4. Summarize what is mean of forces reaction in beams. 5. Explain the analysis force in mechanics application. 6. Identify the basics of stress and strain in mechanical applications. 7. List the various parameters associated with mechanics theory. 8. Identify the basics of forces analysis and their applications. 9. Explain the Newton's laws used in mechanics application. 10. Identify the basics of friction forces in motion. 11. Identify the basics of welding and riveted joints in mechanical applications. 12. Explain the mechanical test to determine the mechanical properties. 13. Discuss the phenomena of moment of forces under different force moment.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A :</u> 1- Introduction of forces, Analysis of Forces, Result of forces, Moment of forces, Equilibrium force system. [5 hrs] 2- Stress, Strain, stress – strain curve, Simple strain, Variable stress. [6 hrs] 3- Beams and bending, Analysis of structure. [5 hrs] 4- Friction, coefficient of friction, mechanism of friction. [5 hrs] <u>Part B:</u> 1- Materials properties, material selective, stress- strain diagram. [5 hrs.]

	2- Mechanical tensile test, compression test, impact test, hardness test. [5 hrs.] 3- Mechanical joint, Rivet joint, welding connection. [5 hrs.] 4- Beams and bending, Analysis of structure, Centroid, Second moment of area. [7 hrs.]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Strategies in mechanical subject like: The main strategy that will be adopted in delivering this module is to encourage students to participate in the exercises, while at the same time refining and expanding their mechanical subject thinking development skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SSWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	3
Unstructured USWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	3, 12	LO #1, 2, 10 and 11
	Online Assignments	2	10% (10)	5,9	LO # 3, 4, 6 and 7
	Onsite assignment	2	10% (10)	6, 10	LO # 5, 6, 8 and 9
	Report	1	10% (10)	14	LO # 2-10
Summative assessment	Midterm Exam	2 hr.	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1:	- Introduction to Engineering Mechanics - Basic Concepts and Definitions
Week 2:	Introduction to Statics and Vectors (Part 1) - Course introduction, syllabus, and importance of Statics. - Fundamentals of forces, types of forces. - Scalars and vectors. - Vector addition and subtraction. - Vector components and unit vectors.
Week 3:	
Week 4:	
Week 5:	Introduction to Statics and Vectors (Part 2) - Resultant of force systems (graphical method). - Resultant of force systems (analytical method). - Moments of forces (torque). - Conditions for equilibrium. - Free-body diagrams and solving equilibrium problems.
Week 6:	
Week 7:	Stress, Strain, and Material Properties (Part 1) - Stress and types of stress. - Strain and types of strain. - Hooke's Law and material properties. - Stress-strain diagrams. - Thermal stress and strain.
Week 8:	
Week 9:	Stress, Strain, and Material Properties (Part 2) - Simple strain and deformation. - Stress and strain transformations. - Shear and axial deformation. - Review and applications of stress and strain. - Assignment on stress and strain analysis.
Week 10:	
Week 11:	Second Moment of Area and Structural Analysis (Part 1) Geometric properties of shapes.

Week 12:	• Centroids and center of mass. • Second moment of area (moment of inertia). • Bending stress in beams. • Shear stress in beams.
Week 13:	Second Moment of Area and Structural Analysis (Part 2) • Shear and moment diagrams. • Introduction to beams and types of loads. • Determining reactions in statically determinate structures. • Truss analysis. • Frame analysis.
Week 14:	Friction • Friction coefficient • Type of friction • Mechanism of friction. Stress Concentration, Fatigue, and Special Topics • Review of special topics. • Comprehensive review of the course material. • Final exam or project presentations. Course evaluation and feedback.
Week 15:	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	1- Engineering Mechanic's Statics, 12th Edition by R. C. Nibbler, 1995.	Yes
Recommended Texts	2- Engineering Mechanic's Statics, 7th Edition by James, L. Meriam, L. G Kraige, 1995.	No
Websites		

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Fundamentals of Electrical Engineering (AC)		Module Delivery
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE1201		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGI	Semester of Delivery	
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Fundamentals of Electrical Engineering (DC)	Semester	1
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. To develop problem solving skills and understanding of circuit theory through the application of techniques. 2. To understand capacitance, inductance and resistance from an AC circuit. 3. To learn the basic concept of First-Order electrical circuits. 4. To explain the parallel and series circuits. 5. To understand Sinusoids and Phasors problems. 6. To perform AC- network theorem. 7. To perform AC Power Analysis. 8. To understand 3-phase system.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize how electricity works in electrical circuits. 2. List the various terms associated with electrical circuits. 3. Summarize what is meant by a basic electric circuit. 4. Describe electrical capacitance, inductance and resistance. 5. Define First-Order electrical circuits' voltage, resistance, and current. 6. Identify the basic circuit elements and their applications. 7. Discuss the operations of sinusoids and phasors in an electric circuit. 8. Discuss the various properties of resistors, capacitors, and inductors. 9. Explain the parallel and series circuits. 10. Identify the capacitor and inductor phasor relationship with respect to voltage and current. 11. Learn the 3-Phase system, Wye connection and Delta connection. 12. Identify the power in balance phase circuit. 13. Describe the Magnetism and Magnetic Circuits
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. AC circuits I – Generation of alternating current, Sinusoidal current. The mean values of current and voltage. [15 hrs.] AC Circuits II - The effective values of current and voltage. The vector diagram, [10 hrs.] The instantaneous power and mean power of A.C , relative and apparent power . [10 hrs.] Revision problem classes [8 hrs.] 3-Phase system, Wye connection, and Delta connection [10 hrs.] The power in balance phase circuit. [7 hrs.] Revision problem classes [5 hrs.]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

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

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	8% (10)	5, 10	LO #1-4, 6- 9
	Project	1	10% (10)	12	LO # 1-11
	Onsite assignment	2	6% (6)	4, 11	LO # 4, 11
	Report and presentation	1	6% (6)	13	LO # 6, 8, 10
	Lab	5	10% (10)	3, 6, 9, 12, 15	LO # 1-2, 4-5, 7-8, 10-11, 13-14
Summative assessment	Midterm Exam	2 hr.	10% (10)	7	LO # 1-7
	Final Exam	4hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Generation of alternating current, Sinusoidal current
Week 2	Average and RMS values of current & voltage
Week 3	AC in resistive circuits Current & voltage in an inductive circuit
Weeks 4-6	Current and voltage in an capacitive circuits AC series and parallel circuit RL, RC and RLC circuit analysis & phasor representation
Week 7	Mid-term exam
Weeks 8-11	Power in resistive circuits Power in inductive and capacitive circuits Power in circuit with resistance and reactance Measurement of power in a single-phase AC circuit
Week 12-15	Basic concept & advantage of Three-phase circuit Phasor representation of star & delta connection Measurements of power & power factor in 3-phase system Preparation for final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Introduction to electrical elements, sources, and measuring devices related to electrical circuits.
Week 2 + week3	Generating AC Voltages and Measurement Frequency, Period, Amplitude, and Peak Value.
Week 4	Calculations and Verification of the Impedance of RL series circuits
Weeks 5	Calculations and Verification of the current of RL series circuits
Week 6	Calculations and Verification of Impedance RC series circuits + Calculations and Verification of Current RC series circuits
Weeks 7	Mid-term exam
Week 8	Calculations and verification of the impedance of RLC series circuits
Week 9	Calculations and verification of the current of RLC series circuits

Week 10	Calculations of Power in AC Circuits
Week 11	Calculations and verification of the impedance of RL and RC parallel circuits
Week 12	Calculations and verification of the current of RL and RC parallel circuits
Week 13	Calculations and verification of the impedance RLC parallel circuits
Week 14	Calculations and verification of the impedance current RLC parallel circuits
Week 15	Final exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamentals of Electric Circuits, C.K. Alexander and M.N.O Sadiku, McGraw-Hill Education	Yes
Recommended Texts	Electric Circuits Seventh Edition و Schaum's Outline Series	No
Websites		

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Medical physics		Module Delivery
Module Type	Support		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE1202		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UG1	Semester of Delivery	
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1- to recognize the influence of forces on the human body Identify how the skeleton works 2- to show how pressure affects the body's organs Recognize physical activity of the lungs and breathing 3- to demonstrate the physics of the cardiovascular system and the urinary system 4- to distinguishes the basic principles using the applications of electricity and magnetism in medicine 5- to shall be acquainted with respiratory, cardiovascular and cardiovascular equipment 6- to distinguishes the basic principles, using the sound waves in medicine and the use of x-rays in the diagnosis and identification of diseases
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon completion of the course, students should be able to: 1- Understand the difference between the Forces. 2- Know the bone has at least six functions. What are the main components of the bone, and to study the methods of Measurement the minerals quantity in the bone 3- know methods of diathermy 4- understand how Energy change in the body 5- know pressures inside the body parts and measure it 6- understand how to work the lungs and How the blood and lungs interact 7- know nervous system and the neuron 8- know the graphing devices of the body organs 9- know the applications of Electricity and Magnetism in Medicine 10- know the application of sound in medicine, know sonar devices 11- know the application of light and laser in medicine 12- know Major components of the cardiovascular system 13- know physics of nuclear medicine 14- know the x- ray device
Indicative Contents المحتويات الإرشادية	1- Define the Forces , Frictional Forces , Dynamics (5hrs.) 2- functions of the skeleton and Bone consists of quite different materials and how to measure mineral in the bones (5 hrs.) 3- Types of thermometers , Heat therapy, Cryogenics (5 hrs.) 4- Sphygmomanometer, blood pressure, bladder pressure , tonometer(4hrs.) 5- Function of Lungs & Breathing, breath rate, airways, Dalton's law of partial pressures(3hrs.) 6- The nervous system and the neuron, Electrocardiogram, Electro retion gram (ERG), The magneto cardiogram (MCG)(4hrs.)

	7- Magnetic signals from the heart –magneto cardiogram(3hrs.) 8- Macro shock, Micro shock (3hrs.) 9- General Properties of Sound, Acoustic Impedance, Absorption, A-mode Display, Doppler Ultrasound(5hrs.) 10- Endoscope, cystoscopes, Emissive IR photography. (5hrs.) 11- Laser, population inversion, X-ray (6hrs.) 12- Physics of the cardiovascular system (5 hrs.)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Daily assessment - weekly assessment - quarterly assessment - objective questions - general questions - practical tests.

Student Workload (SWL)

الحمل الدراسي للطلاب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	61	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	4, 11	LO # 1-3 and 8-10
	Assignments	2	10% (10)	9, 13	LO # 8 and 11-12
	Projects / Lab.	7	10% (10)	Continuous	
	Report	2	10% (10)	7, 12	LO # 1-6 and 7-11
Summative assessment	Midterm Exam	2 hr.	10% (10)	7	LO # 1-7
	Final Exam	4 hr.	50% (50)	14	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Forces on and in the body.
Week 2	Physics of the skeleton.
Week 3	Heat & cold in medicine
Week 4	Energy, work and power of the body, Pressure in body organs
Week 5	Physics of the lungs and breathing.
Week 6	Physics of cardiovascular system
Week 7	Mid Term Exam
Week 8	Physics of urinary system.
Week 9	Electricity within the body.
Week 10	Sound in medicine and physics of hearing.
Week 11	Light in medicine and physics of vision.
Week 12	Diagnostic X-rays
Week 13	Physics of nuclear medicine (radioisotopes in medicine).
Week 14	Physics of radiation therapy+ Radiation protection
Week 15	Preparatory week before the final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to laboratory tools
Week 2	Lab 2: the simple pendulum
Week 3	Lab 3: hook's law
Week 4	Lab 4: the blood pressure
Week 5	Lab 5: the friction
Week 6	Lab 6: the speed of sound
Week 7	Lab 7: the laser
Week 8	Lab 8: viscosity of liquids
Week 9	Lab 9: The cylindrical body
Week 10	Lab 10: The convex lens
Week 11	Lab 11: the concave lens

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Recommended Texts	Introductory Physics I Elementary Mechanics by Robert G. Brown	NO
Websites	https://webhome.phy.duke.edu/~rgb/Class/intro_physics_1/intro_physics_1.pdf	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Computer Programming and Applications I		Module Delivery	
Module Type	Support		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MITE1206			
ECTS Credits	3			
SWL (hr/sem)	75			
Module Level	UGII	Semester of Delivery		
Administering Department	MITE	College	ETC	
Module Leader			e-mail	
Module Leader's Acad. Title			Module Leader's Qualification	
Module Tutor			e-mail	
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date			Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. Understanding the fundamental concepts of MATLAB programming language environment. 2. The students will understand and learn how to use MATLAB as an effective programming language. 3. The students will be able to solve different mathematical and engineering problems as well as using plotting functions and design projects using codes or GUI. 4. Students will acquire the knowledge of basic MATLAB syntax such as: variables, input, output, vectors, matrices, functions, plotting, and GUI, 5. The students will gain the necessary skills to design and implements appropriate algorithms that solve problems dealing with different mathematical and engineering applications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the MATLAB environments and windows (Command Window, Workspace Window, Command History window, Help Window, Editor Window). 2. The students learn how to write first program and learn Expressions, Constants, Entering Matrices, Useful Matrix Generators, Subscripting, End as a subscript, Colon Operator, Transpose Deleting Rows or Columns. 3. Explain how to use variables and assignment statement, logical operator. 4. Practice on using Arrays, built in functions, Basic Matrix Functions (sum, max, min, mean, magic, dig, length, size, median, prod, sort). 5. Learn how to perform basic Plotting (Multiple Data Sets in One Graph, Specifying Line Styles and Colors, Multiple Plots in One Figure, Setting Axis Limits). 6. Understand arguments and return values, M-file, input-output statement. 7. Train on using control Statements (Conditional statements: If, Else, Elseif, switch case) 8. Identify the repetition statements: (While statement, For statement). 9. Learn how to use combination of conditional and repetition statements. 10. Understand the procedures and functions (a custom-made MATLAB function, define the name of the function, the input and the output variables, Calling Functions). 11. Learn how to handle graphics and user interface. 1.pre-defined dialogs 2. Handle graphics a) Graphics objects b) Properties of objects c) Modifying properties of graphics objects. 12. Train of GUI Interface (Attaching buttons to actions, Getting Input, Setting Output).
Indicative Contents المحتويات الإرشادية	1. Window, Workspace Window, Command History window, Help Window, Editor Window. (3 hr) 2. Constants, Entering Matrices, Useful Matrix Generators, Subscripting, End as a subscript, Colon Operator, Transpose Deleting Rows or Columns. (5 hr) 3. variables and assignment statement, logical operator. (5 hr)

	4. sum, max, min, mean, magic, dig, length, size, median, prod, sort. (2 hr.)
	5. Multiple Data Sets in One Graph, Specifying Line Styles and Colors, Multiple Plots in One Figure, Setting Axis Limits. (2 hr.)
	6. M-file, input-output statement. (2 hr.)
	7. Conditional statements: If, Else, Elseif, switch case. (3 hr.)
	8. While statement, For statement. (4 hr.)
	9. conditional and repetition statements. (4 hr.)
	10. accustom-made MATLAB function. (4 hr.)
	11. GUI. (4 hr.)
	12. GUI attaching buttons to actions, Getting Input, Setting Output. (4 hr.)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students. Moreover, motivate the creative side by posing various problems to students and urging them to find appropriate solutions. Also forming work teams to assess the results of their work and change their structure periodically to develop the spirit of cooperation and development and motivate students to make intensive efforts to work different roles.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	49	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	26	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	2
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	15% (20)	5, 10	LO #1, 2, 3, 4,7,8,9 and 10
	Assignments	2	15% (20)	6, 13	LO # 9 and 10
	Projects / Lab.	10	10% (10)		
	Report	N/A			
Summative assessment	Midterm Exam	3hr	10% (10)	7	LO # 1-7
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction, MATLAB Environment, MATLAB Windows(Command Window, Workspace Window, Command History window, Help Window, Editor Window).
Week 2	A First Program, Expressions, Constants, Entering Matrices, Useful Matrix Generators, Subscripting, End as a subscript, Colon Operator, Transpose Deleting Rows or Columns.
Week 3	Variables and assignment statement, logical operator.
Week 4	Arrays, Built in functions, Basic Matrix Functions (sum, max, min, mean, magic, diag, length, size, median, prod, sort).
Week 5	Basic Plotting (Multiple Data Sets in One Graph, Specifying Line Styles and Colors, Multiple Plots in One Figure, Setting Axis Limits).
Week 6	Arguments and return values, M-file, input-output statement, + + Control Statements (Conditional statements: If, Else, Elseif, switch case)
Week 7	Mid-Exam
Week 8	Repetition statements: (While statement, For statement)
Week 9	Combination of conditional and repetition statements I
Week 10	Combination of conditional and repetition statements II
Week 11	Procedures and Functions (a custom-made MATLAB function, define the name of the function, the input and the output variables, Calling Functions)
Week 12	Handle graphics and user interface. 1.pre-defined dialogs 2. Handle graphics a) Graphics

	objects b) Properties of objects c) Modifying properties of graphics objects
Week 13	GUI Interface (Attaching buttons to actions, Getting Input, Setting Output) I
Week 14	GUI Interface (Attaching buttons to actions, Getting Input, Setting Output) II
Week 15	Preparatory week before the final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Introduction, MATLAB Environment, MATLAB Windows (Command Window, Workspace Window, Command History window, Help Window, Editor Window).
Week 2	A First Program, Expressions, Constants, Entering Matrices, Useful Matrix Generators, Subscripting, End as a subscript, Colon Operator, Transpose Deleting Rows or Columns.
Week 3	Variables and assignment statement, logical operator.
Week 4	Arrays, built in functions, Basic Matrix Functions (sum, max, min, mean, magic, dig, length, size, median, prod, sort).
Week 5	Basic Plotting (Multiple Data Sets in One Graph, Specifying Line Styles and Colors, Multiple Plots in One Figure, Setting Axis Limits).
Week 6	Arguments and return values, M-file, input-output statement
Week 7	Control Statements (Conditional statements: If, Else, Elseif, switch case)
Week 8	Repetition statements: (While statement, For statement)
Week 9	Combination of conditional and repetition statements I
Week 10	Combination of conditional and repetition statements II
Week 11	Procedures and Functions (a custom-made MATLAB function, define the name of the function, the input and the output variables, Calling Functions)
Week 12	Handle graphics and user interface. 1.Pre-defined dialogs 2. Handle graphics a) Graphics objects b) Properties of objects c) Modifying properties of graphics objects
Week 13	GUI Interface (Attaching buttons to actions, Getting Input, Setting Output) I
Week 14	GUI Interface (Attaching buttons to actions, Getting Input, Setting Output) II

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Introduction to MATLAB for Engineers William J. Palm III	yes
Recommended Texts	INTRODUCTION TO MATLAB FOR ENGINEERING STUDENTS, David Houcque	
Websites		

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Integral Mathematics		Module Delivery
Module Type	Support		☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE1204		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGI	Semester of Delivery	
Administering Department	MITE	College	ETC
Module Leader			e-mail
Module Leader's Acad. Title			Module Leader's Qualification
Module Tutor			e-mail
Peer Reviewer Name			e-mail
Scientific Committee Approval Date			Version Number
			2.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Differential Mathematics		Semester
			1
Co-requisites module	None		Semester

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. To develop problem solving skills and understanding of Integral calculus through a broad range of Integration techniques. 2. To understand theory and methods of integrations and apply it on various types of functions. 3. This is the basic subject for all engineering fields 4. Demonstrate basic knowledge and understanding of a core of linear algebra and applied mathematics. 5. Introduce student to integration of trigonometric functions and their inverses.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Identify the integration. 2. Interpret definite and indefinite integrals. 3. Integrate functions resulting in inverse trigonometric functions. 4. Integrate functions involving exponential and logarithmic functions. 5. Learn approximation techniques for integration. 6. Calculate the areas of curved regions by using integration methods. 7. Find the volume of a solid of revolution using various integration methods. 8. Learn how to find the length of a plane curve for a given function. 9. Teaching students how to calculate the inverses of matrices and how to identify them. 10. Teaching students how to find the solution of a homogeneous system of linear equations. 11. Teaching students how to find the eigenvalues of a matrix and the corresponding eigenvectors of a matrix. 12. Determine the diagonalizability of a given matrix.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Introduction to integration. Methods of integration and Basics of Definite and indefinite Integration, Integration of trigonometric and inverse functions. Integration of the exponential functions, Integration of logarithmic functions. Integration of Hyperbolic and inverse hyperbolic functions, numerical integration and applications of the definite integrals. [30 hrs.] Area of surface, Volume of revolution, Length of plane curve, Matrices and Inverse of matrix, Matrix Diagonalization Solution of homogeneous systems, Eigenvalues, and Eigenvectors [40 hrs.] Revision problem classes [3 hrs.]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The major approach used to offer this module will be to promote student engagement in the exercises while also enhancing and broadening their critical thinking abilities. Classes and interactive lessons will be used to achieve this.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعاً

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 12	LO #1- #4 and #6 - #12
	Online assignments	2	10% (10)	3 and 13	LO #1- #4 and #6 - #12
	Report	1	10% (10)	14	LO #1- #6 and #8 - #11
	OnSite assignment	1	10% (10)	4 and 11	LO #1- #9
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #5
	Final Exam	3hr	50% (50)	16	LO #1- #12
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction to integration.
Week 2	Methods of integration and Basics of Definite and indefinite Integration.
Week 3	Integration of trigonometric and inverse functions.
Week 4	Integration of the exponential functions.
Week 5	Integration of logarithmic functions.
Week 6	Integration of Hyperbolic and inverse hyperbolic functions.
Week 7	Mid-term Exam + numerical integration and applications of the definite integrals.
Week 8	Area of surface.
Week 9	Volume of revolution.
Week 10	Length of plane curve.
Week 11	Matrices and Inverse of matrix.
Week 12	Matrix Diagonalization
Week 13	Solution of homogeneous systems
Week 14	Eigenvalues and Eigenvectors
Week 15	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Notes on Calculus II Integral Calculus Miguel A. Lerma	No
Recommended Texts	Thomas 'Calculus (pdf) Fourteenth edition Based on the original work by GEORGE B. THOMAS, JR.	No
Websites	https://sites.math.northwestern.edu/~mlerma/courses/math214-2-02f/notes/c2-all.pdf http://dl.konkur.in/post/Book/Paye/Thomas-Calculus-14th-Edition-%5Bkonkur.in%5D.pdf	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Arabic Language		Module Delivery
Module Type	Basic		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MTU1001		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	UGI	Semester of Delivery	1
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	أهداف المادة الدراسية أن يكون الطالب قادرًا على أن: 1. يتعرف على أنواع الأخطاء اللغوية المشتركة وتوضيح أسبابها وكيفية تجنبها. 2. يتعلم القواعد المتعلقة بالناء المربوطة والطويلة والناء المفتوحة وكيفية كتابتها بشكل صحيح. 3. يتعلم قواعد كتابة الألف الممدودة والمقصورة واستخدام الحروف الشمسية والقمرية بشكل صحيح. 4. التعرف على الضاد والطاء ومعرفة كيفية التمييز بينهما في كتابة. 5. يتعلم طرق كتابة الهمزة بشكل صحيح وفقًا للقواعد اللغوية. 6. التعرف على علامات الترقيم واستخدامها بشكل صحيح النصوص 7. يفهم الفروق بين الاسم والفعل والتمييز بينهما في الجمل. 8. يفهم المفاعيل وكيفية استخدامها بشكل صحيح النصوص. 9. يتعلم الأرقام والعدد واستخدامها في التعب عن الكميات. 10. يتجنب الأخطاء اللغوية الشائعة في سياقات عملية لتعزيز فهم القواعد وتحسين المهارات اللغوية. 11. يدرس النون والتثنية وفهم معاني حروف الجر واستخدامها بشكل صحيح في الجمل. 12. يركز على الجوانب الشكلية للخطاب الإداري وكيفية كتابته بأسلوب صحيح ومناسب. 13. التعرف على لغة الخطاب الإداري وفهم استخدامها في التواصل الإداري. 14. يفهم نماذج من المراسلات الإدارية لتطبيق المفاهيم والمهارات المكتسبة في الخطاب الإداري.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	مخرجات التعلم للمادة الدراسية: 1. قدرة الطلاب على تحليل وتعريف الأخطاء اللغوية المشتركة وتطبيق القواعد الصحيحة لتجنبها. 2. القدرة على استخدام القواعد اللغوية المتعلقة بالناء المربوطة والطويلة والناء المفتوحة بشكل صحيح. 3. قدرة الطلاب على استخدام الألف الممدودة والمقصورة بشكل صحيح واستخدام الحروف الشمسية والقمرية بطريقة صحيحة. 4. تمكن الطلاب من التمييز بين الضاد والطاء وتطبيق القواعد الصحيحة في الكتابة 5. القدرة على كتابة الهمزة بشكل صحيح وفقًا للقواعد اللغوية. 6. استخدام علامات الترقيم بشكل صحيح في النصوص المكتوبة. 7. فهم الطلاب للفروق بين الاسم والفعل وتمكينهم من استخدامها بشكل صحيح بين الجمل. 8. القدرة على استخدام المفاعيل بشكل صحيح بين النصوص المكتوبة. 9. استخدام الأرقام والعدد بطريقة صحيحة للتعب عن الكميات. 10. التمكن من تطبيق الأخطاء اللغوية الشائعة في سياقات عملية وتصحيحها بشكل مناسب. 11. فهم استخدام النون والتثنية ومعاني حروف الجر واستخدامها بشكل صحيح في الجمل. 12. القدرة على كتابة الخطاب الإداري بأسلوب صحيح ومناسب وفهم لغة الخطاب الإداري. 13. تطبيق المفاهيم والمهارات المكتسبة في كتابة المراسلات الإدارية بشكل صحيح وفعال.
Indicative Contents المحتويات الإرشادية	المحتويات الإرشادية: مادة اللغة تشمل مجموعة من المفاهيم والمواضيع التي يتم تغطيتها خلال عملية التعلم. ومن بين المحتويات الإرشادية المهمة: 1. مقدمة عن الأخطاء اللغوية والتعريف بالناء المربوطة والناء المطولة والناء المفتوحة. (3 ساعات). 2. قواعد كتابة الألف الممدودة والمقصورة والتعرف على الحروف الشمسية والقمرية. (3 ساعات). 3. دراسة الضاد والطاء وتعلم طرق كتابتهما بشكل صحيح. (3 ساعات) 4. تعلم كتابة الهمزة بشكل صحيح وفقًا للقواعد اللغوية. (3 ساعات) 5. دراسة علامات الترقيم وتعلم استخدامها بشكل صحيح في النصوص اللغوية. (3 ساعات) 6. التعرف على الاسم والفعل والتمييز بينهما وفهم القواعد المتعلقة بهما. (3 ساعات). 7. دراسة المفاعيل وتعلم استخدامها في الجمل اللغوية. (3 ساعات) 8. التعرف على الأعداد واستخدامها بشكل صحيح في العبارات والجمل. (3 ساعات) 9. دراسة الأخطاء اللغوية الشائعة وتطبيقاتها في النصوص اللغوية. (3 ساعات)

10. تعلم استخدام النون والتنوين وفهم معا بين حروف الجر واستخدامها بشكل صحيح في الجمل. (2 ساعات)
11. التعرف على الجوانب الشكلية للخطاب الإداري وفهم لغته وقواعده. (2 ساعات) . 12 دراسة نماذج من المراسلات الإدارية وتطبيقها في الكتابة. (2 ساعات)
- توفر هذه المحتويات الإرشادية للطلاب فهما شاملاً للمفاهيم اللغوية وتعلم القواعد والتطبيقات العملية التي تساعد في تطوير مهاراتهم اللغوية.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies

- استراتيجيات التعلم والتعليم المستخدمة- في مادة اللغة تشمل مجموعة متنوعة من النهج والتقنيات التي تعزز عملية التعلم للطلاب. من بين هذه الاستراتيجيات:
1. التفاعل النشط: يتم تشجيع الطلاب على المشاركة والمشاركة الفعالة في الدروس من خلال المناقشات الجماعية والأنشطة التفاعلية.
 2. التعلم التعاوني: يشجع التعاون والتعاون بين الطلاب من خلال العمل الجماعي والمشاريع الجماعية، حيث يتعاون الطلاب مع بعضهم البعض لتحقيق أهداف التعلم المحددة.
 3. التطبيق العملي: يتم توفير فرص للطلاب لتطبيق المفاهيم والمهارات المكتسبة في سياقات عملية وواقعية، مما يعزز التفاعل الفعال مع المادة.
 4. استخدام التقنيات الحديثة: يستفيد الطلاب من استخدام التكنولوجيا عملية التعلم، مثل استخدام الحواسيب والتعلم الذاتي.
 5. توفير ردود فعل فورية: يتم توفير ردود فعل فورية وتقييم مستمر للطلاب، سواء عن طريق التقييمات الشفهية أو الكتابية، مما يساعدهم على تحسين أدائهم وتطوير مهاراتهم.
 6. التنوع في وسائل التواصل: يتم استخدام مجموعة متنوعة من وسائل التواصل والتعليم، مثل الوسائل التوضيحية، والمناقشات الجماعية، والأنشطة العملية، والعروض التقديمية، لتلبية احتياجات وأساليب التعلم المختلفة للطلاب.
 7. باستخدام هذه الاستراتيجيات يتم تعزيز التفاعل والتعلم الفعال للطلاب.
 8. حدثهم على المشاركة واكتساب المعرفة والمهارات بشكل شامل وشيق.

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ أسبوعاً

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

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	15% (15)	5, 10,13	LO #1, 5 and 11
	Assignments	3	15% (15)	2, 11,14	LO # 3, 6 and 12
	Projects / Lab.				
	Report	1	10% (10)	14	LO # 1-13
Summative assessment	Midterm Exam	2 hours	10% (10)	7	LO # 1-7
	Final Exam	3 hours	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

1-8	مقدمة عن الأخطاء اللغوية - التاء المربوطة والطويلة والتاء المفتوحة	الأسبوع الأول
9-14	قواعد كتابة الألف الممدودة والمقصورة - الحروف الشمسية والقمرية	الأسبوع الثاني
15-19	الضاد والطاء	الأسبوع الثالث
20-30	كتابة الهمزة	الأسبوع الرابع
31-36	علامات الترقيم	الأسبوع الخامس
37-44	الاسم والفعل والتفريق بينهما	الأسبوع السادس
45-50	المفاعيل + العدد	الأسبوع السابع
51-61	امتحان منتصف الفصل الدراسي	الأسبوع الثامن
62-69	تطبيقات الأخطاء اللغوية الشائعة	الأسبوع التاسع والعاشر
70-75	النون والتنوين - معاني حروف الجر	الأسبوع الحادي عشر
76-80	الجوانب الشكلية للخطاب الإداري	الأسبوع الثاني عشر
81-86	لغة الخطاب الإداري + نماذج من المراسلات الإدارية	الأسبوع الثالث عشر والرابع عشر
	الاستعداد للاختام النهائي	الأسبوع الخامس عشر

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?

Required Texts	-أخطاء لغوية شائعة ،تأليف: خالد بن هلال بن ناصر العنبري ،مكتبة: الجيل الواعد الطبعة الأولى. ٢-قواعد الأملاء وعلامات الترقيم ، تأليف: عبد السلام هارون، تحقيق: نبيل عبد السلام هارون، دار الكتب العلمية ،الطبعة الأولى ،٢٠٠٥.	Yes
Recommended Texts	أقسام الكلام العربي من حيث الشكل والوظيفة، تأليف: الدكتور فاضل مصطفى الساق، تقديم الأستاذ الدكتور: تمام حسان، مكتبة الخانجي – القاهرة، طبعة ١٩٧٧م.	No
Websites	The Collage E-Library	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Electronic Circuits I		Module Delivery
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE2102		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGII	Semester of Delivery	
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Fundamentals of Electrical Engineering (AC) MITE1201	Semester	UGI_S2
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. The graduate gets scientific and applied skills of electronic circuits. 2. The graduated students will gain the ability of knowledge of different parts of electronic circuits. 3. Development and training the engineering technical staffs on the electronic circuits. 4. Preparation the research and studies to improve and develop the action of electronic circuits. 5. Prepare application engineers in technical and electronic engineering. 6. Put the proposals and alternatives for the electronic devices.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Become aware of the general characteristics of electronic devices. 2. Be able to describe the difference types of electronic categories. 3. Develop a clear understanding of the basic operation and characteristics of electronic devices. 4. Become familiar with the use of equivalent circuits to analyze series, parallel, and series-parallel electronic networks. 5. Be able to predict the output response of an electronic network. 6. Become familiar with the analysis of and the range of applications for electronic devices. 7. Become familiar with the basic construction and operation of the various types of electronic categories. 8. Be able to test a various type of electronic terminals. 9. Be able to determine the dc levels for the variety of important electronic circuits. 10. Understand how to measure the important voltage levels of electronic circuits. 11. Begin to understand the troubleshooting process as applied to electronic configurations. 12. Develop a sense for the stability factors of an electronic circuit. 13. Learn to use the equivalent model to find the important ac parameters for an amplifier. 14. Develop some skill in troubleshooting ac amplifier networks.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A Electronic Theory</u> Semiconductor Materials: Ge, Si, and GaAs 2, Covalent Bonding and Intrinsic Materials, n -Type and p -Type Materials, Semiconductor Diode, Transistor Construction, T r a n s i s t o r Operation, Construction and Characteristics of JFETs , Transfer Characteristics, Important Relationships, Depletion-Type MOSFET Enhancement-Type MOSFET [10 hrs.] Diode Applications -Load-Line Analysis, Series Diode Configurations, Parallel and

	Series-Parallel Configurations, Sinusoidal Inputs; Half-Wave Rectification Full-Wave Rectification, Clippers, Clampers Networks with a dc and ac Source, Zener Diodes , Voltage-Multiplier Circuits [12 hrs.] Revision problem classes [6 hrs.]
	<u>Part B - DC Electronic Circuits</u> BJT Transistor - Operating Point, dc bias configurations of a BJT transistor, Miscellaneous Bias Configurations of a BJT transistor 4.11 Design Operations of a BJT transistor, Multiple BJT Networks, Current Mirrors. [13 hrs.] FET Transistor - biasing arrangements for the n and p channel JFET, 7.7 Depletion-Type MOSFETs, Enhancement-Type MOSFETs, Combination Networks, Universal JFET Bias, Practical Applications. [10 hrs.]
	<u>Part C - AC Electronic Circuits</u> BJT Transistor - Amplification in the AC Domain, BJT Transistor Modeling, the r_e Transistor Model, Effect of R_L and R_s, Determining the Current Gain, Cascaded Systems, Darlington Connection, Feedback Pair, The Hybrid Equivalent Model. [17 hrs.]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	
	The main strategy will be encouraging active participation and engagement of students through activities such as group discussions, hands-on experiments, problem-solving tasks, and case studies. This approach promotes critical thinking, collaboration, and knowledge application and encourages students to explore and discover knowledge through inquiry and investigation. Pose open-ended questions or problem scenarios that require learners to research, analyze, and draw conclusions independently.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	16% (16)	5,10	LO #1,2,10 and 11
	Assignments	2	8% (8)	2,12	LO # 3,4 ,6,7 and 14
	Projects / Lab.	1	8% (8)	continuous	
	Report	1	8% (8)	13	LO # 5,8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	8	LO # 1,2,5,9,10 and 13
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction -
Week 2	Semiconductors materials
Week 3	Diode Configurations
Week 4	Diode Networks with a dc and ac Source
Week 5	Zener Diodes
Week 6	Bipolar junction transistor
Week 7	Mid-term Exam
Week 8	DC biasing BJTs
Week 9	Multiple BJT Networks
Week 10	Field effect transistor and MOSFET
Week 11	Depletion-Type MOSFET

Week 12	Enhancement type MOSFET
Week 13	BJT AC Analysis
Week 14	BJT Transistor Modeling and Effect of RL and Rs
Week 15	Preparatory week before final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Diode characteristics
Week 2	Lab 2: Half – wave Rectifier
Week 3	Lab 3: full wave Rectifier
Week 4	Lab 4: Filter for Halve – wave and full wave Rectifiers
Week 5	Lab 5: Voltage Doubler
Week 6	Lab 6: Voltage Tripler
Week 7	Lab 7: Positive Series Clipper
Week 8	Lab 8: Negative Series Clipper
Week 9	Lab 9: positive parallel Clipper
Week 10	Lab 10: Negative parallel Clipper
Week 11	Lab 11: Clamper
Week 12	Lab12: Zener Diode
Week 13	Lab13: Fixed V_i , Variable RL Zener Diode
Week 14	Lab14: Fixed RL, Variable V_i Zener Diode

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Electronic devices and circuit theory 11th edition, Robert L. Bolstad, Louis Nashelsky	Yes
Recommended Texts		No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Electrical Machines		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MITE2103			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	UGII	Semester of Delivery		3
Administering Department	MITE	College	ETC	
Module Leader			e-mail	
Module Leader's Acad. Title			Module Leader's Qualification	Ms.c
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	Fundamentals of Electrical Engineering (AC)	Semester	UGI-S2
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

Module Aims أهداف المادة الدراسية	1- Study engineering concepts and their applications for electrical machines and transformers. 2- How electrical transformers work, how to connect them, and solve mathematical problems related to them and their types. 3- What are electrical machines and what are their classifications. 4- Knowledge and understanding of the basics of laws related to electrical technology materials. 5- Solve issues and issues and apply the rules of application related to electrical engineering. 6- Giving students confidence and ability to use mathematical foundations in applications on generators, electric motors. 7- Building interactive skills that help classify information and make engineering decisions. 8- Develop proposals and alternatives for electrical parts for medical devices
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Learn how transformers work in electrical circuits. 2. List the various terms associated with electrical circuits and machines. 3. Summarize what is meant by electrical transformers and basic electrical machines of all kinds. 4. Discuss the interaction and participation of the number of windings, wire diameter and size of electrical transformers. 5. Description of electrical transformers, motors and generators with direct current and alternating current. 6. Determine the laws related to electrical transformers and their derivations. 7. Identify the equivalent circuits of electrical transformers and methods of calculating their efficiency. 8. Discuss the processes that lead to losses in transformers and electrical machines, and ways to reduce them and increase their efficiency. 9. Discuss the different characteristics of engines and generators, their main components, and the functioning of each. 10. Explain the two laws of machines and determine their efficiency, capacity and torque, and the laws of their formation. 11. Identify the relationship of transformers and electrical machines to medical devices. 12. Discuss the systems of connecting machines, ways of wrapping coils inside them, and the benefits of each. 13. Determining how to increase the efficiency of motors used in medical devices and methods of maintaining and repairing them. 14. Describe the types of motors included in the formation of medical devices and their classification

Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A - Single-phase electrical transformers Types of electrical transformers, their parts and components, their equivalent circuit, types of losses, how to calculate them, and how to calculate transformer efficiency through mathematical operations and efficiency laws. [10 hours] Part B - Three-phase electrical transformers Types of three-phase electrical transformers, calculating their cost, types of connections in their files, calculating their equivalent circuits, and deriving special laws for each connection [13 hours] Part C- Electromagnetic and electromechanical induction and the relationship between them and linear motion using those concepts and applications on linear motion and how to generate it. [10 hours] Part D- The electromotive force of single-phase machines, methods of generating them, their laws, and their calculation through mathematical issues and calculating currents, voltages, losses, and capacity. [10 hours] Part E- The electromotive force of the three-phase machines, methods of generating them, their laws, and their calculation through mathematical problems, types of coil connections, testing those machines, and calculating currents, voltages, losses, and real and apparent power. [15 hours] Instantaneous power and average power of alternating current, relative and apparent power. Types of electric motors and how they work [5 hours] Review problem categories [6 hours]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in the delivery of this unit is to encourage students to participate in the exercises, while improving and expanding their critical thinking skills at the same time. This will be achieved through classes and interactive tutorials and by looking at the types of simple experiments that include some of the electrical wiring activities in the laboratory curriculum that develop students' skills.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	% (10)	5,12	1-3 , 4-10
	Assignments	4	% (10)	4,6,8,12	2-3, 4-5, 6-7, 8-11
	Projects / Lab.	1	% (15)	14	1-12
	Report	5	% (5)	3,5,7,9,11	1-2, 3-4, 5-6, 7-8, 9-10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	1-5
	Final Exam	4 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Material Covered

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

Week 1	Transformers: single phase transformer and construction

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

Week 2	Transformers: single phase transformer and construction
Week 3	Theory of operation, no load and short circuit test.
Week 4	Equivalent circuit, auto-transformers, instrument transformers
Week 5	Equivalent circuit, auto-transformers, instrument transformers
Week 6	Three phase transformers, constructions methods of connection.
Week 7	Mid exam + Three phase transformers, constructions methods of connection.
Week 8	Electromechanical energy conversion principles relay operation.
Week 9	Electromechanical energy conversion principles relay operation.
Week 10	Motor characteristics, testing, calculation of losses and efficiency.
Week 11	Induction machines: equivalent circuit, basic equation, simple analysis testing.
Week 12	Single phase induction motor, methods of starting, split phase, capacitor short, capacitor run and shaded pole motors.
Week 13	Single phase induction motor, methods of starting, split phase, capacitor short, capacitor run and shaded pole motors.
Week 14	Synchronous machines, generators and motors, equivalent circuit, basic equation.
	Special machines: Reluctance motor, hysteresis motor, linear motor, stepper motor, dray cup type m motor, etc. ...
Week 15	Preparatory week before final exam

	Material Covered
Week 1	Introduction to measuring devices and identifying wattmeter
Week 2	Characteristics of single-phase electric transformers
Week 3	Open circuit test of transformers
Week 4	Load circuit for single phase transformers
Week 5	Three phase transfer theorem delta- delta
Week 6	Three phase transfer theorem delta- star
Week 7	Three phase transfer theorem star- delta
Week 8	Three phase transfer theorem star- star
Week 9	Characteristics of DC machine
Week 10	load test of three phases (I.M)
Week 11	open circuit test of three phases (I.M)
Week 12	short circuit test of three phases (I.M)

Week 13	Speed control of DC motor + load test of DC generator
Week 14	Series & Shunt DC machine connection. Compound connection of DC machine.
Week 15	Preparatory week before final exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Electrical Machines and Drives Fundamentals and Advanced Modelling by Jan A. Melekeok	Yes
Recommended Texts	Electrical Machines Drives and Power Systems 5th Edition By Theodore Wildi	No
Websites		

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Engineering Mathematics		Module Delivery
Module Type	Support		☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE2104		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	UGII	Semester of Delivery	
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Integral Mathematics-MITE1204	Semester	UGI-S2
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. The goal of this module is to give students the necessary mathematical skills and tools to solve a range of design engineering issues. 2. Demonstrate basic knowledge and understanding of a core of vector analysis, linear algebra and applied mathematics. 3. Introduce student to Infinite and power series. 4. Understand how to solve Differential equations of the 1st and nth order. 5. Introduce student to Integral Transforms: Fourier series and Laplace transform and their applications in signal and systems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Define a vector, represent a vector by a directed straight line, add vectors, write a vector in terms of component vectors, write a vector in terms of component unit vectors, set up a coordinate system for representing vectors, and obtain the direction of a vector. 2. Explain the concept of a vector field and make sketches of simple vector fields in the plane 3. Memorize algebraic definitions and explain geometric meanings of dot and cross products 4. Compute dot and cross products given either algebraic or geometric information. 5. Apply dot or cross product to determine angles between vectors, scalar and vector projections, and volumes of parallelepipeds. 6. Memorize change of coordinate formulae between rectangular and cylindrical coordinate systems. 7. Memorize change of coordinate formulae between rectangular and spherical coordinate systems. 8. Identify coordinate surfaces in cylindrical and spherical coordinate systems as well as Converting equations between rectangular, cylindrical and spherical coordinate systems. 9. know what is meant by infinite series & its convergence, 10. Learn formation of Differential Equations - solutions of first order Differential Equations: Homogeneous-Non-homogeneous - Exact – Non-exact and solutions of nth order Differential Equations as well. 11. Definition of Laplace and Fourier transforms, Condition for existence, Laplace

	transform of standard functions, Properties of Laplace transform, 12. Application of Laplace and Fourier transforms to ordinary differential equations.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Vector analysis, Vector fields, Orthogonal vectors and Dot Product, Parallel vectors and Cross Product, in addition to Partial Derivatives: Formulas for Del operation. [25 hrs.] Polar Coordinates, Cylindrical Coordinates Systems, Spherical Coordinates Systems, and Infinite series. Power series. [23 hrs.] Convergence and divergence series, Differential equation of the first order, Differential equation of nth order. Integral Transforms: Fourier series and Laplace transform. [25 hrs.]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The major approach used to offer this module will be to promote student engagement in the exercises while also enhancing and broadening their critical thinking abilities. Classes and interactive lessons will be used to achieve this.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعاً

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	2
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
Quizzes	2	5% (10)	4 and 10	LO #1- #4 and #5 - #9

Formative assessment	Online assignments	2	5% (10)	3 and 6	LO #1- #4 and #5 - #8
	Report	1	10% (10)	14	LO #1- #6 and #7 - #12
	OnSite assignment	2	5% (10)	5 and 14	LO #1- #5 and #6- #12
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #8
	Final Exam	3hr	50% (50)	16	LO #1- #12
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعية النظري

	Material Covered
Week 1	Vector analysis.
Week 2	Vector fields.
Week 3	Orthogonal vectors and Dot Product.
Week 4	Parallel vectors and Cross Product.
Week 5	Partial Derivatives: Formulas for Del operation.
Week 6	Polar Coordinates.
Week 7	Mid-term Exam + Cylindrical Coordinates Systems.
Week 8	Spherical Coordinates Systems.
Week 9	Infinite series.
Week 10	Power series.
Week 11	Convergence and divergence series.
Week 12	Differential equations.
Week 13	Differential equation of the first order.
Week 14	Differential equation of n th order.
Week 15	Integral Transforms: Fourier series and Laplace transform.
Week 16	Preparatory week before the final Exam.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	https://dokumen.tips/download/link/engineering-mathematics-5th-ed-by-k-a-stroud.html (pdf)	No
Recommended Texts	https://www.bau.edu.jo/UserPortal/UserProfile/PostsAttach/59003_3812_1.pdf	No
Websites	https://dokumen.tips/download/link/engineering-mathematics-5th-ed-by-k-a-stroud.html	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Anatomy & Physiology		Module Delivery
Module Type	Support or related learning activities		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical Seminar
Module Code	MITE2105		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	UGII	Semester of Delivery	
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1-Anatomy and Physiology are important medical discipline to understand structures and functions of human body cells, tissues, organs, organ systems, and as a whole system, how it works and the relationships between body parts. 2- This mode unit consists of main elements of anatomy and physiology, the terminology used, and how our body control itself. 3- Students will be able to understand how medical device work with the human body and what the benefit from it. 4- To understand the level of organization of the human organism and the homeostatic system. 5- To understand the chemical structure, chemical reactions and their control with acid-base balance in human body.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Demonstrate correct usage of the terminology used to describe anatomical structures. 2. Describe the organization of cells and tissues. 3. Describe the principles relating to the structure of connective tissues, skeletal muscle, bones, and joints. 4. Describe the principles of excitable tissues. 5. Describe the structure and function of the human eye and ear and the mechanisms of vision and hearing. 6. Describe the principles of sensorimotor control. 7. Describe cardiac mechanics and cardiac biophysics. 8. Develop quantitative descriptions of physiological properties and systems. 9. Describe the application of technologies and techniques for investigating the structure and function of the body. 10. Demonstrate communication skills (oral and written) to describe the structure and function of the human body. 11. Describe basic structural and functional features of the major organ systems within the human body. 12. Define basic biological processes essential for maintenance of homeostasis. 13. Correlate specific structural features of human cells, tissues, organs and systems of the human body with their normal functions, and identify the changes that occur during human development, ageing and disease.
Indicative Contents	Topics include:

المحتويات الإرشادية	- Anatomical terminology (5 hrs.). - The structure and appearance of cells and tissues (6 hrs.). - The appearance of bone and cartilage, the organization of dense connective tissues (6 hrs.). - Skeletal muscle structure and function. Principles of excitable tissues. [15 hr.] - The structure and function of sensory systems, including the eye and vision and the ear and hearing. - Principles of sensory motor control. Cardiac mechanics and cardiac biophysics. [10 hr.] - Multiscale modelling of physiological systems (6 hrs.). - Technologies, quantitative measurements and experimental techniques used to investigate the structure and function of different tissues, organs and organ systems. [15 hr.]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The learning and teaching strategies employed in this module can vary depending on the specific course. However, here are some common strategies that may be used with this course: <u>Teaching methods include:</u> - lectures - seminars - tutorials - lab experiments - design assignments. - industrial visits - professional training - a variety of projects <u>Assessment :</u> methods of assessment include a combination of: - coursework - group project reports - lab reports - written exams.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	36	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
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	4	20%	2,4,6, 8, 10, 12	LO: 1,2,3... 14
	Assignments	2	5%	7, 10	LO: 6, 13
	Projects / Lab.	2	5%	5, 9	LO: 1-5, 6-9
	Report	1	10%	11	LO: 1,2,3 12
Summative assessment	Midterm Exam	2 hr.	10% (10)	7	LO: 1-7
	Final Exam	4 hr.	50 % (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction to Anatomy and Physiology.
Week 2	The Chemical level of Organization.
Week 3	The Cell level of Organization
Week 4	The Tissue level of organization
Week 5	The Integumentary system
Week 6	The Muscular system
Week 7	Mid Exam
Week 8	The Skeletal System
Week 9	The Central Nervous System
Week 10	The Peripheral Nervous System and Autonomic Nervous System.

Week 11	The Sense and Sensory System.
Week 12	The Endocrine System.
Week 13	The Cardiovascular System: The Heart, Blood Vessels and Blood.
Week 14	The Respiratory System. The Urinary System.
Week 15	Preparatory week before final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Lab 1 measurement of body temperature
Week 2	Lab 2 Coagulation
Week 3	Lab 3 The blood
Week 4	Lab 4 Membrane transport
Week 5	Lab 5 Complete blood count
Week 6	Lab 6 Hemoglobin (Hb) Determination
Week 7	Lab 7 Erythrocyte Sedimentation Rate ESR
Week 8	Lab 8 Total leucocyte count
Week 9	Lab 9 Total Red Blood Cell R B C count
Week 10	Lab 10 Platelets count
Week 11	Lab 11 Blood film
Week 12	Lab 12 Blood group
Week 13	Lab 13 Blood sugar
Week 14	Lab 14 Blood urea & Blood pressure

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Frederic H Martini, Edwin F Bartholomew, William C. Ober, Claire W. Garrison, Kathleen Welch, & Ralf T Hutchings (2007), <i>Essentials of Anatomy and Physiology</i> , 14 th ed., Pearson Education, San Francisco, USA.	No
Recommended Texts	1- Human Physiology Study Guide 2- Human Anatomy & Physiology: Help and Review	
Websites	Interactive physiology, Copyright © 2005 Pearson Education, Inc. publishing as Benjamin	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Laboratory Medical Instrumentation I		Module Delivery
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☒ Seminar
Module Code	MITE2101		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	UGII	Semester of Delivery	
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. The graduate gets scientific and applied skills to diagnose the medical instruments faults. 2. The graduated students will gain the ability of knowledge of different parts of medical instruments. 3. Development and training the engineering technical staff on medical device maintenance. 4. Preparation of the research and studies to improve and develop the action of medical devices. 5. Prepare application engineers in technical and electronic engineering. 6. Put the proposals and alternatives for the medical devices.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon completion of the course, students should be able to: 1. Define the Medical instrumentation and recognize what is the laboratory security system and determine the quality control results in the medical laboratory. 2. Classify the medical instrumentation. 3. Describe the hospital design. 4. Design and Describe the operating room. 5. Understand patient safety laws and rules. 6. Define and understand the medical Laboratory Instruments and Tools. 7. Calibration of Medical Laboratory Instruments. 8. Define, explain, and describe Balances and understand the electrical and electronic parts. 9. Explain the types of balances and their medical application. 10. Define, explain, and describe water bath and understand the electrical and electronic parts. 11. Define, explain, and describe wax bath and understand the electrical and electronic parts.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: Medical instrumentation classification, analysis lists, work security rules, and best laboratory use guidelines [14 hr]. Calibration of instruments criteria, types, components, advantages and disadvantages, physical and medical applications. [14hr] Medical instrumentation faults and maintenance, analysis lists, work security rules, and best laboratory use guidelines [14hr]. Patient safety and hospital design rules [15h]. Classification of different types of medical laboratories like medical, biological histological and chemical [13hr].

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 design, while at the same time refining and expanding their medical instrumentations 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

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	% (10)	3,10	LO # 1,2,3,...14 ,
	Assignments	2	% (10)	4,8	LO # 6,13
	Projects / Lab.	1	% (10)	6	LO #3
	Report	2	% (10)	5,9	LO # 7,12
Summative assessment	Midterm Exam	2 hr.	10% (10)	7	LO # 1-7
	Final Exam	3 hr.	50% (50)	14	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Definition to medical instruments.
Week 2	Introduction to medical instruments.
Week 3	Classification of medical instrumentation.
Week 4	Design of hospitals.
Week 5	Design of operating room.
Week 6	Patient Safety.
Week 7	Mid-term exam
Week 8	Medical Laboratory Instruments and Tools-1
Week 9	Medical Laboratory Instruments and Tools- 2
Week 10	Classification of different medical laboratories
Week 11	Calibration of Medical Laboratory Instruments.
Week 12	Introduction to Balance.
Week 13	Balance and their types.
Week 14	Wax bath. Water bath.
Week 15	The preparatory week before the final exam.

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Introduction to medical instruments.
Week 2	Classification of medical instrumentation.
Week 3	Medical Laboratory Instruments and Tools.
Week 4	Patient Safety.
Week 5	Calibration of Medical Laboratory Instruments.
Week 6	Classification of different medical lab.

Week 7	Introduction to Balance.
Week 8	Balance and their types.
Week 9	Wax bath.
Week 10	Water bath.
Week 11	Exam.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Biomedical device technology, by ANTHONY Y. K. CHAN, MSc, MEng, Peng, CCE	
Recommended Texts	Ananthi ,2005,” A text book of medical instruments	
Websites		

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Computer applications		Module Delivery
Module Type	Basic		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MTU1005		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	UGII 2	Semester of Delivery	
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims

أهداف المادة الدراسية

The module aims to:

1. To provide an overview of Microsoft Word, Excel, and PowerPoint, and familiarize students with their key features and user interfaces.
2. To develop essential skills in creating, saving, and opening documents in Microsoft Word, including formatting text and paragraphs and working with styles and themes.
3. To explore advanced features in Microsoft Word, such as page layout options, working with headers, footers, and page numbers, and incorporating tables, images, and objects.
4. To introduce spreadsheets and worksheets in Microsoft Excel, and develop students' skills in data entry, manipulation, and basic formulas and functions.
5. To delve into advanced Microsoft Excel features, including working with ranges and cells, sorting and filtering data, and creating charts and graphs.
6. To guide students in creating and editing slides in Microsoft PowerPoint, applying themes and templates, and adding text, images, and multimedia elements.
7. To explore advanced PowerPoint features, such as slide transitions, animations, using SmartArt and shapes, and utilizing presenter tools and slide show options.
8. To teach word processing techniques in Microsoft Word, such as mail merge, document collaboration, creating professional documents, and managing references and citations.
9. To provide advanced data analysis skills in Microsoft Excel, covering advanced formulas and functions, data validation, conditional formatting, and PivotTables.
10. To explore collaboration and sharing features in Microsoft Office, including sharing and co-authoring documents, using comments and track changes, and protecting documents.

Module Learning Outcomes

مخرجات التعلم للمادة
الدراسية

1. Demonstrate a solid understanding of Microsoft Word, Excel, and PowerPoint, including their key features, user interfaces, and common functions.
2. Create, format, and manage documents effectively in Microsoft Word, utilizing styles, themes, page layout options, headers, footers, tables, images, and objects.
3. Utilize Microsoft Excel for data entry, manipulation, basic calculations using formulas and functions, sorting and filtering data, and creating charts and graphs.
4. Develop proficiency in creating and editing slides, applying themes, templates, and multimedia elements, and utilizing advanced features in Microsoft PowerPoint.
5. Employ word processing techniques in Microsoft Word, including mail merge, document collaboration, creating professional documents, and managing references and citations.
6. Apply advanced data analysis skills in Microsoft Excel, including advanced formulas and functions, data validation, conditional formatting, and PivotTables.
7. Collaborate and share documents effectively using Microsoft Office features, such as sharing and co-authoring, comments and track changes, and document protection.

	8. Automate tasks in Word, Excel, and PowerPoint using macros, customizing the ribbon, creating shortcuts, and integrating data between applications for enhanced productivity and efficiency.
Indicative Contents المحتويات الإرشادية	The indicative contents for the Computer Application module may include: 1. Introduction to Microsoft Office Suite: [8 hrs.] 2. Microsoft Word Basics: [8 hrs.] 3. Advanced Microsoft Word Features: [8 hrs.] 4. Microsoft Excel Basics: [8 hrs.] 5. Advanced Microsoft Excel Features: [8 hrs.] 6. Microsoft PowerPoint Basics: [8 hrs.] 7. Advanced Microsoft PowerPoint Features: [8 hrs.] 8. Word Processing Techniques in Microsoft Word: [8 hrs.] 9. Data Analysis in Microsoft Excel: [8 hrs.] 10. Presentation Design in Microsoft PowerPoint: [8 hrs.] 11. Collaboration and sharing in Microsoft Office: [8 hrs.] 12. Automating Tasks in Microsoft Office: [8 hrs.] 13. Integrating Office Applications: [8 hrs.] 14. Advanced Tips and Tricks: [8 hrs.] 15. Final Projects and Review: [8 hrs.]
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The learning and teaching strategies employed in the applied mathematics module are designed to facilitate active engagement, critical thinking, and practical application of mathematical concepts. The following strategies are commonly used: 1. Lectures: Lectures serve as the primary mode of content delivery, where instructors present key concepts, theories, and techniques. Lectures may include visual aids, examples, and demonstrations to enhance understanding and provide real-world context. 2. Interactive Discussions: Interactive discussions encourage student participation and facilitate deeper understanding of the material. Students are encouraged to ask questions, share their insights, and engage in discussions on specific topics or problem-solving strategies. 3. Problem-solving Sessions: Problem-solving sessions allow students to apply mathematical principles to solve a variety of problems. These sessions may be conducted in groups or individually, allowing students to collaborate, exchange ideas, and develop problem-solving skills. 4. Practical Exercises: Practical exercises involve hands-on application of mathematical concepts through computational tasks, modeling exercises, or simulations. These exercises reinforce theoretical knowledge and help students develop proficiency in using mathematical tools and software. 5. Case Studies and Real-world Applications: Case studies and real-world applications demonstrate the relevance of mathematics in various fields. Students analyze and solve mathematical problems based on real-life scenarios, enabling them to connect theoretical concepts with practical applications. 6. Computer-based Learning: Computer-based learning resources, such as online tutorials, interactive simulations, and mathematical software, are utilized to enhance students' understanding and proficiency in applying mathematical techniques. 7. Group Projects: Group projects promote teamwork, communication, and problem-solving skills. Students work collaboratively on

	mathematical projects or research assignments, allowing them to explore advanced topics or applications of mathematics. 8. Self-directed Learning: Students are encouraged to take responsibility for their learning by engaging in self-directed study. This may involve reading recommended textbooks, exploring additional resources, and practicing problem-solving independently. 9. Assessments: Regular assessments, including quizzes, tests, and assignments, evaluate students' understanding and application of mathematical concepts. These assessments provide feedback and help track progress throughout the module. 10. Tutorial Sessions: Tutorial sessions provide opportunities for students to seek clarification, discuss challenging topics, and receive individualized guidance from instructors or teaching assistants.

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	49	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	26	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/ Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 8 and 9
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	14	LO # 1-14
Summative assessment	Midterm Exam	2 hours	10% (10)	7	LO # 1-7
	Final Exam	4 hours	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Microsoft Office Suite - Overview of Microsoft Word, Excel, and PowerPoint - Understanding the user interface and common features
Week 2	Microsoft Word Basics - Creating, saving, and opening documents - Formatting text and paragraphs - Working with styles and themes
Week 3	Advanced Microsoft Word Features - Page layout and formatting options - Working with headers, footers, and page numbers - Using tables, images, and other objects
Week 4	Microsoft Excel Basics

	• Introduction to spreadsheets and worksheets • Data entry and manipulation • Formulas and functions
Week 5	Advanced Microsoft Excel Features • Working with ranges and cells • Sorting and filtering data • Creating charts and graphs
Week 6	Microsoft PowerPoint Basics • Creating and editing slides • Applying themes and templates • Adding text, images, and multimedia elements
Week 7	Mid Exam + Advanced Microsoft PowerPoint Features • Slide transitions and animations • Using SmartArt and shapes • Presenter tools and slide show options
Week 8	Word Processing Techniques in Microsoft Word • Mail merge and document collaboration • Creating professional documents (reports, resumes, etc.) • Managing references and citations
Week 9	Data Analysis in Microsoft Excel • Advanced formulas and functions • Data validation and conditional formatting • PivotTables and data visualization
Week 10	Presentation Design in Microsoft PowerPoint • Design principles for effective presentations • Customizing slide layouts and master slides • Adding interactive elements (hyperlinks, buttons, etc.)
Week 11	Collaboration and Sharing in Microsoft Office • Sharing and co-authoring documents • Using comments and track changes • Protecting documents and controlling access
Week 12	Automating Tasks in Microsoft Office • Macros and automation in Word, Excel, and PowerPoint • Customizing the ribbon and creating shortcuts • Using add-ins and productivity tools
Week 13	Integrating Office Applications • Linking data between Word, Excel, and PowerPoint • Embedding objects and creating dynamic content • Importing and exporting data
Week 14	Advanced Tips and Tricks • Time-saving techniques and shortcuts • Troubleshooting common issues • Customizing settings and options
Week 15	Final Projects and Review • Students work on individual or group projects using Word, Excel, and PowerPoint • Review of key concepts and features covered throughout the course
Week 16	Preparatory week before the final Exam.

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

Week	Material Covered
Week 1	Introduction to Lab Environment and Office Suite - Lab setup and software installation. Overview of Microsoft Office Suite tools and features.
Week 2	Microsoft Word Lab - Creating, editing, and formatting documents. Inserting and formatting images and tables.
Week 3	Microsoft Excel Lab - Creating spreadsheets and entering data. Formulas and functions for calculations.
Week 4	Microsoft PowerPoint Lab - Creating, editing, and designing slides. Adding multimedia elements and animations.
Week 5	Word Processing Techniques Lab - Mail merge and document collaboration exercises. Creating professional documents with advanced formatting.
Week 6	Data Analysis Lab with Excel - Advanced formula and function exercises. Sorting, filtering, and analyzing data.
Week 7	Presentation Design Lab with PowerPoint - Applying design principles to create visually appealing slides. Adding interactive elements and customizing slide layouts.
Week 8	Collaboration and Sharing Lab - Collaborative document editing and reviewing. Sharing and protecting documents with permissions.
Week 9	Automation and Customization Lab - Recording and running macros for repetitive tasks. Customizing the ribbon and creating shortcuts.
Week 10	Integrating Office Applications Lab - Linking and embedding data between Word, Excel, and PowerPoint. Importing and exporting data between applications.
Week 11	Advanced Tips and Tricks Lab - Exploring time-saving techniques and productivity hacks. Troubleshooting common issues and errors.
Week 12-15	Project-based Labs - Students work on individual or group projects that integrate Word, Excel, and PowerPoint skills. Projects can involve tasks such as creating a professional report, analyzing data, or designing an interactive presentation.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	M. E. Vermaat, S. M. Freund, C. Hoisington, and E. Schmieder, "Microsoft Office 365 & Office 2019: Introductory," Boston, MA: Cengage Learning, 2020.	Yes
Recommended Texts	Triad Interactive, Inc., "Microsoft Office 2019: A Skills Approach," Boston, MA: Cengage Learning, 2019.	Yes
Websites	The Collage E-Library	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	The crimes of the Ba'ath regime in Iraq		Module Delivery
Module Type	Basic		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MTU1007		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	2	Semester of Delivery	3
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	يهدف هذا المقرر الدراسي على تعزيز فهم الطلاب للجرائم والانتهاكات التي وقعت خلال فترة نظام البعث في العراق وتأثرت بها على الأفراد والمجتمع، وتشجيع التحليل والنقاش حول هذه القضايا المهمة. ومن أبرز الأهداف للمادة الدراسية يكون الطالب قادراً على أن: 1. فهم مفهوم الجرائم وأقسامها. 2. دراسة جرائم نظام البعث والقوانين المتعلقة بها. 3. التعرف على الجرائم النفسية والاجتماعية وآثارها على الفرد والمجتمع. 4. تحليل الانتهاكات القانونية في العراق، بما في ذلك الانتهاكات لحقوق الإنسان والجرائم ذات الصلة. 5. فهم الجرائم البيئية وآثارها، بما في ذلك التلوث وتدمير المدن والقرى وتجفيف الأهوار. 6. دراسة جرائم المقابر الجماعية وفهم أحداث المقابر والتصنيف في العراق.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	مخرجات التعلم للمادة الدراسية هي: 1. فهم مفهوم الجرائم وقدرة الطلاب على تصنيف الجرائم وفقاً لأقسامها. 2. تحليل جرائم نظام البعث وفهم القوانين المتعلقة بها، بما في ذلك الجرائم الدولية. 3. القدرة على التعرف على الجرائم النفسية لنظام البعث وفهم الآثار النفسية لجرائم نظام البعث على الأفراد والمجتمع. 4. القدرة على التعرف على الجرائم الاجتماعية لنظام البعث والآثار الاجتماعية لجرائم نظام البعث على الأفراد والمجتمع. 5. التعرف على الانتهاكات القانونية لنظام البعث في العراق وفهم أنواع الانتهاكات ومكان احتجاز الأفراد. 6. التعرف على صور انتهاكات حقوق الإنسان وجرائم السلطة. 7. التعرف على الانتهاكات السياسية والعسكرية لنظام البعث. 8. فهم الجرائم البيئية لنظام البعث والقدرة على تحليل تأثيرها على البيئة والمجتمع. 9. دراسة جرائم المقابر الجماعية لنظام البعث. 10. فهم الأحداث المرتبطة بجرائم المقابر الجماعية وتصنيفها زمنياً.
Indicative Contents المحتويات الإرشادية	المحتويات الإرشادية: مادة اللغة تشمل مجموعة من المفاهيم والمواضيع التي يتم تغطيتها خلال عملية التعلم. ومن بين المحتويات الإرشادية المهمة: 1. تعريف الجريمة لغة واصطلاحاً، مفهوم الجريمة، أقسام الجريمة 2. جرائم نظام البعث وفق توثيق قانون المحكمة الجنائية العراقية العليا عام 2005 3. الجرائم النفسية والاجتماعية وآثارها 4. عسكرية المجتمع، موقف النظام البعثي من الدين 5. انتهاكات القوانين العراقية، صور انتهاكات حقوق الإنسان وجرائم السلطة 6. بعض قرارات الانتهاكات السياسية والعسكرية لنظام البعث 7. أماكن السجون والاحتجاز لنظام البعث 8. الجرائم البيئية لنظام البعث في العراق 9. جرائم المقابر الجماعية 10. أحداث مقابر الإبادة الجماعية المرتكبة من النظام البعثي في العراق 11. التصنيف الإلزامي لمقابر الإبادة الجماعية في العراق للمدة 1963م - 2003م

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	الاستراتيجيات التعلم والتعليم المستخدمة في مادة جرائم حزب البعث تشمل مجموعة متنوعة من النهج والتقنيات التي تعزز عملية التعلم للطلاب. من هذه الاستراتيجيات: 1. التفاعل النشط: يتم تشجيع الطلاب على المشاركة والمشاركة الفعالة في الدروس من خلال المناقشات الجماعية والأنشطة التفاعلية. 2. التعلم التعاون: يشجع التعاون والتعاون بين الطلاب من خلال العمل الجماعي والمشاريع الجماعية، حيث يتعاون الطلاب مع بعضهم البعض لتحقيق أهداف التعلم المحددة. 3. استخدام التقنيات الحديثة: يستفيد الطلاب من استخدام التكنولوجيا في عملية التعلم، مثل استخدام الحواسيب والإنترنت للبحث والتعلم الذاتي. 4. توفير ردود فعل فورية: يتم توفير ردود فعل فورية وتقييم مستمر للطلاب، سواء عن طريق التقييمات الشفهية أو الكتابية، مما يساعدهم على تحسين أدائهم وتطوير مهاراتهم. 5. التنوع في وسائل التواصل: يتم استخدام مجموعة متنوعة من وسائل التواصل والتعليم، مثل المحاضرات التوضيحية، والمناقشات الجماعية، والأنشطة العملية، والعروض التقديمية، لتلبية احتياجات وأسلوب التعلم المختلفة للطلاب.

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ أسبوعاً

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

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

الأسبوع الأول	تعريف الجريمة لغة واصطلاحاً، مفهوم الجريمة، أقسام الجريمة
الأسبوع الثاني	جرائم نظام البعث وفق توثيق قانون المحكمة الجنائية العراقية العليا عام 2005
الأسبوع الثالث	الجرائم النفسية لنظام البعث وفهم الآثار النفسية لجرائم نظام البعث على الأفراد والمجتمع.
الأسبوع الرابع	الجرائم الاجتماعية لنظام البعث وفهم الآثار الاجتماعية لجرائم نظام البعث على الأفراد والمجتمع.
الأسبوع الخامس	انتهاكات القوانين العراقية
الأسبوع السادس	بعض قرارات الانتهاكات السياسية والعسكرية لنظام البعث
الأسبوع السابع	امتحان نصف الفصل
الأسبوع الثامن	الجرائم البيئية لنظام البعث في العراق (التلوث الحربي وسياسة الأرض المحروقة)
الأسبوع التاسع والعاشر	تجفيف الأهوار و تجريف بساتين النخيل والأشجار والمزروعات

	الأسبوع الحادي عشر و الأسبوع الثاني عشر	جرائم المقابر الجماعية وأحداث مقابر الإبادة الجماعية المرتكبة من النظام البعث في العراق
	الأسبوع الثالث عشر والرابع عشر والخامس عشر	التصنيف الزمني لمقابر الإبادة الجماعية في العراق للمدة من (1963-2003) م
	الأسبوع السادس عشر	الهيئة لامتحان النهائي

Module Evaluation

تقييم المادة الدراسية

		Time/ Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	% (10)	5,9	LO #1,2,3, LO # 6,7
	Assignments	2	% (10)	6,13	LO # 4 and LO# 9
	Seminar	1	% (10)	12	LO# 5,6,7,8
	Report	1	% (10)	14	LO # 8,9,10
Summative assessment	Midterm Exam	2 hours	10% (10)	7	LO # 1-7
	Final Exam	3 hours	50% (50)	16	All
Total assessment			100% (100 Marks)		

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	منهاج وزارة التعليم العالي والبحث العلمي العراقية - جرائم نظام البعث في العراق 2023	Yes
Recommended Texts		No
Websites	The Collage E-Library	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Laboratory Medical Instrumentation II		Module Delivery
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☒ Seminar
Module Code	MITE2201		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	UGII	Semester of Delivery	
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Laboratory Medical Instrumentation I	Semester	UGII-S3
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. The graduate gets scientific and applied skills to diagnosis the medical instruments faults. 2. The graduated students will gain the ability of knowledge of different parts of medical instruments. 3. Development and training the engineering technical staffs on the medical device maintenance. 4. Preparation of the research and studies to improve and develop the action of medical devices. 5. Put the proposals and alternatives for the medical devices. 6. To describe the types of laboratory medical instruments. 7. To explain the principal work of the laboratory medical devices techniques. 8. To understand the maintenance of laboratory medical devices and their electrical and mechanical faults.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon completion of the course, students should be able to: 1. Introduction about the laboratory Design, Rules and limitations. 2. Define, explain, and describe the centrifuge and understand the electrical and electronic parts. 3. Define, explain, and describe Microscope and understand the electrical and electronic parts. 4. List and recognize the types of microscopes. 5. Define, explain, and describe Polymerase chain reaction (PCR). and understand the electrical and electronic parts. 6. Definition of Laboratory incubators and explain their applications. 7. List and understand the types of Laboratory Incubators. 8. Define and explain Oven and its medical application. 9. Define and explain Autoclave and its medical application. 10. Describe and understand water distillation and its application with the medical field. 11. Definition and understanding of the CBC System. 12. Define the principle of CBC Medical system. 13. Faults and maintenance of medical instrumentations
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: Medical instrumentation definition, analysis lists, work security rules, and best laboratory use guidelines [14hr]. Laboratory instruments criteria, types, components, advantages and

	disadvantages, physical and medical application. [12hrs.]. Medical instrumentation faults and maintenance, analysis lists, work security rules, and best laboratory use guidelines [14 hrs.]. Explain Polymerase chain reaction (pcr) and definition of Laboratory incubators [14 hrs.]. Types of Laboratory Incubators and oven and its medical application[14hrs.]. Autoclave medical application and water distillation[14hrs.].

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 design, while at the same time refining and expanding their medical instrumentations 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

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	% (10)	3,10	LO # 1,2,3...14 ,
	Assignments	2	% (10)	4,8	LO # 6,13
	Projects / Lab.	1	% (10)	6	LO #3
	Report	2	% (10)	5,9	LO # 7,12
Summative assessment	Midterm Exam	2 hr.	10% (10)	7	LO # 1-7
	Final Exam	3hr	50% (50)	14	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction about the laboratory Design.
Week2	Definition of Centrifuge
Week 3	Applications of Centrifuge
Week 4	Definition of Microscopes.
Week 5	Types of Microscopes.
Week 6	Water distillation
Week7	Mid Term exam
Week 8	Oven and its medical application.
Week 9	Autoclave and its medical application.
Week 10	Definition of Laboratory incubators.
Week 11	Types of Laboratory Incubators.
Week 12	Polymerase chain reaction (PCR).
Week 13	Applications of (PCR)
Week 14	Definition of Complete Blood Counter (CBC) Principle of (CBC)
Week 15	A preparatory week before final exam.

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Introduction about the laboratory Design
Week 2	Centrifuge
Week 3	Microscopes.
Week 4	Types of Microscopes.
Week 5	Water distillation
Week6	Oven and its medical application.
Week7	Autoclave and its medical application.
Week 8	Laboratory Incubators.
Week 9	Polymerase chain reaction (PCR).
Week10	Complete Blood Counter (CBC)
Week11	Faults and maintenance of medical lab. instruments

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Biomedical device technology, by ANTHONY Y. K. CHAN, MSc, MEng, Peng, CCE	
Recommended Texts	Ananthi ,2005,” A text book of medical instruments	
Websites		

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Electronic Circuits II		Module Delivery
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE2202		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UG11	Semester of Delivery	
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Electronics Circuits I-MITE2102	Semester	UGII-S3
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. The graduate get scientific and applied skills of electronic circuits 2. The graduated students will gain the ability of knowledge of different parts of electronic circuits. 3. Development and training the engineering technical staffs on the electronic circuits. 4. Preparation the research and studies to improve and develop the action of electronic circuits. 5. Prepare application engineers in technical and electronic engineers. 6. Put the proposals and alternatives for the electronic devices.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Become aware of the general characteristics of electronic devices. 2. Be able to describe the difference types of electronic categories. 3. Develop a clear understanding of the basic operation and characteristics of electronic devices. 4. Become familiar with the use of equivalent circuits to analyze series, parallel, and series-parallel electronic networks. 5. Be able to predict the output response of an electronic network. 6. Become familiar with the analysis of and the range of applications for electronic devices. 7. Become familiar with the basic construction and operation of the various types of electronic categories! 8. Be able to test a various type of electronic terminals. 9. Be able to determine the dc levels for the variety of important electronic circuits. 10. Understand how to measure the important voltage levels of electronic circuits. 11. Begin to understand the troubleshooting process as applied to electronic configurations. 12. Develop a sense for the stability factors of an electronic circuit. 13. Learn to use the equivalent model to find the important ac parameters for an amplifier. 14. Develop some skill in troubleshooting ac amplifier networks.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A Electronic Theory</u> JFETs: n -channel, p -channel, TRANSFER CHARACTERISTICS, Shockley's Equation, Shorthand Method [10 hrs.] FET Biasing -Fixed-bias configuration, self-bias configuration, voltage-divider bias arrangement; common gate configuration, depletion-type MOSFETs, enhancement-type MOSFET [10 hrs.]

	Revision problem classes [6 hrs]
	<u>Part B – Frequency response</u>
	Decibels- General Frequency Considerations, Low-Frequency Analysis—Bode Plot, Low-Frequency Response—BJT Amplifier with RL, Low-Frequency Response—FET Amplifier, High-Frequency Response—BJT Amplifier, High-Frequency Response—FET Amplifier [12 hrs.]
	Operational Amplifiers - Differential Amplifier Circuit, Biet, Bims, and CMOS Differential Amplifier Circuits, Op-Amp Basics, Practical Op-Amp Circuits, Op-Amp Specifications—DC Offset Parameters. [12 hrs.]
	<u>Part C - Power Amplifiers</u>
	Series-Fed Class A Amplifier- Transformer-Coupled Class A Amplifier, Class B Amplifier Operation, Class B Amplifier Circuits, Amplifier Distortion. [10 hrs.]
	Power Supplies (Voltage Regulators) [12 hrs]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be encourage active participation and engagement of students through activities such as group discussions, hands-on experiments, problem-solving tasks, and case studies. This approach promotes critical thinking, collaboration, and knowledge application and encourage students to explore and discover knowledge through inquiry and investigation. Pose open-ended questions or problem scenarios that require learners to research, analyze, and draw conclusions independently.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	16% (16)	5,10	LO #1,2,10 and 11
	Assignments	2	8% (8)	2,12	LO # 3,4 ,6,7 and 14
	Projects / Lab.	1	8% (8)	continuous	
	Report	1	8% (8)	13	LO # 5,8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	8	LO # 1,2,5,9,10 and 13
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	FET Amplifiers.
Week 2	JFET Small-Signal Model
Week 3	General Frequency Considerations
Week 4	BJT frequency response
Week 5	JFET frequency response
Week 6	Power amplifier.
Week 7	Mid- Exam
Week 8	Series-Fed Class A Amplifier
Week 9	Class B,C and D amplifiers
Week 10	Feedback and Oscillator Circuits
Week 11	PNPN and Other Devices

Week 12	Operational amplifier
Week 13	Operational amplifier applications
Week 14	Power Supplies Voltage Regulators
Week 15	Preparatory week before final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Common emitter transistor characteristics
Week 2	Lab 2: Common collector transistor
Week 3	Lab 3: Common emitter amplifier
Week 4	Lab 4: Transistor biasing (part 1)
Week 5	Lab 5: Transistor biasing (part 2)
Week 6	Lab 6: common collector amplifier
Week 7	Lab 7: Common base amplifier
Week 8	Lab 8: Collector feedback amplifier circuit
Week 9	Lab 9: Voltage divider biasing circuit
Week 10	Lab 10: Emitter follower
Week 11	Lab 11: JFET characteristics
Week 12	Lab12: JFET amplifier
Week 13	Lab13: operational amplifier (part1)
Week 14	Lab14: operational amplifier (part 2)

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	electronic devices and circuit theory 11th edition, Robert L. Boylestad, Louis Nashelsky	Yes
Recommended Texts		No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Digital Electronics		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE2203		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Electronics Circuits I (MITE2102)	Semester	S3
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. To learn the basics of logical circuits which are used in computers. 2. To understand how the logical medical instrumentations to work 3. To program the logical medical instrumentations 4. To design the logical medical instrumentations 5. To learn how to use logical tables to perform the logical medical instrumentations 6. TO maintain the logical medical instrumentations 7. To suggest how to build modern the logical medical instrumentations.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	At ending of course, student will: 1-know the numbers systems, and conversion between them. 2-know binary codes. 3-design binary gates, and use Boolean algebra. 4-design and simplify the arithmetic circuits. 5- define Karnaugh maps. 6- know how flip-flops works RS, JK. 7- design flip-flops D, T. 8-define the work principles of counters and its types. 9-know the shift registers and types. 10-principles of decoders. 11-identify the Multiplexers and De-Multiplexers. 12-conversion of analog to digital circuits.
Indicative Contents المحتويات الإرشادية	Numbers systems, Binary, Octal, Hexadecimal [4 H]. Codes numbers [4 H]. Arithmetic circuits [10 H]. De Margan's theorems [4 H]. Karnaugh map [8 H]. Flip – Flop: RS, RST, JK, D, FF [8 H]. Asynchronous counter and synchronous [10 H]. Shift registers [10 H]. Multiplexer, De multiplexer [4 H]. Decoder [8 H]. Analog conversion [4 H].

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

Student Workload (SWL)

الحمل الدراسي للطلاب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	46	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعياً	3
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	3, 9	LO #1, 2, 4,11 and 12
	Assignments	2	10% (10)	3, 13	LO # 4, 5, 7 and 8
	Projects / Lab.	1	10% (10)	Continuous	
	Report	13	10% (10)	13	LO # 6, 8 and11
Summative assessment	Midterm Exam	2 hr.	10% (10)	8	LO # 1-8
	Final Exam	2hr.	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered

Week 1	Number system: Binary numbers, Octal numbers, Hexadecimal numbers,
Week 2	Binary codes
Week 3	Logic gates, De Morgan's theorems, Laws and theorem of Boolean algebra
Week 4	Arithmetic circuit, Simplifying logic circuits:
Week 5	fundamentals products, sum of products, algebraic simplification
Week 6	Truth table to Karnaugh map
Week 7	Flip – Flop: RS, RST, JK, D, FF
Week 8	Counters: Asynchronous counter
Week 9	Counters: synchronous counter
Week 10	Shift registers: Serial in -Serial out shift register Serial in -Parallel out shift register
Week 11	Shift registers: Bidirectional Shift Register
Week 12	Multiplexer and De multiplexer
Week 13	Decoder
Week 14	Digital to Analog converter
Week 15	Final Exam (Practical)
Week 16	Final Exam (Theoretical)

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Logic Gates (NOT, AND)
Week 2	Lab 2: Logic Gates (OR, NAND, NOR)
Week 3	Lab 3: Logic Gates (XOR, XNOR)
Week 4	Lab 4: Exercises
Week 5	Lab 5: Universal Gates (NAND, NOR)
Week 6	Lab 6: Flip-Flop
Week 7	Lab 7: Adder (Half and Full Adder)
Week 8	Lab 8: Subtractor (Half and Full Subtractor)
Week 9	Lab 9: Comparator
Week 10	Lab 10: Asynchronous Binary Counter Up

Week 11	Lab 11: Asynchronous Binary Down Counter
Week 12	Lab 12: Asynchronous Binary Decade Counter
Week 13	Lab 13: Asynchronous MOD Counter
Week 14	Lab 14: Asynchronous Binary Counter (count from number to another)

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	DIGITAL FUNDAMENTALS / FLOYD	YES
Recommended Texts	Digital Logic Design - 4th Edition	NO
Websites	https://www.udemy.com/course/digital-electronics-logic-design/?utm_source=adwords&utm_medium=udemyads&utm_campaign=DSA_Catch_all_la.EN_cc.ROW&utm_content=deal4584&utm_term=._ag_88010211481._ad_535397282061._kw._de_c._dm._pl._tides-52949608673._li_1007949._pd._&match_type=&gelid=CjwKCAjwp6CkBhB_EiwAlQVyxcuQ427tsVehXbetXE4NUFlekP4rqq-PrCWgQflucPuo7Mqz8SXRvxoC5asQAvD_BwE	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Clinical Chemistry instrumentation		Module Delivery
Module Type	Core	☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MITE2204		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGII		
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1.To introduce the clinical chemistry and biochemical mechanism in the human body 2.To describe the types of laboratory medical instruments. 3. To describe the types of clinical chemistry analysis or (tests). 4. To explain the principal work of the laboratory medical devices techniques. 5. To describe the most important compositions in human body. 6. To understanding the maintenance of laboratory medical devices and its electrical and mechanical faults.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon completion of the course, students should be able to: 1. Define the clinical chemistry and recognize what is the laboratory security system and determine the quality control results in medical laboratory. 2. List the principal work of spectrophotometer instruments and derive Beer's-Lambert Law. 3. Describe the measurement instruments of ions and salts in human body. 4. Identify all the clinical chemistry analysis and their measurement techniques. 5. Discuss the importance of minerals in human body and their measurement. 6. Describe the principal work of Elisa technique and list their methods. 7. Explain the electrical conduction concept and their examples in human body. 8. Explain the osmotic conduction concept and their examples in human body. 9. List the types and function of enzyme in human body and their measurements techniques. 10. Discuss the importance of proteins in human body and describe their measurements. 11. Explain the importance of fats in human body and explain their measurement techniques. 12. Define the hemoglobin and explain the hemoglobin diseases with its clinical significant. 13. List all types of minerals in human body and describe their daily requirements. 14. Define the immune system and recognize the foreign material and explain the disorders of immune system.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: Clinical chemistry definition, analysis lists, work security rules, best laboratory uses guidelines. [3hr].

	Spectrophotometer instruments criteria, theory, types, components, advantage and disadvantage, physical and medical application and Beer-Lambert law derivative. [10 hr] Electrolyte analyzer definition, features, theory, components, configuration advantages, disadvantages and application. [6hr] Autoanalyzer concept, Blood Gas Analyzer (BGA) criteria, types, theory, components, figuration, advantages and disadvantages. [6hr] ELISA Technique concept, theory, methods:(direct and indirect), components , figuration, advantages, disadvantages and applications [6hr]. Minerals definition, classifications, sources, function, nutrition(mg/day) and diagnostic procedure[6hr]. Electrical conduction concept, examples, performing tests. Osmotic conduction concept, examples, performing tests [10hr]. Enzyme definition, classification, function, performing test and clinically significant. [6hr] Proteins definition, classification, function, clinically significant, Electrophoresis Technique: diagnostic procedure, theory and principal work [6hr]. Fats concept, classification, sources, importance, clinical signification and measurements: Hydro densitometry Weighing (Underwater Weighing, near – infrared interaction (NIR), Skin Fold Caliper, Dual energy X-ray absorptiometry (DEXA), BMI (Body mass impedance) [10hr]. Hemoglobin definition, structure, analysis, hemoglobin diseases, clinically significant and diagnostic procedure: complete blood count (CBC) [6hr]. Concept of immunology, structure, material and disease diagnostic [3hr].

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Lectures - scientific laboratory- data show - summer training- workshops- seminars, written exam, Quizzes and online testing.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10%	3, 11	LO:1,2,3 14
	Assignments	2	10%	7,10	LO: 6, 13
	Projects / Lab.	2	10%	4,8	LO: 3, 10
	Report	1	10%	11	LO: 10,12
Summative assessment	Midterm Exam	2 hr	10%	7	LO: 1-7
	Final Exam	3 hr	50%	14	All
Total assessment			100%		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction, Best laboratory uses and quality control.
Week 2	Spectrum instruments and uses.
Week 3	Ion and salt measurement instruments
Week 4	Auto-analysis instruments
Week 5	Mineral measurement instrument
Week 6	Elisa instrument and its uses
Week 7	Midterm Exam
Week 8	Electrical conduction
Week 9	Osmotic conduction

Week 10	Enzyme and their measurement
Week 11	Protein and its importance
Week 12	Fats and its importance
Week 13	Hemoglobin
Week 14	Minerals and nutrition
Week 15	Immunological chemistry
Week 16	Preparatory week before the final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Introduction to Clinical Chemistry instrumentation
Week 2	Lab1: spectrophotometer and colorimeter, theory, principle of work, operation, component's function, maintenance and the faults.
Week 3	Lab2: Flame photometer, types, theory, principle of work, operation, component's function, maintenance and the faults.
Week 4	Lab3: Blood gas analyzer and PH meter, theory, principle of work, operation, components function, normal results, maintenance and the faults.
Week 5	Lab4: Auto-analysis, types, theory, principle of work, operation, component's function, maintenance and the faults.
Week 6	Lab5: Elisa, types, theory, principle of work, operation, component's function, maintenance and the faults.
Week 7	Lab6: Hemodialysis and peritoneal technique, theory, principle of work, operation, maintenance and faults.
Week 8	Lab7: Electrophoresis, theory, principle of work, operation, component's function, normal results, maintenance and the faults.
Week 9	Lab 8: Body fat analyzer, theory, principle of work, operation, component's function, normal results, maintenance and the faults.
Week 10	Lab 9: review for the clinical chemistry instrumentation.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Clinical Chemistry Hand book: workbook of principles, techniques and correlation by N.T. Coleman	yes
Recommended Texts	LABORATORY INSTRUMENTATION AND TECHNIQUES, Book by Dr. Mathew Folaranmi OLANIYAN, Associate Professor, Department of Medical Laboratory Science, Achievers University, Owo-Nigeria, 2017.	No
Websites	1. https://byjus.com/chemistry/spectrophotometer-principle/ 2. 3. https://www.bosterbio.com/media/pdf/ELISA_Handbook.pdf 3.	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Biomedical Transducers and Sensors		Module Delivery
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE2205		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGII	Semester of Delivery	
Administering Department	MITE	College	
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Fundamental of Electrical Engineering (AC) - MITE1201	Semester	UGI-S2
Co-requisites module	None	Semester	

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

Module Aims أهداف المادة الدراسية	1. Analyze errors and uncertainty of experimental results obtained from biomedical sensors. 2. Understand requirements, calibration, characteristics, and parameters of biomedical sensors. 3. Design with confidence signal conditioning systems required for processing the sensors responses. 4. Understand the operating principle, types, parameters, signal conditioning, and applications of resistive, reactance variation and self-generating sensors. 5. Understand the operating principle of different types of optical sensors and their features. 6. Understand the operation, models, and parameters of ultrasound transducers. 7. Understand the design, main building blocks, features, and calibration of intelligent sensors.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Define biomedical sensors, biosensors, and biomedical transducers. 2. Classify the biomedical sensors. Acquire knowledge about sensor data processing and feature extraction. 3. Recognize the requirements of biomedical sensors. 4. Explain the Static and dynamic characteristics of biomedical sensors. 5. Explain the requirements of signal conditioning circuits suitable for biomedical sensors. 6. Identify design principles of conditioning circuits. 7. Identify the different types of resistive, reactance variation and self-generating sensors. 8. Explain the operating principle, parameters, calibration and applications of resistive, reactance variation and self-generating sensors. 9. Identify the different types of optical sensors. 10. Reveal the advantages of optical sensors. 11. Classify ultrasound transducers. 12. Recognize the main parts of ultrasound transducers. 13. List the main features of intelligent sensors.
Indicative Contents المحتويات الإرشادية	<u>Indicative Contents including the following:</u> General concept and terminology, Sensor classification and calibration, static and dynamic characteristics, errors [10 hrs.] Resistive Temperature Detectors (RTD), Thermistors, light-dependent resistors, signal conditioning for resistive sensors [5hrs] Capacitive sensors, Inductive sensors,

	Electromagnetic sensors, signal conditioning for reactance variation sensors [5 hrs.] Thermoelectric sensors, Piezoelectric sensors, Electrochemical sensors, Signal conditioning for self-generating sensors. [7 hrs.] Optical techniques, General principles of optical sensing, Fiber-optic basics, Fiber-optic sensor technologies and applications. [7 hrs.] Fundamentals of ultrasonic-based sensors, Ultrasonic-based sensing methods and applications. [8 hrs.] Definition, parameters, features, operating principle, main building blocks and applications. [5 hrs.]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Active learning, where students should be active and involved in the learning process inside the classroom, will be emphasized in the delivery of this course. ➤ Different active learning methods/approaches such as: Engaged Learning, Project-Based Learning, Cooperative Learning, Problem-based Learning, Structured Problem-solving, will be used. ➤ The teaching method that will be used in this course will be composed of a series of mini lectures interrupted with frequent discussions and brainstorming exercises. PowerPoint presentations will be prepared for the course materials. ➤ Use software packages for design and simulation of signal conditioning circuits implemented using these sensors.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	6,9	LO # 1-4, and 5-8
	Assignments	2	10% (5)	5,12	LO # 1-4, 5-10
	Projects / Lab.	1	10% (10)	Continuous	Continuous
	Report	1	10% (10)	14	LO # 5-14
Summative assessment	Midterm Exam	2 hr.	10% (10)	12	LO # 1-11
	Final Exam	4 hr.	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1,2	Introduction to Biomedical Sensors General concept and terminology, Sensor classification and calibration, static and dynamic characteristics, errors and uncertainty.
Week 3,4	Resistive Sensors and their signal conditioning Potentiometers, Strain gages, Resistive Temperature Detectors (RTD), Thermistors, light-dependent resistors, signal conditioning for resistive sensors
Week 5,6	Reactance Variation and Electromagnetic Sensors Capacitive sensors, Inductive sensors, Electromagnetic sensors, signal conditioning for reactance variation sensors,

Week 7	Mid- Exam
Week 8,9	Self-Generating Sensors and Signal Conditioning Thermoelectric sensors, Piezoelectric sensors, Electrochemical sensors, Signal conditioning for self-generating sensors.
Week 10,11	Optical Sensors Optical techniques, General principles of optical sensing, Fiber-optic basics, Fiber-optic sensor technologies and applications.
Week 12,13	Ultrasound Transducers Fundamentals of ultrasonic-based sensors, Ultrasonic-based sensing methods and applications.
Week 14	Intelligent Sensors Definition, parameters, features, operating principle, main building blocks and applications.
Week 15	Preparatory week before final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1,2	Characteristics of various Biomedical sensors(Pulse sensor, Galvanic skin Response, Glucose sensor, EMG sensor).
Week 3,4	Measurement of Resistance, Inductance and Capacitance using bridge circuits.
Week 5	Measurement of temperature using thermistor and RTD.
Week 6	Design of preamplifiers to acquire bio-signals along with impedance matching circuit using suitable ICs.
Week 7,8	Design of EEG, ECG amplifiers and Measurement of heart rate.
Week 9,10	Acquire and display electrical and biological bio signals on a computer using the appropriate hardware and software tools.
Week 11	e-Health Sensor Platform V2.0 using Arduino and Raspberry Pi.
Week 12	Measurement of respiration rate.

	Learning and Teaching Resources مصادر التعلم والتدريس		
		Text	Available in the Library?
Required Texts		Sensors and Signal Conditioning, Ramon Pallas-Areny and John G. Webster, John Wiley & Sons, 2001,2nd Edition	No
Recommended Texts		Biosensors: An Introduction, Eggins, Brian, John Wiley & Sons, 1996,1st Edition	No
Websites		https://www.multisim.com/	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	English Language II		Module Delivery
Module Type	B		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MTU1003		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	2	Semester of Delivery	
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	English Language1 MTU1002	Semester	1
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims

أهداف المادة الدراسية

Module Aims

The module aims of the English Language Course are structured to support learners at the intermediate to upper-intermediate level in enhancing their English language skills and achieving specific learning outcomes. By the end of this course, students will:

1. *Grammar Mastery: *

- Achieve a comprehensive understanding of advanced grammar rules, including the use of auxiliary verbs, present simple, present continuous, past simple, present perfect, future forms, questions and negatives, modals, comparatives and superlatives, conditionals, passive voice, relative clauses, present perfect continuous, and reported speech.

2. *Vocabulary Expansion: *

- Expand their vocabulary across various topics and contexts, such as everyday expressions, common activities, storytelling, experiences, permissions, hypothetical situations, descriptive details, and phrasal verbs. This will include learning advanced vocabulary related to describing characteristics, actions, and consequences.

3. *Everyday English Proficiency: *

- Develop practical language skills for everyday communication, focusing on effective use of everyday expressions, making comparisons, discussing future intentions, and navigating social interactions. This includes enhancing the ability to participate in conversations and use language appropriately in various social settings.

4. *Reading Comprehension: *

- Improve reading comprehension skills through engagement with diverse texts, including stories, articles, and informative content. Students will analyze and interpret texts, building the ability to understand complex language structures and themes.

5. *Writing Competence: *

- Enhance writing skills by composing various forms of written content, such as short stories, comparative essays, descriptive passages, and reviews. Students will learn to use linking words, express opinions, and structure their writing coherently.

6. *Critical Thinking and Analysis: *

- Develop critical thinking skills by analyzing and discussing texts, drawing comparisons, and making inferences. Students will be encouraged to engage with texts critically, assessing arguments and evidence.

7. *Cultural Awareness: *

- Gain insights into different cultures and lifestyles through readings and discussions, fostering a broader understanding of the world. This will help students develop cultural sensitivity and an appreciation for diversity.

	8. *Effective Communication: * - Improve their ability to express ideas clearly and confidently in both spoken and written forms. The course will emphasize clarity, coherence, and fluency in communication, preparing students to articulate their thoughts effectively. 9. *Language Assessment Preparation: * - Prepare for language assessments, including a final review and exam, by consolidating their understanding of grammar, vocabulary, and reading comprehension. This will include practicing various question formats and test-taking strategies. 10. *Independent Learning: * - Develop skills for independent learning, enabling students to continue enhancing their English proficiency beyond the course. This includes fostering a habit of self-study and utilizing resources effectively. 11. *Language Fluency: * - Work towards achieving greater fluency in English, allowing students to engage in complex conversations, express nuanced ideas, and write with increased sophistication and ease. 12. *Cultural Competency: * - Build cultural competence and sensitivity through exposure to diverse texts and discussions about different cultural perspectives. This will enhance students' ability to interact respectfully and knowledgeably in multicultural contexts. These module aims provide a comprehensive framework for student learning and development, ensuring that participants gain both linguistic competence and cultural awareness throughout the course.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Module Learning Outcomes Students will comprehend and discuss a variety of texts on diverse topics, enhancing their reading and analytical skills. Students will expand their vocabulary related to various topics, including everyday expressions, actions, experiences, and descriptive details. Students will be able to write various forms of text, including short stories, comparative essays, descriptive passages, and reviews. Students will use auxiliary verbs correctly in sentences, mastering their application in different tenses. Students will distinguish between present simple, past simple, present continuous, and present perfect tenses, understanding their appropriate contexts.

	Students will study and apply modal verbs such as must, should, can, and could, understanding their use in expressing necessity, possibility, and advice. Students will understand and correctly use comparative and superlative adjectives to describe and compare objects and situations. Students will focus on verb patterns and express future intentions using appropriate grammatical structures. Students will learn the correct usage of first and second conditionals and the passive voice in various contexts. Students will effectively use defining and non-defining relative clauses to provide additional information in sentences. Students will describe ongoing actions and experiences using the present perfect continuous tense and appropriate time expressions. Students will learn to report statements, questions, and commands accurately, mastering the use of reported speech. Students will discuss hypothetical situations and understand the use of time and conditional clauses in various contexts. Students will acquire and use advanced vocabulary, including phrasal verbs and synonyms/antonyms, in both written and spoken communication.
Indicative Contents المحتويات الإرشادية	Intermediate Book (Based on "New Headway Plus: Intermediate Student's Book") Total Hours: 21 hours Week 1 (2 hours) Grammar: Auxiliary Verbs (Unit 1) Focus: Usage of "to be," "have," and other auxiliary verbs. Vocabulary: Everyday Expressions (Unit 1) Reading: "It's a Wonderful World!" (Unit 1) Writing: Basic sentences using auxiliary verbs Week 2 (2 hours) Grammar: Present Simple (Unit 2) Focus: Usage in daily routines and habits. Vocabulary: Common Activities (Unit 2) Reading: "Get Happy!" (Unit 2) Week 3 (2 hours) Grammar: Present Continuous (Unit 2) Focus: Actions happening now. Vocabulary: Actions and Activities (Unit 2) Reading: "Simple or Continuous?" (Unit 2) Week 4 (2 hours) Grammar: Past Simple (Unit 3)

Focus: Narrating past events.
 Vocabulary: Telling Stories (Unit 3)
 Reading: "Telling Tales" (Unit 3)
 Writing: Writing a short story using past simple tense
 Week 5 (2 hours)

Grammar: Present Perfect (Unit 1, 3)
 Focus: Describing experiences and actions with present relevance.
 Vocabulary: Experiences and Achievements (Unit 1, 3)
 Reading: "Present Perfect Stories" (Unit 1, 3)
 Week 6 (2 hours)

Grammar: Future Forms (Unit 5)
 Focus: "Going to," "will," and present continuous for future plans.
 Vocabulary: Plans and Predictions (Unit 5)
 Reading: "On the Move" (Unit 5)
 Week 7 (2 hours)

Grammar: Questions and Negatives (Unit 4)
 Focus: Formulating questions and negative sentences.
 Vocabulary: Social Interactions (Unit 4)
 Reading: "Nothing but the Truth" (Unit 4)
 Week 8 (2 hours)

Grammar: Modals (Unit 4, 7)
 Focus: Expressing obligation, permission, and possibility.
 Vocabulary: Permissions and Possibilities (Unit 4, 7)
 Reading: "Doing the Right Thing" (Unit 4)
 Week 9 (2 hours)

Grammar: Comparatives and Superlatives (Unit 6)
 Focus: Comparing people, objects, and situations.
 Vocabulary: Describing Characteristics (Unit 6)
 Reading: "Making Comparisons" (Unit 6)
 Writing: Comparative essay
 Week 10 (1 hour)

Grammar: Conditionals (Unit 8)
 Focus: First and second conditional structures.
 Vocabulary: Hypothetical Situations (Unit 8)
 Reading: "Just Imagine!" (Unit 8)
 Week 11 (1 hour)

Grammar: Passive Voice (Unit 2, 3)
 Focus: Usage in various tenses to emphasize actions.
 Vocabulary: Actions and Consequences (Unit 2, 3)
 Reading: "Passive Constructions" (Unit 2, 3)
 Week 12 (1 hour)

Grammar: Relative Clauses (Unit 8)
 Focus: Defining and non-defining clauses.
 Vocabulary: Descriptive Details (Unit 8)
 Reading: "Descriptive Sentences" (Unit 8)
 Week 13 (1 hour)

Grammar: Present Perfect Continuous (Unit 10)

Focus: Describing ongoing actions and experiences.
 Vocabulary: Time Expressions (Unit 10)
 Reading: "Obsessions" (Unit 10)
 Writing: Describing ongoing activities using present perfect continuous
 Week 14 (1 hour)

Grammar: Reported Speech (Unit 11)
 Focus: Reporting statements, questions, and commands.
 Vocabulary: Reporting Verbs (Unit 11)
 Reading: "Reported Conversations" (Unit 11)
 Week 15 (2 hours)

Review and Exam Preparation
 Focus: Reviewing key grammar, vocabulary, and reading topics covered.
 Upper-Intermediate Book (Based on "New Headway Plus: Upper-Intermediate Student's Book")
 Total Hours: 7 hours (Max 25% of Total Content)

Week 8 (1 hour)

Reading: "Getting on Together" (Unit 7)
 Focus: Permissions and possibilities.
 Week 9 (1 hour)

Vocabulary: Describing Characteristics (Unit 6)
 Reading: "Making it Big" (Unit 6)
 Week 10 (1 hour)
 Vocabulary: Hypothetical Situations (Unit 8)
 Reading: "Going to Extremes" (Unit 8)
 Week 11 (1 hour)

Vocabulary: Actions and Consequences (Unit 7)
 Reading: "Getting on Together" (Unit 7)
 Week 12 (1 hour)

Vocabulary: Descriptive Details (Unit 8)
 Reading: "Going to Extremes" (Unit 8)
 Week 13 (1 hour)

Vocabulary: Time Expressions (Unit 10)
 Reading: "Risking Life and Limb" (Unit 10)
 Week 14 (1 hour)

Vocabulary: Reporting Verbs (Unit 11)
 Reading: "In Your Dreams" (Unit 11)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Learning and Teaching Strategies for the English Language Course
	Interactive Language Practice:
	Engage learners in communicative activities that promote active participation and practical language use. Strategies include pair work, group discussions, role-plays, and language games, which are designed to foster speaking and listening skills in an engaging and supportive environment.
	Use of Authentic Materials:
	Integrate authentic materials such as videos, audio recordings, and reading texts that reflect real-life language use. These materials help learners develop their listening, speaking, reading, and writing skills by exposing them to various dialects, accents, and real-world contexts.
	Task-Based Learning:
	Design tasks and projects that require learners to use the target language to accomplish specific objectives or solve problems. This approach promotes meaningful language use, encouraging learners to think critically and develop problem-solving skills while using English in practical scenarios.
	Visual Aids and Multimedia:
	Utilize visual aids, such as charts, diagrams, and multimedia resources, to enhance language learning and comprehension. These tools aid in vocabulary acquisition, provide context, and support understanding, making abstract concepts more concrete and accessible.
	Error Correction and Feedback:
	Provide timely and constructive feedback on learners' language production, focusing on both strengths and areas for improvement. Encourage self-correction and peer correction, fostering a supportive learning environment where students can learn from their mistakes and from each other. This approach helps build confidence and promotes a growth mindset.

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	50		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Grammar: Auxiliary Verbs (Intermediate: Unit 1) Vocabulary: Everyday Expressions (Intermediate: Unit 1) Reading: "It's a Wonderful World!" (Intermediate: Unit 1) Writing: Basic sentences using auxiliary verbs (Intermediate: Unit 1)
Week 2	Grammar: Present Simple (Intermediate: Unit 2) Vocabulary: Common Activities (Intermediate: Unit 2) Reading: "Get Happy!" (Intermediate: Unit 2)
Week 3	Grammar: Present Continuous (Intermediate: Unit 2) Vocabulary: Actions and Activities (Intermediate: Unit 2) Reading: "Simple or Continuous?" (Intermediate: Unit 2)
Week 4	Grammar: Past Simple (Intermediate: Unit 3) Vocabulary: Telling Stories (Intermediate: Unit 3) Reading: "Telling Tales" (Intermediate: Unit 3) Writing: Writing a short story using past simple tense (Intermediate: Unit 3)
Week 5	Grammar: Present Perfect (Intermediate: Unit 1, 3) Vocabulary: Experiences and Achievements (Intermediate: Unit 1, 3) Reading: "Present Perfect Stories" (Intermediate: Unit 1, 3)
Week 6	Grammar: Future Forms (Intermediate: Unit 5) Vocabulary: Plans and Predictions (Intermediate: Unit 5) Reading: "On the Move" (Intermediate: Unit 5)
Week 7	Grammar: Questions and Negatives (Intermediate: Unit 4) Vocabulary: Social Interactions (Intermediate: Unit 4) Reading: "Nothing but the Truth" (Intermediate: Unit 4)
Week 8	Grammar: Modals (Intermediate: Unit 4, 7) Vocabulary: Permissions and Possibilities (Intermediate: Unit 4, 7; Upper-Intermediate: Unit 7)

	Reading: "Doing the Right Thing" (Intermediate: Unit 4; Upper-Intermediate: Unit 7 "Getting on Together")
Week 9	Grammar: Comparatives and Superlatives (Intermediate: Unit 6) Vocabulary: Describing Characteristics (Intermediate: Unit 6; Upper-Intermediate: Unit 6) Reading: "Making Comparisons" (Intermediate: Unit 6; Upper-Intermediate: Unit 6 "Making it Big") Writing: Comparative essay (Intermediate: Unit 6)
Week 10	Grammar: Conditionals (Intermediate: Unit 8) Vocabulary: Hypothetical Situations (Intermediate: Unit 8; Upper-Intermediate: Unit 8) Reading: "Just Imagine!" (Intermediate: Unit 8; Upper-Intermediate: Unit 8 "Going to Extremes")
Week 11	Grammar: Passive Voice (Intermediate: Unit 2, 3) Vocabulary: Actions and Consequences (Intermediate: Unit 2, 3; Upper-Intermediate: Unit 7) Reading: "Passive Constructions" (Intermediate: Unit 2, 3; Upper-Intermediate: Unit 7 "Getting on Together")
Week 12	Grammar: Relative Clauses (Intermediate: Unit 8) Vocabulary: Descriptive Details (Intermediate: Unit 8; Upper-Intermediate: Unit 8) Reading: "Descriptive Sentences" (Intermediate: Unit 8; Upper-Intermediate: Unit 8 "Going to Extremes")
Week 13	Grammar: Present Perfect Continuous (Intermediate: Unit 10) Vocabulary: Time Expressions (Intermediate: Unit 10; Upper-Intermediate: Unit 10) Reading: "Obsessions" (Intermediate: Unit 10; Upper-Intermediate: Unit 10 "Risking Life and Limb") Writing: Describing ongoing activities using present perfect continuous (Intermediate: Unit 10)
Week 14	Grammar: Reported Speech (Intermediate: Unit 11) Vocabulary: Reporting Verbs (Intermediate: Unit 11; Upper-Intermediate: Unit 11) Reading: "Reported Conversations" (Intermediate: Unit 11; Upper-Intermediate: Unit 11 "In Your Dreams")
Week 15	Review and Exam Preparation

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the library?
Required Texts	L. Soars and J. Soars, New Headway Plus - Intermediate, 4th ed. Oxford: Oxford University Press, 2019. - Soars, J., Soars, L. New Headway Plus: Upper-Intermediate. United Kingdom: Oxford University Press.	Yes
Recommended Texts	Audio CDs or Online Audio: Recordings of listening exercises, dialogues, and pronunciation practice.	No
Websites	Collage E- Library	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Electromagnetic Fields		Module Delivery
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE 3103		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGIII	Semester of Delivery	5
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Engineering Mathematics	Semester	UGII-S3
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. To learn about electromagnetic transmission 2. To learn about Maxwell's equations 3. To know the types of electromagnetic wave transmission media. 4. To recognize the types of signals and systems. 5. To recognize the Guided Waves 6. To recognize transmission lines 7. To recognize Electromagnetic Radiation and Antennas
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Learn about General review in electrostatic. 2. Learn about Gauss's law. 3. Learn about Steady magnetic field. 4. Learn about Time varying magnetic field. 5. Learn about Maxwell's equations in electric fields. 6. Learn about Maxwell's equations in magnetic fields. 7. Recognize types of electromagnetic wave transmission media. 8. Recognize the types of signals and systems for electromagnetic waves. 9. Recognize the introduction Guided Waves. 10. Recognize the applications Guided Waves in medical device. 11. Recognize transmission lines. 12. Recognize Electromagnetic Radiation and Antennas.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: 1- Electrostatic, Electric charge, Coulomb's law, Electrical field intensity, and examples [4 H]. 2- Electric Flux Density and Gauss's Law with examples [4 H]. 3- Steady Magnetic Field, Magnetic Field in life's human with examples [4 H]. 4- Time varying - magnetic field and Maxwell's equations, FARADAY'S LAW, Moving Conductor in a Magnetic Field, Displacement Current and Conduction Current (Ampere's Law), Maxwell's equations in pointing form, Wave equations with examples [12 H]. 5- Uniform plane wave, Wave velocity, Characteristic impedance, Wave propagation in media, Skin effect, The pointing vector and power consideration with examples [8 H]. 6- Guided Waves with examples [12 H]. 7- Transmission lines with examples [8 H]. 8- Electromagnetic Radiation and Antennas with examples [12 H].

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Lectures - means of clarification - intellectual questions - scientific exhibitions - scientific competitions

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي منتظم للطالب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	Unstructured SWL (h/w) الحمل الدراسي الغير المنتظم للطالب أسبوعياً	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10 %(10)	3,5,7,9,11,13	LO # 1, 2 LO # 3, 4 LO # 5, 6 LO # 7, 8 LO # 9, 10 LO # 11, 12
	Assignments	2	10 %(10)	5,13	LO # 3-6, and 6-9
	Projects / Lab.	10	15 %(10)	Continuous	
	Report	1	5 %(10)	14	LO # 1-12
Summative assessment	Midterm Exam	2hr	10 %(10)	7	LO # 1-7
	Final Exam	4hr	50 %(50)	16	ALL
Total assessment			100 % (100)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	General review in electrostatic
Week 2	Gauss's law
Week 3	Steady magnetic field
Week 4	Time varying magnetic field
Week 5-6	Maxwell's equations
Week 7	Midterm exam
Week 8	Plane Wave Propagation and Reflection
Week 9-11	Guided Waves
Week 12-13	Transmission lines
Week 14-15	Electromagnetic Radiation and Antennas Preparing for final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	General review in electrostatic
Week 2	Gauss's law
Week 3	Steady magnetic field
Week 4	Time varying magnetic field
Week 5-6	Maxwell's equations
Week 7-8	Plane Wave Propagation and Reflection
Week 8-10	Guided Waves
Week 11-12	Transmission lines
Week 13-14	Electromagnetic Radiation and Antennas

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Engineering Electromagnetic (fifth edition – by William H. Hayt. JR)	NO
Recommended Texts	Introduction to Communication Systems (Second edition- by Ferrel. G. Stremler)	YES
Websites	1. https://www.coursera.org/search?query=Electromagnetic%20Fields&=null index=prod_all_launched_products_term_optimization. 2. www.tallguide.com 3. www.ainfoinc.com 4. www.millitech.com 5. www.rfcafe.com 6. www.globalspec.com	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Medical Diagnostic Instrumentation I		Module Delivery
Module Type	Core		☒ Theory Lecture ☒ Lab ☐ Tutorial ☒ Practical ☐ Seminar
Module Code	MITE3101		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	UGIII	Semester of Delivery	5
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Anatomy & Physiology	Semester	UGII - S3
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	The module aims: 1. To generate a grounding knowledge base for the students which allows them understanding the technology and principles applied in a medical environment. 2. To understand the nature of physiological signals and how they can be acquired, analyzed and visualized. 3. To provide a grounding in the theory of biomedical measurement systems, including sensors, signal conditioning methods, measurement techniques, patient interfacing and instrumentation used in biomedicine. 4. To introduce students to design strategies of biomedical devices. 5. To develop prototypes of medical instruments in an accompanying laboratory session. 6. To demonstrate how modern biomedical instruments combine traditional instrumentation techniques and technological innovation, including software presentation and analysis of data. 7. To be able to enter a wide range of medical related industries, clinical environments or professional biomedical research programs.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of the module, students should be able to: 1. (a). Understanding the principles of operation of important sensors used in biomedical instrumentation and measurement. (b). Understanding the technical specifications of commercially produced sensors used for these purposes. 2. (a). Being able to specify and design instrumentation and measurement systems that employ these sensors and which, as appropriate, enable safe interface with the human body. (b). Recognized and understand the characteristics of the physiological signals being measured; 3. (a). Being able to offer realistic solutions to clinical measurement problems and to justify the choices. (b). Having a sufficient knowledge in the subject to be able to investigate and evaluate new designs of biomedical sensors and instruments. (c) Explain the operating principles of biomedical transducers for the measurement of biopotentials (ECG, EMG, EEG, EOG) and other critical physiological variables such as blood pressure, flow, and temperature. 4. (a) Design and build analog signal conditioning circuits that provide reliable biopotential measurements, e.g. ECG. (b) Explain the physical principles underlying the function of biopotential electrodes; (c) Demonstrate knowledge of electrical safety considerations in the medical

	environment. 5. (a) A respirometer is a device used to measure the rate of respiration of a living organism by measuring its rate of exchange of oxygen and/or carbon dioxide. They allow investigation into how factors such as age, or chemicals affect the rate of respiration. (b). The patient monitoring systems in healthcare are collections of machines or equipment used to constantly monitor patients through various vital signs and warning systems to detect and record changes in patient wellbeing. 6. Ambulatory monitors are devices that record the electrical activity in your heart. These are used to detect heart rhythm problems over a longer period of time, and you can take them home with you. They're an invaluable tool when it comes to diagnosing problems that happen unpredictably and outside of a medical setting. 7. Electronic fetal monitoring is a procedure in which instruments are used to continuously record the heartbeat of the fetus and the contractions of the woman's uterus during labor. 8. An endoscope is an inspection instrument composed of image sensor, optical lens, light source and mechanical device, which is used to look deep into the body by way of openings such as the mouth or anus. 9. There are many direct and indirect (noninvasive) methods of measuring cardiac output. Several instruments can measure blood pressure quickly and with little discomfort. A sphygmomanometer is commonly used. 10. There are three different types of eye exams, including a comprehensive eye exam, a routine eye exam, and a contact lens exam. 11. Pulmonary function tests (PFTs) are noninvasive tests that show how well the lungs are working. The tests measure lung volume, capacity, rates of flow, and gas exchange. 12. Patients who have a tumor in or around the ear may undergo audiometry testing to determine whether hearing loss has occurred or to monitor their hearing before and after surgery. 13. (a). An arterial blood gas (ABG) test measures the levels of oxygen and carbon dioxide in your blood as well as the pH balance in your blood. (b). The blood cell counter measure of the number of red blood cells, white blood cells, and platelets in the blood. 14. (a). Hospitals can ensure patient safety and prevent untoward harm to patients who seek treatment with these steps. (b). Apply safety standards and select disposal method and procedures for electrical diagnostic equipment.
Indicative Contents المحتويات الإرشادية	The indicative contents of module include: <u>Biopotential amplifiers:</u> Physiological quantities, basic concepts and principles of medical

instrumentation

Bio-potentials, electrodes and amplifiers, static and dynamic characteristics of measurement systems, noise and noise reduction, sensor characterization.

[5 hr.]

Instrumentation amplifier:

Signal conditioning.

Digital/analog conversion

Electrodes (Oxidation/reduction, electrolytes, electrode electrical models)

Advanced conditioning circuits (noise, interference, shielding, active shielding, driven right leg active ground).

Sensing displacement (strain gauges, LVDTs, piezo crystals, MEMS accelerometers and gyroscopes, optical sensors)

* Bridges (no bridge; 1/4, 1/2, full bridge)

* Electrical safety [10 hrs]

Introduction to sensors and signal processing:

transducers, sensors and instruments; calibration; accuracy and error; amplifiers; filters; software and hardware signal processing.

Nature of biomedical signals:

physical signals (force, torque, flow, pressure as well as thermal, geometric and kinematic quantities); biopotentials; chemical signals. [10 hr.]

Medical measurement systems:

(EEG, ECG, EMG, EOG,)

Measurement constraints in the clinical environment, invasive and non-invasive measurements, Biomedical and chemical biosensors, Measurement of blood pressure, flow and volume, pulse oximetry and respiratory performance; Clinical laboratory instrumentation, and applications in patient monitoring.

[15 hrs.]

Protection and safety:

medical ethics; mechanical safety; electrical safety; biological hazards; chemical safety; radiation protection. [5 hrs.]

Introduction to sensors and signal processing:

transducers, sensors and instruments; calibration; accuracy and error; amplifiers; filters; software and hardware signal processing. (b). Nature of biomedical signals: physical signals (force, torque, flow, pressure as well as thermal, geometric and kinematic quantities); biopotentials; chemical signals. Transducers of biomedical signals and their application: biopotential electrodes and amplifiers; pressure sensors; flow sensors; optical sensors; electrochemical sensors. [15 hrs.].

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The learning and teaching strategies employed in this module can vary depending on the specific course. However, here are some common strategies that may be used with this course: Teaching methods include: - lectures - seminars - tutorials - lab experiments - design assignments - industrial visits - professional training - a variety of projects Assessment : methods of assessment include a combination of: - coursework - group project reports - lab reports - written exams.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	12	15% (10)	Continuous	
	Report	1	5% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr.	10% (10)	7	LO # 1-7
	Final Exam	4 hr.	50 % (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Fundamentals of Medical Instrumentation.
Week 2	Bioelectric Signals and Electrodes, Physiological Transducers, Recording System.
Week 3	Biomedical Recorders.(ECG, EMG, EEG,EOG, VCG, PCG,...etc.).
Week 4	Respiratory System Measurements, Respiration Monitoring and Apnea Detection, Oximeters.
Week 5	Patient Monitoring Systems, Coronary Care Unit (CCU).
Week 6	Arrhythmia and Ambulatory Monitoring Instruments.
Week 7	Midterm exam
Week 8	Foetal Monitoring Instruments/Systems.
Week 9	Blood Flow and Cardiac Output Measurements and Devices. Endoscopy.
Week 10	Advanced Vision and Eye Testing Instruments
Week 11	Pulmonary Function System.
Week 12	Pulmonary Function System.
Week 13	Equipment for Diagnostic Audiology and Hearing Tests.
Week 14	Patient Safety, Regulations and Safety Measures.
Week 15	Recap and Final Assessments: Review of the Entire Syllabus, Revision Sessions, and Preparing for final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Introduction to the Medical diagnostic instrumentation lab.
Week2	Biomedical signals recorders (ECG)
Week3	Biomedical signals recorders (ECG)
Week 4	Biomedical signals recorders (EMG, EEG, ERG, EOG).
Week 5	Equipment for patient monitoring systems, (CCU), and ambulatory monitoring instruments.
Week 6	Equipment for fetal monitoring system.
Week 7	Equipment for cardiac output measurements..
Week 8	Equipment for blood flow measurement.
Week 9	Endoscopy.
Week 10	Advanced vision and eye testing instruments (Ophthalmoscopy, Retinoscopy, Ocular tonometry, Slit lamp, Optical coherence tomography,.....etc.).
Week 11	Advanced vision and eye testing instruments (Ophthalmoscopy, Retinoscopy, Ocular tonometry, Slit lamp, Optical coherence tomography,.....etc.).
Week 12	Pulmonary function testing equipment's and machines (Spirometer, Body plethysmograph., Pulmonary gas analyzer, Gas-conditioning device, Blood gas analyzer, Silverman pneumotachometer, Pulse oximeter, etc.).
Week 13	equipment for diagnostic audiology (ABR, AOE, Audiometers, Tympanometry, Hearing aid fitting systems, Balance testing equipment.... etc.).
Week 14	Equipment for diagnostic audiology (ABR, AOE, Audiometers, Tympanometry, Hearing aid fitting systems, Balance testing equipment.... etc.).
Week 15	Preparatory week before the final exam.
Week 16	Final test.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. Khandpur, R. S. (1990). Handbook of Biomedical	Yes
	Instrumentation, Tata McGraw Hill Publishing Co. 2. Joseph D. Bronzino (2006). The Biomedical Engineering Handbook, 3rd. Edition. Germany: Taylor & Francis.	

Recommended Texts	1. Press. Joseph D. Bronzino (2006). Medical Devices and Human Engineering. (2017). United Kingdom: CRC Press. 2. Khandpur, R. S. (2004). Biomedical Instrumentation: Technology and Applications. India: McGraw Hill LLC. 3. Brown, J. M., Carr, J. J. (2001). Introduction to Biomedical Equipment Technology. India: Prentice Hall.	No
Websites		

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Microprocessor		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab Tutorial Practical Seminar
Module Code	MITE3102		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGIII	Semester of Delivery	
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Digital electronics		Semester
Co-requisites module	none		Semester

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1- The student knows the definition of Microprocessor 8085. 2- How to engage colleagues and stakeholders in managing information, knowledge and communication systems. 3. Design and implementation of 8085 microprocessors. 4- Principles, methods, tools and techniques for keeping information, knowledge and communication secure and how to establish appropriate security levels and approaches. 5- How to evaluate current information, knowledge and communication systems and their capability and capacity to meet future needs. 6- Information, knowledge and communication technologies, their features and benefits for your needs. 7- Suppliers of information, knowledge and 8085MP and their capabilities.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon completion of the course, students should be able to: 1- Understand the difference between microprocessor and microcontroller 2- Understand application of microprocessor in medical devices 3- Know characteristics of 8085 microprocessor 4- Know the architecture of 8085 microprocessor 5- Know the pins of 8085 microprocessor IC 6- Know the op-code of instructions 7- Know how to transfer data between memory and processor programmatically 8- Know how to build program to execute any arithmetic operation 9- Know how to build program to execute any logical operation 10- Know how to build program by using branching instruction for multitask 11- Know how to calculate time delay of any program code 12- Know how to draw time diagram of any instruction 13- Know the types of memories
Indicative Contents المحتويات الإرشادية	1. Microprocessor, microcontroller (6hrs) 2. Microprocessor architecture, registers, accumulator, flag (8hrs) 3. Carry, auxiliary carry, parity (4 hrs.) 4. Stack pointer, decoder, arithmetic/logic unit(6hrs) 5. Interrupt, serial I/O, address buffer, bus organization (6hrs) 6. Direct memory access, hold acknowledge (4 hrs.) 7. Instructions, data transfer instructions (8hrs) 8. Arithmetic, logical, branching, control instructions (15hrs) 9. Time diagram, time delay, opcode (6hrs)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Daily assessment - weekly assessment - quarterly assessment - objective questions - general questions - practical tests.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	56	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	20% (10)	3, 6, 8, 11	LO # 1-2, 4-5, 6-7, 8-10
	assessment	2	10% (10)	9, 13	LO # 8 and 11-12
	Projects / Lab.	6	10% (10)	7, 12	LO # 1-6 and 7-11
	Report	NA			
Summative assessment	Midterm Exam	2 hr.	10% (10)	7	LO # 1-7
	Final Exam	4hr.	50% (50)	14	All
Total assessment			100% (100)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction to microprocessor and microcomputer
Week 2	MP architecture
Week 3	MP IC pins
Week 4	bus signal
Week 5	Introduction to Instruction set MP and addressing mode

Week 6	Data transfer instructions
Week 7	Mid-term Exam +
Week 8	Arithmetic instructions
Week 9	Logical instructions Branching instructions
Week 10	Review instructions and Tutorial
Week 11	Op-code and machine cycle
Week 12	Timing diagram of instructions
Week 13	Time delay of code
Week 14	Types and architecture for memory
Week 15	Preparatory week before the final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Lab 1: introduction to 8085 simulators
Week 2	Lab 2: move data
Week 3	Lab 3: ADD two data
Week 4	Lab 4: SUB two data
Week 5	Lab 5: multiplication of two 8-bit data
Week 6	Lab 6: division of two 8-bit data
Week 7	Lab 7: OR, AND two data
Week 8	Lab 8: largest number
Week 9	Lab 9: smallest number
Week 10	Lab 10: copy memory locations array
Week 11	Lab 11: count blank memory locations
Week 12	Lab 12: exchange two memory locations array
Week 13	Lab 13: find first and second complement
Week 14	Lab 14: rotate 8-bit data

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Recommended Texts	Microprocessor Architecture, Programming and Applications with the 8085 (6th Edition)	NO
Websites	https://www.mediafire.com/file/xnu0xhfknbp9bml/sim8085_win_7.rar/file	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Signals and Systems		Module Delivery
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE3104		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGIII	Semester of Delivery	5
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Engineering Mathematics	Semester	UGII-S3
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	✓ Understand and classify signals based on their characteristics and properties. ✓ Study basic continuous-time and discrete-time signals to establish a foundation for signal analysis. ✓ Analyze systems and classify them according to their characteristics and behavior. ✓ Investigate the response of continuous-time LTI systems using convolution integral and understand its implications for signal processing. ✓ Explore the properties and behaviors of LTI systems described by differential equations or difference equations to model and analyze real-world systems. ✓ Learn the Laplace Transform and its applications in analyzing continuous-time signals and systems. ✓ Understand the concept of the system function in the Laplace domain and its role in analyzing continuous-time LTI systems. ✓ Study the Z-Transform and its applications in analyzing discrete-time signals and systems. ✓ Understand and represent periodic signals using Fourier series. ✓ Analyze continuous-time signals using the Fourier transform. ✓ Explore properties of the continuous-time Fourier transform. ✓ Study the frequency response of continuous-time LTI systems, including filtering and bandwidth. ✓ Investigate Fourier analysis of discrete-time signals and systems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of the module, students should be able to: ✓ Demonstrate a comprehensive understanding of signal types. ✓ Demonstrate a systematic knowledge of the classification of signals. ✓ Gain the ability to analyze basic continuous-time and discrete-time signals effectively. ✓ Demonstrate an understanding of the principles of LTI system. ✓ Learn how to use the Laplace transform for signal and system analysis in the frequency domain. ✓ Demonstrate an understanding of time analysis of signals and systems. ✓ Demonstrate an understanding of frequency analysis of signals and systems. ✓ Critically evaluate the LTI system response. ✓ Ability to transform signal and system Z domain -. ✓ Demonstrate the techniques of synthesizing signals using Fourier series.
Indicative Contents المحتويات الإرشادية	Signals and classification of signals, basic continuous-time signals, basic discrete-time signals [7 hrs.] Systems and classification of systems, response of a continuous-time LTI system and the convolution integral, properties of continuous-time LTI systems, eigenfunctions of continuous-time LTI systems, systems described by differential equations, response of a discrete-time LTI system and convolution sum, properties and eigenfunctions of discrete-time LTI systems [10 hrs] The Laplace transforms, Laplace transform of some common signals, properties of the Laplace transform, the inverse Laplace transform, the system function, the unilateral Laplace transform. The z-transform, z-transform of some common sequences, properties of the z-transform, the inverse z-transform, the system function of discrete-time LTI systems, the unilateral z-transform [14 hrs.]. Fourier Analysis of Continuous-Time Signals and Systems, Fourier series representation of periodic signals the Fourier transform, properties of the continuous-time Fourier transform. The

	frequency response of continuous-time LTI systems. Fourier Analysis of Discrete-Time Signals and Systems, discrete Fourier series, the Fourier transform and its properties. System response to sampled continuous-time sinusoids [17 hrs.].

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The major strategy for presenting this module will be to encourage students to participate in the tasks while also polishing and improving their critical thinking skills. This will be accomplished through courses, interactive lectures, and the consideration of small experiments involving various sample tasks that are engaging to the students and help them learn more about the module.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	✓ SIGNALS AND CLASSIFICATION OF SIGNALS
Week 2	✓ BASIC CONTINUOUS-TIME SIGNALS ✓ BASIC DISCRETE-TIME SIGNALS
Week 3	✓ SYSTEMS AND CLASSIFICATION OF SYSTEMS ✓ RESPONSE OF A CONTINUOUS-TIME LTI SYSTEM AND THE CONVOLUTION INTEGRAL ✓ PROPERTIES OF CONTINUOUS-TIME LTI SYSTEMS
Week 4	✓ EIGENFUNCTIONS OF CONTINUOUS-TIME LTI SYSTEMS ✓ SYSTEMS DESCRIBED BY DIFFERENTIAL EQUATIONS ✓ RESPONSE OF A DISCRETE-TIME LTI SYSTEM AND CONVOLUTION SUM
Week 5	✓ PROPERTIES OF DISCRETE-TIME LTI SYSTEMS ✓ EIGENFUNCTIONS OF DISCRETE-TIME LTI SYSTEMS ✓ SYSTEMS DESCRIBED BY DIFFERENCE EQUATIONS
Week 6	✓ THE LAPLACE TRANSFORM ✓ LAPLACE TRANSFORM OF SOME COMMON SIGNALS ✓ PROPERTIES OF THE LAPLACE TRANSFORM ✓ Mid Exam
Week 7	✓ THE INVERSE LAPLACE TRANSFORM
Week 8	✓ THE SYSTEM FUNCTION ✓ THE UNILATERAL LAPLACE TRANSFORM
Week 9	✓ THE Z-TRANSFORM ✓ Z-TRANSFORM OF SOME COMMON SEQUENCES ✓ PROPERTIES OF THE Z-TRANSFORM
Week 10	✓ THE INVERSE Z-TRANSFORM ✓ THE SYSTEM FUNCTION OF DISCRETE-TIME LTI SYSTEMS ✓ THE UNILATERAL Z-TRANSFORM
Week 11	<u>Fourier Analysis of Continuous-Time Signals and Systems</u> ✓ FOURIER SERIES REPRESENTATION OF PERIODIC SIGNALS ✓ THE FOURIER TRANSFORM ✓ PROPERTIES OF THE CONTINUOUS-TIME FOURIER TRANSFORM
Week 12	✓ THE FREQUENCY RESPONSE OF CONTINUOUS-TIME LTI SYSTEMS ✓ FILTERING ✓ BANDWIDTH
Week 13	<u>Fourier Analysis of Discrete-Time Signals and Systems</u> ✓ DISCRETE FOURIER SERIES ✓ THE FOURIER TRANSFORM ✓ PROPERTIES OF THE FOURIER TRANSFORM
Week 14	✓ THE FREQUENCY RESPONSE OF DISCRETE-TIME LTI SYSTEMS ✓ SYSTEM RESPONSE TO SAMPLED CONTINUOUS-TIME SINUSOIDS
Week 15	✓ DIGITAL SIMULATION OF ANALOG SYSTEMS Preparing for final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	SIGNAL REPRESENTATIONS
Week 2	RESPONSE OF A DISCRETE-TIME LTI SYSTEM AND CONVOLUTION SUM
Week 3	
Week 4	
Week 5	SYSTEMS DESCRIBED BY DIFFERENCE EQUATIONS
Week 6	PROPERTIES OF THE Z-TRANSFORM
Week 7	
Week 8	FOURIER SERIES REPRESENTATION OF PERIODIC SIGNALS
Week 9	
Week 10	DISCRETE FOURIER TRANSFORM
Week 11	
Week 12	THE FREQUENCY RESPONSE OF DISCRETE-TIME LTI SYSTEMS
Week 13	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts	S. Palani, SIGNALS AND SYSTEMS, Springer International Publishing, 2021	
Websites		

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Computer Programming and Applications (C++ programming)		Module Delivery
Module Type	Basic		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE3105		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	UGIII	Semester of Delivery	
Administering Department	MITE	College	ETC
Module Leader			e-mail
Module Leader's Acad. Title			Module Leader's Qualification
Module Tutor			e-mail
Peer Reviewer Name			e-mail
Scientific Committee Approval Date			Version Number
			2.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Understanding the fundamental concepts of C++ programming language environment. 2. The students will understand and learn how to use C++ as an effective programming language. 3. The students will be able to solve different mathematical and engineering problems as well as design projects using code. 4. Students will acquire the knowledge of basic C++ syntax such as: variables, input, output, vectors, matrices, functions. 5. The students will gain the necessary skills to design and implement appropriate algorithms that solve problems dealing with different mathematical and engineering applications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Introducing the history and philosophy of C and C++, how C++ adds generic programming concepts to the C language, programming language standards, the mechanics of creating a program. 2. The students learn how to create a C++ program and the general format for a C++ program 3. The “# include directive”, the main () function, how to use the cout object for output, how to place comments in a C++ Program, how and when to use endl, how to declare and use variables, how to use the “cin” object for input, how to define and use simple functions. 4. Learn rules for naming C++ variables, C++ built-in integer types, numeric constants of various integer types, using the const qualifier to create symbolic constants, C++’s built-in floating-point types, C++’s arithmetic operators, automatic type conversions, forced type conversions (type casts). 5. How to create and use arrays, how to create and use C-style strings. 6. How to create and use string class strings, how to use the “get line ()”. 7. Learn how to create and use structures, how to create and use pointers, how to create dynamic arrays, how to create dynamic structures, automatic, static, and dynamic storage. 8. Understand the for loop, expressions and statements, the increment and decrement operators: ++ and --, combination assignment operators, compound statements (blocks). 9. The if statement, the if else statement, logical operators: “&&”, “ ”, and “!”, the “ctype” library of character functions, the conditional operator, the switch statement, the continue and break statements, number-reading loops, basic file input/output. 10. The C++ view of input and output, the “iostream” family of classes redirection,

	onstream class methods, formatting output, “istream” class methods, stream states, file I/O, using the “ifstream” class for input from files, using the “ofstream” class for output to files, using the “fstream” class file input and output, command-line processing, binary files.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Introducing to the history and philosophy of C and of C++, How C++ adds object-oriented, concepts to the C language, How C++ adds generic programming concepts to the C language, programming language standards, and the mechanics of creating a program. How to create a C++ program, the general format for a C++ program the #include directive, the “main()” function, how to use the cout object for output, how to place comments in a C++ program, how and when to use “endl”, how to declare and use variables, how to use the “cin” object for input, and how to define and use simple functions. Rules for naming C++ variables, C++’s built-in integer types, Numeric constants of various integer types, Using the “const” qualifier to create symbolic constants, C++’s built-in floating-point types, C++’s arithmetic operators, automatic type conversions, and forced type conversions (type casts). [15 h] How to create and use arrays, how to create and use C-style strings ,how to create and use string class strings, How to use the “getline()” and how to create and use arrays, how to create and use C-style strings, how to create and use string class strings, How to use the “getline()” and “get()” methods for reading strings, How to mix string and numeric input, how to create and use structures, how to create and use pointers, how to create dynamic arrays, and how to create dynamic structures, automatic, static, and dynamic storage. The for loop, Expressions and statements, The increment and decrement operators: ++ and --, Combination assignment operators, Compound statements (blocks), The comma operator, Relational operators: >, >=, ==, <=, <, and !=, The while loop, The do while loop, The get() character input method, The end-of-file condition, Nested loops and two-dimensional arrays.[15 hrs.] The if statement, The if else statement, Logical operators: &&, , and! The ctype library of character functions, The conditional operator?:. The switch statement, the continue and break statements, number-reading loops, and basic File input/output [10 hrs.] The C++ view of input and output, the “iostream” family of classes Redirection, “onstream” class methods, formatting output, “istream” class methods, stream states, file I/O, using the “ifstream” class for input from files, using the “ofstream” class for output to files, using the “fstream” class file input and output, command-line processing, binary files, and random file access. [15 h] Revision problem classes [5 h]

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 للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	36	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	20% (20)	5 and 10	LO #1, #2 and #10,
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Project/Lab	5	10% (10)	2 and 13	LO #2, #4 and #5, #9
	Report	N/A			
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introducing history and philosophy of C and C++, How C++ adds object-oriented, concepts to the C language, How C++ adds generic programming concepts to the C language, Programming language standards, and the mechanics of creating a program.
Week 2	How to create a C++ program, general format for a C++ program, “#include” directive, The main () function, how to use the “cout” object for output, how to place comments in a C++ program, how and when to use “endl”, how to declare and use variables, how to use the “cin” object for input, and how to define and use simple functions.
Week 3 & 4	Rules for naming C++ variables, C++’s built-in integer types, numeric constants of various integer types, using the “const” qualifier to create symbolic constants, C++’s built-in floating-point types, C++’s arithmetic operators, automatic type conversions, and forced type conversions (type casts).
Week 5	How to create and use arrays, how to create and use C-style strings, how to create and use string class strings, how to use the “get line()” and “get ()” methods for reading strings,
Week 6	How to mix string and numeric input, how to create and use structures, how to create and use pointers, and how to create dynamic arrays. How to create dynamic structures, automatic, static, and dynamic storage.
Week 7	Mid-term Exam
Week 8	The for loop, Expressions and statements, increment and decrement operators: ++ and --, combination assignment operators, compound statements (blocks), comma operator, and relational operators: >, >=, ==, <=, <, and !=.
Week 9	While loop, do “while” loop, and “get ()” character input method.
Week 10	The end-of-file condition, nested loops and two-dimensional arrays.
Week 11	if statement, if else statement, logical operators: &&, , and !”, “cctype” library of character functions, and conditional operator: ?.
Week 12	“Switch” statement, “continue” and “break” statements, number-reading loops, and basic File input/output.
Week 13 & 14	C++ view of input and output, the “io-stream” family of classes redirection, “io-stream” class methods, formatting output, “io-stream” class methods, stream states, file I/O, using the “ifstream” class for input from files, and using the “ofstream” class for output to files.
Week 15	Command-line processing, binary files, random file access, and “Encore” formatting Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Introduction, C++ Environment.
Week 2	The general format for a C++ program, the #include directive, The main() function, how to use the cout object for output, How to place comments in a C++ Program, how and when to use endl, how to declare and use variables, how to use the cin object for input, and how to define and use simple functions.
Week 3	
Week 4	Variables and assignment statement, logical operator.
Week 5	
Week 6	Using the const qualifier to create symbolic constants, C++'s built-in floating-point types, and C++'s arithmetic operators.
Week 7	
Week 8	Arrays, Built in functions, Basic Matrix Functions
Week 9	
Week 10	Control Statements (Conditional statements: If, Else, Elseif, switch case)
Week 11	
Week 12	How to create dynamic structures, automatic, static, and dynamic storage.
Week 13	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	P.B. Mahapatra "C++"	yes
Recommended Texts	A Complete Guide to Programming in C++ Ulla Kirch-Prinz Peter Prinz	
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering http://www.lmpt.univ-tours.fr/~volkov/C++.pdf	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Project Management		Module Delivery
Module Type	Support learning activity		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☒ Seminar
Module Code	MITE3106		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	UGIII	Semester of Delivery	5
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims

أهداف المادة الدراسية

1. Introduce the fundamental concepts and principles of project management.
2. Develop an understanding of project planning, scheduling, and controlling techniques.
3. Explore cost accounting methods and their application in project management.
4. Gain knowledge of machine replacement, materials handling, and inventory control in projects
5. Learn about time management techniques and their significance in project management.

Module Learning Outcomes

مخرجات التعلم للمادة
الدراسية

1. Define and explain the key elements, objectives, and phases of project management.
2. Apply project planning, scheduling, and controlling techniques effectively.
3. Utilize project planning techniques such as Gantt charts, Critical Path Method (CPM), and Project Evaluation and Review Technique (PERT).
4. Understand the concept of crashing project networks to expedite project completion.
5. Apply cost accounting methods, including unit cost calculations and break-even analysis.
6. Demonstrate knowledge of depreciation accounting methods: straight-line, sum-of-years digits, reducing balance, and double-declining balance.
7. Evaluate machine replacement decisions in project management.
8. Analyze materials handling strategies in project environments.
9. Apply Material Requirements Planning (MRP) concepts in project settings.
10. Understand inventory control techniques and their relevance to project management.
11. Implement time management strategies to optimize project efficiency.

Indicative Contents

المحتويات الإرشادية

Indicative content includes the following.

1. Introduction to Project Management: Elements, Objectives, and Phases (5)
2. Planning and controlling in Projects (5)
 - Planning
 - Scheduling
 - Controlling

	3. Project Planning Techniques (5) • Gantt chart • Critical Path Method (CPM) • Project Evaluation and Review Technique (PERT) 4. Crashing of Project Network (5) 5. Cost Account Methods (5) • Unit Cost Calculations • Break-Even Analysis Method 6. Depreciation Accounting Methods (5) • Straight-line Method • Sum-of-Years Digits (SOYD) Method • Reducing Balance (RB) Method • Double-Declining Balance (DDB) Method 7. Machine Replacement (2) 8. Materials Handling (2) 9. Material Requirements Planning (MRP) (2) 10. Inventory Control (2) 11. Time Management (2)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	• Lectures to introduce key concepts and theories. • Case studies and practical examples to illustrate application in real-world scenarios. • Group discussions and activities to promote active learning and collaboration. • Assignments and projects to apply learned techniques and tools. • Continuous Feedback: Provide regular feedback to support student progress and understanding.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	27	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	2
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	20% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.				
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Project Management: Introduction, Elements, Objectives and Phases
Week 2	Planning and Controlling in Projects: Planning, Scheduling and Controlling
Week 3	Project Planning Techniques - Gantt chart
Week 4	Project Planning Techniques - Critical Path Method (CPM)
Week 5	Project Planning Techniques - Project Evaluation and Review Technique (PERT)
Week 6	Crashing of project network Cost Account Methods (Unit Cost Calculations)
Week 7	Mid-Exam
Week 8	Cost Account Methods (Break Even Analysis Method)
Week 9	Depreciation Accounting Methods:

	(1) Straight-line Method (2) Sum-of- Years Digits (SOYD) Method
Week 10	Depreciation Accounting Methods: (3) Reducing Balance (RB) Method (4) Double-Declining Balance (DDB) Method
Week 11	Machine Replacement
Week 12	Materials Handling
Week 13	Material Requirements Planning (MRP)
Week 14	Inventory Control
Week 15	Time Management Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Project Management: Introduction, Elements, Objectives and Phases
Week 2	Planning and Controlling in Projects: Planning Scheduling Controlling
Week 3	Project Planning Techniques Gantt chart
Week 4	Project Planning Techniques Critical Path Method (CPM)
Week 5	Project Planning Techniques Project Evaluation and Review Technique (PERT)
Week 6	Crashing of project network
Week 7	Cost Account Methods Unit Cost Calculations
Week 8	Cost Account Methods Break Even Analysis Method
Week 9	Depreciation Accounting Methods: (1) Straight-line Method (2) Sum-of- Years Digits (SOYD) Method

	(3) Reducing Balance (RB) Method Double-Declining Balance (DDB) Method
Week 10	Machine Replacement
Week 11	Materials Handling
Week 12	Material Requirements Planning (MRP)
Week 13	Inventory Control
Week 14	Time Management

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Project Management: A Systems Approach to Planning, Scheduling, and controlling" by Harold Kerzner	Yes
Recommended Texts	"Project Management: The Managerial Process" by Clifford Gray and Erik Larson	No
Websites	Lecture Slides: Prepared lecture slides covering the key concepts, frameworks, and techniques of project management will be provided to students.	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Medical Communication systems		Module Delivery
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE 3203		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGIII	Semester of Delivery	6
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Signals and systems	Semester	UGIII-S5
Co-requisites module		Semester	

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

Module Aims أهداف المادة الدراسية	1. To learn the types of digital and analog modulation 2. To distinguish the difference between digital and analogue modulation 3. To learn the types of impulse modulation. 4. To learn spread spectrum systems 5. To learn the biomedical sensor network 6. To learn mobile communications (3G / 4G) 7. To learn telemedicine and healthcare systems 8. To learn the Internet of Things in medical applications
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand and mitigate noise in communication systems. 2. Master the basics of sampling. 3. The student learns the types of digital and analog modulation. 4. The student distinguishes the difference between digital and analogue modulation. 5. The student learns the types of impulse modulation. 6. The student learns spread spectrum systems 7. The student learns the biomedical sensor networks. 8. Learn wireless sensor networks. 9. The student learns mobile communications (3G / 4G) 10. The student learns telemedicine and healthcare systems 11. The student learns the Internet of Things in medical applications
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: 1. Communication System and types [4 H]. 2. AM and Fm modulation system and types and examples [4 H]. 3. Sampling, PAM, PWM, PPM, and PCM and examples [10 H]. 4. Digital Modulation Techniques, ASK, FSK, and PSK examples [8 H]. 5. Spread Spectrum Systems, Wireless Sensor Network, Biomedical Sensor Network, and Mobile Communication (3G/4G) and examples [20 H]. 6. Telemedicine and Health care Systems, IoT in Medical Applications and examples [8 H].

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Lectures - means of clarification - intellectual questions - scientific exhibitions - scientific competitions

Student Workload (SWL)			
الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10 % (10)	4, 8, 12, 14	LO # 1, 2, 3 LO # 4, 5, 6. LO # 7, 8, 9. LO # 10, 11
	Assignments	2	10 % (10)	5,13	LO # 1-4, and 5-11
	Projects / Lab.	2	10 % (10)	Continuous	
	Report	14	10 % (10)	14	LO # 1-11
Summative assessment	Midterm Exam	2h	10 % (10)	7	LO # 1-6
	Final Exam	4h	50 % (50)	16	ALL
Total assessment			100 % (100)		

Delivery Plan (Weekly Syllabus)	
المنهاج الأسبوعي النظري	
	Material Covered
Week 1	Noise in Communication Systems
Week 2-3	Sampling, PAM, PWM, PPM, and PCM
Week 4-5	Digital Modulation Techniques
Week 6	Spread Spectrum Systems

Week 7	Mid-Exam
Week 8	Wireless Sensor Network
Week 9-10	Biomedical Sensor Network
Week 11-12	Mobile Communication (3G/4G)
Week 13	Telemedicine and Health care Systems
Week 14	IoT in Medical Applications
Week 15	Preparing for final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1-2	Amplitude Modulation large carrier and Amplitude Modulation suppressed carrier
Week 3	Frequency Modulation
Week 4	Amplitude Demodulation
Week 5	PAM
Week 6	PWM
Week 7	PPM
Week 8	ASK
Week 9	FSK
Week 10	PWM
Week 11	BPSK
Week 12	Biomedical Sensor Network
Week 13	Telemedicine and Health care Systems
Week 14	IoT in Medical Applications

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Introduction to Communication Systems	NO
Recommended Texts	Introduction to Communication Systems (Second edition- by Ferrel. G. Stremler)	YES
Websites	1. https://www.coursera.org/search?query=Electromagnetic%20Fields&=null index=prod_all_launched_products_term_optimization. 2. www.tallguide.com 3. www.ainfoinc.com 4. www.millitech.com 5. www.rfcafe.com 6. www.globalspec.com	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Medical Diagnostic Instrumentation II		Module Delivery
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☐ Seminar
Module Code	MITE3201		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	UG-III	Semester of Delivery	6
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Medical Diagnostic Instrumentation I	Semester	UG-III - S5
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	The module aims: 1. To provide a grounding in the theory of relevant biomedical measurement systems including sensors, signal acquisition and conditioning principles, measurement techniques and instrumentation and detectors; 2. To impart the basic theory and physiological interactions of medical imaging modalities (including microscopy, endoscopy, x-ray, ultrasound, CT, MRI, PET and IR) and review applications and image-guided interventions; 3. To teach the basic physiological and anatomical principles of surgical interventions, interventional radiology and how the imaging objectives relate to disease and treatment 4. To review the working principles of existing surgical technology including robotics and how this addresses the surgical intent, including current minimal access techniques and understand the implications for image guidance. 5. To provide a basic understanding of the process of invention and its management; an introduction to entrepreneurship and its interface with invention; product development and its relationship to invention, resultant intellectual property and entrepreneurship
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of the module, students should be able to: 1. Understand the principles of operation of relevant sensors and detectors used in biomedical measurement for imaging and their technical specifications. 2. Be able to apply a range of signal analysis and signal processing methods. 3. Understand how medical imaging systems work, how they interact with the tissue, how their images can be interpreted and the limitations of their application. 4. Be familiar with a range of medical imaging applications for different pathologies, including cellular, molecular imaging and interventions. 5. Know how image guidance interacts and operates with instruments and equipment in surgical intervention including robotics. Understand the equipment and instruments required and how it is use. 6. Understand the requirements in quality spatial, contrast and time resolution of imaging modalities used for different outcomes. 7. have knowledge of the research and engineering methods applied in the development of medical imaging. 8. Basic knowledge and understanding of the inventive process and its

	management, the entrepreneurial basis of business development; exploitation and value of Intellectual Property. 9. This gives you a solid understanding of how engineering improves patient care. 10. Having the opportunity to gain valuable experience within a clinical environment – learning about the anatomy and functions of the human biology. 11. Develop research and business management skills within the biomedical industry. 12. the application of engineering principles and design concepts to human biology and medicine, to solve challenges in the healthcare industry. 13. Gain an all-rounded understanding of where and how the technologies you develop will be used.
Indicative Contents المحتويات الإرشادية	The indicative contents of module include: <u>Part A:</u> • Physiologic quantities, basic concepts and principles of medical imaging instrumentation. • Signal types, measurement and sensor system properties, transfer functions, Fourier analysis, spectral analysis and filtering theory. [8 hrs.] <u>Part B:</u> • Characteristics of detection systems, amplification, noise/noise reduction and biomedical sensor and detector types. • Measurement constraints in the physical environment. [8 hrs.] <u>Part C:</u> • Principles and exemplar applications of x-ray and CT imaging. • Principles and exemplar applications of Nuclear and PET imaging. • Principles of MRI imaging, MRI applications and MRI-guided interventions, MRI safety. • Current and future developments of medical optical and photonics imaging, fluorescence, confocal, single/multiphoton, Raman, NIR. [8 hrs.] <u>Part D:</u> • Overview of diagnostic and interventional ultrasound and review of likely future developments. • Introduction to the objectives and practice of clinical diagnostic imaging. [12 hrs.]

	<u>Part E:</u> • Introduction to interventional principles, overview of instrumentation and devices, open, minimally invasive and image guided surgery. [12 hrs.]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The learning and teaching strategies employed in this module can vary depending on the specific course. However, here are some common strategies that may be used with this course: <u>Teaching methods include:</u> • lectures • seminars • tutorials • lab experiments • design assignments • industrial visits • professional training • a variety of projects <u>Assessment :</u> methods of assessment include a combination of: • coursework • group project reports • lab reports • written exams.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	15	10% (10)	Continuous	
	Report	15	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr.	10% (10)	7	LO # 1-7
	Final Exam	4 hr.	50 % (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction to Modern Imaging Systems.
Week 2	X-ray Machines and Digital Radiography.
Week 3	X-ray Machines and Digital Radiography.
Week 4	X-ray Computed Tomography.
Week 5	X-ray Computed Tomography, Electrical Impedance Tomography.
Week 6	Magnetic Resonance Imaging System.
Week 7	Mid-Exam +
Week 8	Nuclear Medical Imaging Systems, Single- Photon – Emission Computed Tomography (SPECT).
Week 9	Nuclear Medical Imaging Systems, Gamma Camera, Positron Emission Tomography (PET) Scanner.

	Ultrasonic Imaging Systems, Three – Dimensional Ultrasound Imaging Systems, Portable Ultrasound Systems.
Week 10	Modern Ultrasound Imaging Systems.
Week 11	Thermal Imaging Systems.
Week 12	Magnetic Resonance Microscopy, Medical Applications of Virtual Reality Technology.
Week 13	Biomedical Telemetry.
Week 14	Telemedicine Technology.
Week 15	Recap and Final Assessments: Review of the Entire Syllabus, Preparing for final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	X-ray Machines and Digital Radiography.
Week2	X-ray Machines and Digital Radiography.
Week 2	X-ray Computed Tomography.
Week 3	X-ray Computed Tomography.
Week 4	Magnetic Resonance Imaging System.
Week 5	Magnetic Resonance Imaging System.
Week 6	Nuclear Medical Imaging Systems.
Week 7	Nuclear Medical Imaging Systems.
Week 8	Ultrasonic Imaging Systems.
Week 9	Ultrasonic Imaging Systems.
Week 10	Modern Ultrasound Imaging Systems.
Week 11	Thermal Imaging Systems.
Week 12	Biomedical Telemetry.
Week 13	Telemedicine Technology.
Week 14	Medical Applications of Virtual Reality Technology.
Week 15	Preparatory Week Before the Final Exam.,

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. Khandpur, R. S. (1990). Handbook of Biomedical Instrumentation, Tata McGraw Hill Publishing Co. 2. Joseph D. Bronzino (2006). The Biomedical Engineering Handbook, 3rd. Edition. Germany: Taylor & Francis.	Yes
Recommended Texts	1. Press. Joseph D. Bronzino (2006). Medical Devices and Human Engineering. (2017). United Kingdom: CRC Press. 2. Khandpur, R. S. (2004). Biomedical Instrumentation: Technology and Applications. India: McGraw Hill LLC. 3. Brown, J. M., Carr, J. J. (2001). Introduction to Biomedical Equipment Technology. India: Prentice Hall.	No
Websites	https://www.intuitive.com/en-us/products-and-services/da-vinci/learning .	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Medical Electronic Systems		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE3202		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGIII	Semester of Delivery	6
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Electronic circuits II	Semester	UGII-S4
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. To provide students with an understanding of electronic systems and their applications in the medical field. 2. To develop students' knowledge and skills in designing, analyzing, and troubleshooting electronic circuits used in medical devices. 3. To familiarize students with the principles and operation of regulated power supplies, switching regulators, clippers, clampers, voltage multiplier circuits, and their practical applications in medical electronic systems. 4. To enhance students' ability to apply theoretical knowledge to practical scenarios and develop critical thinking skills in the context of medical electronics.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Demonstrate a comprehensive understanding of electronic systems and their relevance in the medical field. 2. Design and analyze regulated power supplies, switching regulators, clippers, clampers. 3. Design and analyze voltage multiplier circuits used in medical electronic systems. 4. Explain the principles and operation of regulated power supplies, switching regulators, clippers, clampers, and voltage multiplier circuits. 5. Apply theoretical knowledge to solve problems and troubleshoot electronic circuits used in medical devices. 6. Evaluate the suitability of different electronic circuits for specific medical applications. 7. Critically analyze and interpret data obtained from electronic measurements in medical electronic systems. 8. Communicate effectively and professionally about medical electronic systems, both orally and in writing. 9. Understand analog-to-digital conversion (ADC) 10. Grasp digital-to-analog conversion (DAC)
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A: Regulated power supplies (Rectification) (20hrs)</u> • Introduction to medical electronic systems • Half-wave and full-wave rectification • Understanding diodes and their characteristics

	• Rectifier circuits and waveforms • Capacitor filtering and its role in power supplies • Ripple factor and its significance in regulated power supplies • Calculation of filter capacitance • Design considerations for capacitor filters in medical devices • Linear voltage regulators and their operation • Zener diode regulators • IC regulators <u>Part B: Clippers & Clampers (20hrs)</u> • Introduction to clippers and their role in signal conditioning • Diode clippers and their characteristics • Design considerations for clipping circuits • Applications of clippers in medical electronic systems • Positive and negative clampers • Design and analysis of clamping circuits • Use cases and limitations of clampers in medical devices. <u>Part C: Operational Amplifiers (Op-Amps) (20hrs)</u> • Introduction to operational amplifiers and their applications in medical electronic systems • Op-Amp characteristics and ideal behavior • Practical applications <u>Part D: Filters (LPF, HPF, PBF and PSF) (10hrs)</u>

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• Active Learning: Engage students through hands-on experiments, discussions, and problem-solving activities. • Practical Applications: Connect theoretical knowledge to real-world medical devices and systems. • Hands-on Experiments: Provide laboratory experiences to reinforce theoretical knowledge and develop practical skills. • Technology Integration: Utilize simulation software and virtual labs for circuit analysis and design. • Continuous Feedback: Provide regular feedback to support student progress and understanding.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction to medical electronic systems
Week 2	Regulated power supplies (Rectification)
Week 3	Regulated power supplies (Filtration)
Week 4	Regulated power supplies (Regulation)
Week 5	Clippers
Week 6	Clampers Operations amplifiers OP-AMP applications
Week 7	Mid-Exam
Week 8	OP-AMP applications

Week 9	Active filters (LPF and HPF)
Week 10	Active filters (BPF and BSF)
Week 11	Passive filters (LPF and HPF)
Week 12	Passive filters (BPF and BSF)
Week 13	Analog to digital conversion (ADC)
Week 14	Digital to analog conversion (DAC)
Week 15	Practical applications Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Introduction to Multisim
Week 2	Half-wave rectifier circuits
Week 3	full-wave rectifier circuits
Week 4	Designing capacitor filters for power supplies
Week 5	Building and testing voltage regulation circuits (Zener stages)
Week 6	Building and testing voltage regulation circuits (IC Regulators)
Week 7	Implementing and testing diode clipping circuits (negative and positive clippers)
Week 8	Implementing and testing diode clipping circuits (Full-wave Clippers)
Week 9	Designing and evaluating clamping circuits
Week 10	Constructing and testing operational amplifier circuits (Inverting and non-Inverting Op-Amp)
Week 11	Constructing and testing operational amplifier circuits (Comparator Op-Amp)
Week 12	Constructing and testing operational amplifier circuits (Integrator and Differentiator)
Week 13	Filters (LPF and HPF)
Week 14	Filters (PBF and PSF)

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Electronic Devices and Circuits Theory (Eleventh Edition) by Robert L. Boylestad and Louis Nashelsky	Yes
Recommended Texts		No
Websites	https://www.youtube.com/@aliabdulelahal-naji3192	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Power Electronics		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE3204		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGIII	Semester of Delivery	6
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Electronic circuits II	Semester	UGII-S4
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. To develop problem solving skills and understanding of power electronic theory through the application of techniques. 2. To understand thyristor, transistor as switching from a given circuit. 3. This course deals with the basic concept of rectifier. 4. This is the basic subject chopper. 5. To understand ac-ac converter, inverter. 6. Application of power electronics especially in medical instrument.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize how power electronic works in electrical circuits. 2. List the various terms associated with power electronic. 3. Summarize what is meant by a basic with power electronic. 4. Discuss the reaction and involvement of in rectifier circuit. 5. Describe thyristor, transistor diode. 6. Dc- dc converter. 7. Identify the basic circuit elements and their applications. 8. Discuss the operations of ac-ac converter. 9. Discuss the various properties inverter. 10. Explain the applications of power electronics in industry especially in medical equipment.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A - Circuit Theory</u>] Diode and Transistor Thyristor as switch its characteristic, protection, triggering circuit. [15 hrs.] AC circuits I –Single phase half wave and full wave Rectifier. [10 hrs.] Revision problem classes [5 hrs.]

	<u>Part B Applications</u> dc-dc converter ,stepdown and step up chopper. [15 hrs] Single phase and three phase inverters. [15 hrs] Applications oof power Electronics UPS.SMPS and Health car application. [10 hrs]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

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

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction to power electronics. Lect.1and 1a
Week 2	Switching devices, power & control device
Week 3	Types and characteristic, rating (diode, transistor ...).
Week 4	Methods of turning – on & turning – off.
Week 5	Protection of power devices.
Week 6	Triggering & base drive circuits. Controlled rectifiers, 1 – phase
Week 7	Mid-Exam
Week 8	Controlled Rectifier 3 – phase circuits
Week 9	Half – wave & full – wave circuits3 phase Rectifiers.
Week 10	D.C choppers; step – up & step – down choppers
Week 11	A.C phase controllers.
Week 12	Invertors, 1 – phase & 3 – phase bridges
Week 13	Some applications: a – uninterruptible power supply UPS).
Week 14	switching mode power supply (SMPS)
Week 15	Application of power Electronics in medical instruments Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Uncontrolled Resistive Half Wave Rectifier with Load.
Week 2	Controlled Half Wave Rectifier with Resistive Load.
Week 3	Controlled Half Wave Rectifier with Inductive Load.
Week 4	Single Phase Full Wave Rectifier (Bridge) /Part I.
Week 5	Single Phase Full Wave Rectifier (Bridge) /Part II.
Week 6	Three Phase Half Wave Rectifier.
Week 7	Three Phase Full Wave Rectifier.
Week 8	Single Phase Half Bridge Inverter/ Part 1.
Week 9	Single Phase Half Bridge Inverter/ Part 2.
Week 10	Single Phase Full Bridge Inverter.
Week 11	Single-Phase Half Wave AC Voltage Controller.
Week 12	Single-Phase Full wave AC Voltage Controller.
Week 13	Step-Down DC Chopper.
Week 14	Step-Down DC Chopper.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Power Electronics by Lander	Yes
Recommended Texts	Power Electronics and drive By Mohmmmed Tazim	No
Websites	M.T. Lazim	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Python Programming		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE3206		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	UGIII	Semester of Delivery	S-6
Administering Department	MITE	College	TEC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. Introduce students to the fundamental concepts and principles of Python programming language. 2. Develop students' proficiency in writing Python code and solving programming problems. 3. Familiarize students with essential programming constructs, such as variables, data types, control flow structures, and functions. 4. Provide students with a solid foundation in object-oriented programming (OOP) and its application in Python. 5. Enable students to work with various data structures and perform operations on them. 6. Prepare students for practical application of Python in real-world scenarios, such as data manipulation, web scraping, and GUI development.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the fundamentals of Python programming language, including variables, data types, and basic operators. 2. Demonstrate proficiency in control flow structures, such as conditional statements and loops, to control program execution. 3. Develop functions and utilize function arguments to enhance code modularity and reusability. 4. Utilize exception handling techniques to effectively manage errors and ensure program robustness. 5. Gain familiarity with modules and packages to leverage existing code and extend Python's functionality. 6. Understand object-oriented programming (OOP) concepts and apply them to create classes, objects, and inheritance hierarchies. 7. Manipulate strings, lists, dictionaries, and sets to efficiently store and retrieve data. 8. Perform file handling operations, including reading from and writing to files. 9. Apply Python to practical tasks, such as web scraping, data manipulation, and analysis. 10. Demonstrate proficiency in working with files and directories, including navigating file systems and managing file permissions. 11. Develop graphical user interfaces (GUIs) using Python libraries to create interactive applications. 12. Prepare for exams by reviewing course materials, practicing exercises, and answering sample questions.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A: Introduction to Python and Basic Concepts (Estimated time: 10 hours)</u> Overview of Python programming language Installation and setup Variables and data types

	Basic operators Input and output operations <u>Part B: Control Flow and Functions (Estimated time: 10 hours)</u> Conditional statements (if, else, elif) Loops and iterations (for loop, while loop) Functions and function arguments Recursion <u>Part C: Data Structures and File Handling (Estimated time: 10 hours)</u> Strings and string manipulation Lists and list manipulation Dictionaries and sets File handling and input/output operations <u>Part D: Advanced Topics (Estimated time: 15 hours)</u> Exception handling and error management Modules and packages Object-oriented programming (OOP) concepts Classes, objects, inheritance, and polymorphism <u>Part E: Applications and Practical Projects (Estimated time: 15 hours)</u> Working with files and directories GUI programming Web scraping Data manipulation and analysis

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Effective learning and teaching strategies involve creating an engaging and interactive learning environment. This can be achieved through a combination of various approaches, such as incorporating active learning techniques like group discussions, problem-solving activities, and hands-on experiments. Additionally, employing visual aids, multimedia resources, and real-world examples can enhance comprehension and retention. Encouraging student participation and providing timely feedback also play vital roles in fostering student engagement and understanding. It is important to promote a growth mindset, encourage critical thinking, and create opportunities for collaboration and peer learning. By employing these strategies, educators can facilitate

	meaningful learning experiences and empower students to become active participants in their own learning journey.

Student Workload (SWL) الحمل الدراسي للطلاب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	21	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعياً	1
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	100		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO # [1 to 5], LO # [5 to 8]
	Assignments	4	10% (10)		
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # [1 to 12]
Summative assessment	Midterm Exam	2 hrs.	10% (10)	7	LO # [1 to 7]
	Final Exam	4hrs.	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction to Python, Variables, Data Types, and Basic Operators
Week 2	Control Flow and Conditional Statements
Week 3	Loops and Iterations
Week 4	Strings and String Manipulation
Week 5	Lists and List Manipulation
Week 6	Dictionaries and Sets
Week 7	Midterm Exam
Week 8	Functions and Function Arguments
Week 9	File Handling and Input/Output Operations
Week 10	Exception Handling and Error Management
Week 11	Modules and Packages
Week 12	Object-Oriented Programming (OOP) Concepts
Week 13	Classes and Objects
Week 14	Inheritance and Polymorphism
Week 15	Working with Files and Directories
Week 16	Preparatory Week for Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Introduction to Python, Variables, and Basic Operators
Week 2	Control Flow and Conditional Statements
Week 3	Loops and Iterations
Week 4	Strings and String Manipulation
Week 5	Lists and List Manipulation
Week 6	Dictionaries and Sets
Week 7	Midterm Exam (No lab session).
Week 8	Functions and Function Arguments
Week 9	File Handling and Input/Output Operations
Week 10	Exception Handling and Error Management
Week 11	Modules and Packages
Week 12	Object-Oriented Programming (OOP) Concepts
Week 13	Classes and Objects
Week 14	Inheritance and Polymorphism
Week 15	Working with Files and Directories
Week 16	Final Exam (No lab session).

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Title: "Python Crash Course: A Hands-On, Project-Based Introduction to Programming" Author: Eric Matthes	
Recommended Texts	Title: "Learning Python" Author: Mark Lutz	No
Websites	URL: https://realpython.com	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Electromagnetic Fields		Module Delivery
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE 3103		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGIII	Semester of Delivery	5
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Engineering Mathematics	Semester	UGII-S3
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. To learn about electromagnetic transmission 2. To learn about Maxwell's equations 3. To know the types of electromagnetic wave transmission media. 4. To recognize the types of signals and systems. 5. To recognize the Guided Waves 6. To recognize transmission lines 7. To recognize Electromagnetic Radiation and Antennas
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Learn about General review in electrostatic. 2. Learn about Gauss's law. 3. Learn about Steady magnetic field. 4. Learn about Time varying magnetic field. 5. Learn about Maxwell's equations in electric fields. 6. Learn about Maxwell's equations in magnetic fields. 7. Recognize types of electromagnetic wave transmission media. 8. Recognize the types of signals and systems for electromagnetic waves. 9. Recognize the introduction Guided Waves. 10. Recognize the applications Guided Waves in medical device. 11. Recognize transmission lines. 12. Recognize Electromagnetic Radiation and Antennas.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: 1- Electrostatic, Electric charge, Coulomb's law, Electrical field intensity, and examples [4 H]. 2- Electric Flux Density and Gauss's Law with examples [4 H]. 3- Steady Magnetic Field, Magnetic Field in life's human with examples [4 H]. 4- Time varying - magnetic field and Maxwell's equations, FARADAY'S LAW, Moving Conductor in a Magnetic Field, Displacement Current and Conduction Current (Ampere's Law), Maxwell's equations in pointing form, Wave equations with examples [12 H]. 5- Uniform plane wave, Wave velocity, Characteristic impedance, Wave propagation in media, Skin effect, The pointing vector and power consideration with examples [8 H]. 6- Guided Waves with examples [12 H]. 7- Transmission lines with examples [8 H]. 8- Electromagnetic Radiation and Antennas with examples [12 H].

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Lectures - means of clarification - intellectual questions - scientific exhibitions - scientific competitions

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10 % (10)	3,5,7,9,11,13	LO # 1, 2 LO # 3, 4 LO # 5, 6 LO # 7, 8 LO # 9, 10 LO # 11, 12
	Assignments	2	10 % (10)	5,13	LO # 3-6, and 6-9
	Projects / Lab.	10	15 % (10)	Continuous	
	Report	1	5 % (10)	14	LO # 1-12
Summative assessment	Midterm Exam	2hr	10 % (10)	7	LO # 1-7
	Final Exam	4hr	50 % (50)	16	ALL
Total assessment			100 % (100)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	General review in electrostatic
Week 2	Gauss's law
Week 3	Steady magnetic field
Week 4	Time varying magnetic field
Week 5-6	Maxwell's equations
Week 7	Midterm exam
Week 8	Plane Wave Propagation and Reflection
Week 9-11	Guided Waves
Week 12-13	Transmission lines
Week 14-15	Electromagnetic Radiation and Antennas Preparing for final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	General review in electrostatic
Week 2	Gauss's law
Week 3	Steady magnetic field
Week 4	Time varying magnetic field
Week 5-6	Maxwell's equations
Week 7-8	Plane Wave Propagation and Reflection
Week 8-10	Guided Waves
Week 11-12	Transmission lines
Week 13-14	Electromagnetic Radiation and Antennas

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Engineering Electromagnetic (fifth edition – by William H. Hayt. JR)	NO
Recommended Texts	Introduction to Communication Systems (Second edition- by Ferrel. G. Stremler)	YES
Websites	1. https://www.coursera.org/search?query=Electromagnetic%20Fields&=null&index=prod_all_launched_products_term_optimization. 2. www.tallguide.com 3. www.ainfoinc.com 4. www.millitech.com 5. www.rfcafe.com 6. www.globalspec.com	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Medical Diagnostic Instrumentation I		Module Delivery
Module Type	Core		☒ Theory Lecture ☒ Lab ☐ Tutorial ☒ Practical ☐ Seminar
Module Code	MITE3101		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	UGIII	Semester of Delivery	5
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Anatomy & Physiology	Semester	UGII - S3
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	The module aims: 1. To generate a grounding knowledge base for the students which allows them understanding the technology and principles applied in a medical environment. 2. To understand the nature of physiological signals and how they can be acquired, analyzed and visualized. 3. To provide a grounding in the theory of biomedical measurement systems, including sensors, signal conditioning methods, measurement techniques, patient interfacing and instrumentation used in biomedicine. 4. To introduce students to design strategies of biomedical devices. 5. To develop prototypes of medical instruments in an accompanying laboratory session. 6. To demonstrate how modern biomedical instruments combine traditional instrumentation techniques and technological innovation, including software presentation and analysis of data. 7. To be able to enter a wide range of medical related industries, clinical environments or professional biomedical research programs.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of the module, students should be able to: 1. (a). Understanding the principles of operation of important sensors used in biomedical instrumentation and measurement. (b). Understanding the technical specifications of commercially produced sensors used for these purposes. 2. (a). Being able to specify and design instrumentation and measurement systems that employ these sensors and which, as appropriate, enable safe interface with the human body. (b). Recognized and understand the characteristics of the physiological signals being measured; 3. (a). Being able to offer realistic solutions to clinical measurement problems and to justify the choices. (b). Having a sufficient knowledge in the subject to be able to investigate and evaluate new designs of biomedical sensors and instruments. (c) Explain the operating principles of biomedical transducers for the measurement of biopotentials (ECG, EMG, EEG, EOG) and other critical physiological variables such as blood pressure, flow, and temperature. 4. (a) Design and build analog signal conditioning circuits that provide reliable biopotential measurements, e.g. ECG. (b) Explain the physical principles underlying the function of biopotential electrodes; (c) Demonstrate knowledge of electrical safety considerations in the medical

	environment. 5. (a) A respirometer is a device used to measure the rate of respiration of a living organism by measuring its rate of exchange of oxygen and/or carbon dioxide. They allow investigation into how factors such as age, or chemicals affect the rate of respiration. (b). The patient monitoring systems in healthcare are collections of machines or equipment used to constantly monitor patients through various vital signs and warning systems to detect and record changes in patient wellbeing. 6. Ambulatory monitors are devices that record the electrical activity in your heart. These are used to detect heart rhythm problems over a longer period of time, and you can take them home with you. They're an invaluable tool when it comes to diagnosing problems that happen unpredictably and outside of a medical setting. 7. Electronic fetal monitoring is a procedure in which instruments are used to continuously record the heartbeat of the fetus and the contractions of the woman's uterus during labor. 8. An endoscope is an inspection instrument composed of image sensor, optical lens, light source and mechanical device, which is used to look deep into the body by way of openings such as the mouth or anus. 9. There are many direct and indirect (noninvasive) methods of measuring cardiac output. Several instruments can measure blood pressure quickly and with little discomfort. A sphygmomanometer is commonly used. 10. There are three different types of eye exams, including a comprehensive eye exam, a routine eye exam, and a contact lens exam. 11. Pulmonary function tests (PFTs) are noninvasive tests that show how well the lungs are working. The tests measure lung volume, capacity, rates of flow, and gas exchange. 12. Patients who have a tumor in or around the ear may undergo audiometry testing to determine whether hearing loss has occurred or to monitor their hearing before and after surgery. 13. (a). An arterial blood gas (ABG) test measures the levels of oxygen and carbon dioxide in your blood as well as the pH balance in your blood. (b). The blood cell counter measure of the number of red blood cells, white blood cells, and platelets in the blood. 14. (a). Hospitals can ensure patient safety and prevent untoward harm to patients who seek treatment with these steps. (b). Apply safety standards and select disposal method and procedures for electrical diagnostic equipment.
Indicative Contents المحتويات الإرشادية	The indicative contents of module include: <u>Biopotential amplifiers:</u> Physiological quantities, basic concepts and principles of medical

instrumentation

Bio-potentials, electrodes and amplifiers, static and dynamic characteristics of measurement systems, noise and noise reduction, sensor characterization.

[5 hr.]

Instrumentation amplifier:

Signal conditioning.

Digital/analog conversion

Electrodes (Oxidation/reduction, electrolytes, electrode electrical models)

Advanced conditioning circuits (noise, interference, shielding, active shielding, driven right leg active ground).

Sensing displacement (strain gauges, LVDTs, piezo crystals, MEMS accelerometers and gyroscopes, optical sensors)

* Bridges (no bridge; 1/4, 1/2, full bridge)

* Electrical safety [10 hrs.]

Introduction to sensors and signal processing:

transducers, sensors and instruments; calibration; accuracy and error; amplifiers; filters; software and hardware signal processing.

Nature of biomedical signals:

physical signals (force, torque, flow, pressure as well as thermal, geometric and kinematic quantities); biopotentials; chemical signals. [10 hr.]

Medical measurement systems:

(EEG, ECG, EMG, EOG, ...)

Measurement constraints in the clinical environment, invasive and non-invasive measurements, Biomedical and chemical biosensors, Measurement of blood pressure, flow and volume, pulse oximetry and respiratory performance; Clinical laboratory instrumentation, and applications in patient monitoring.

[15 hrs.]

Protection and safety:

medical ethics; mechanical safety; electrical safety; biological hazards; chemical safety; radiation protection. [5 hrs.]

Introduction to sensors and signal processing:

transducers, sensors and instruments; calibration; accuracy and error; amplifiers; filters; software and hardware signal processing. (b). Nature of biomedical signals: physical signals (force, torque, flow, pressure as well as thermal, geometric and kinematic quantities); biopotentials; chemical signals.

Transducers of biomedical signals and their application: biopotential electrodes and amplifiers; pressure sensors; flow sensors; optical sensors; electrochemical sensors. [15 hrs.].

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The learning and teaching strategies employed in this module can vary depending on the specific course. However, here are some common strategies that may be used with this course: Teaching methods include: - lectures - seminars - tutorials - lab experiments - design assignments - industrial visits - professional training - a variety of projects Assessment: methods of assessment include a combination of: - coursework - group project reports - lab reports - written exams.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	12	15% (10)	Continuous	
	Report	1	5% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	4 hr	50 % (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Fundamentals of Medical Instrumentation.
Week 2	Bioelectric Signals and Electrodes, Physiological Transducers, Recording System.
Week 3	Biomedical Recorders.(ECG, EMG, EEG, EOG, VCG, PCG, ... etc.).
Week 4	Respiratory System Measurements, Respiration Monitoring and Apnea Detection, Oximeters.
Week 5	Patient Monitoring Systems, Coronary Care Unit (CCU).
Week 6	Arrhythmia and Ambulatory Monitoring Instruments.
Week 7	Midterm exam
Week 8	Fetal Monitoring Instruments/Systems.
Week 9	Blood Flow and Cardiac Output Measurements and Devices. Endoscopy.
Week 10	Advanced Vision and Eye Testing Instruments
Week 11	Pulmonary Function System.
Week 12	Pulmonary Function System.
Week 13	Equipment for Diagnostic Audiology and Hearing Tests.
Week 14	Patient Safety, Regulations and Safety Measures.
Week 15	Recap and Final Assessments: Review of the Entire Syllabus, Revision Sessions, and Preparing for final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Introduction to the Medical diagnostic instrumentation lab.
Week2	Biomedical signals recorders (ECG)
Week3	Biomedical signals recorders (ECG)
Week 4	Biomedical signals recorders (EMG, EEG, ERG, EOG).
Week 5	Equipment for patient monitoring systems, (CCU), and ambulatory monitoring instruments.
Week 6	Equipment for fontal monitoring system.
Week 7	Equipment for cardiac output measurements..
Week 8	Equipment for blood flow measurement.
Week 9	Endoscopy.
Week 10	Advanced vision and eye testing instruments (Ophthalmoscopy, Retinoscopy, Ocular tonometry, Slit lamp, Optical coherence tomography, ...etc.).
Week 11	Advanced vision and eye testing instruments (Ophthalmoscopy, Retinoscopy, Ocular tonometry, Slit lamp, Optical coherence tomography,.....etc.).
Week 12	Pulmonary function testing equipment and machines (Spirometer, Body plethysmograph., Pulmonary gas analyzer, Gas-conditioning device, Blood gas analyzer, Silverman pneumotachometer, Pulse oximeter, ...etc.).
Week 13	Equipment for diagnostic audiology (ABR, AOE, Audiometers, Tympanometry, Hearing aid fitting systems, Balance testing equipment etc.).
Week 14	Equipments for diagnostic audiology (ABR, AOE, Audiometers, Tympanometry, Hearing aid fitting systems, Balance testing equipment.... etc.).
Week 15	Preparatory week before the final exam.
Week 16	Final test.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. Khandpur, R. S. (1990). Handbook of Biomedical	Yes
	Instrumentation, Tata McGraw Hill Publishing Co. 2. Joseph D. Bronzino (2006). The Biomedical Engineering Handbook, 3rd. Edition. Germany: Taylor & Francis.	

Recommended Texts	1. Press. Joseph D. Bronzino (2006). Medical Devices and Human Engineering. (2017). United Kingdom: CRC Press. 2. Khandpur, R. S. (2004). Biomedical Instrumentation: Technology and Applications. India: McGraw Hill LLC. 3. Brown, J. M., Carr, J. J. (2001). Introduction to Biomedical Equipment Technology. India: Prentice Hall.	No
Websites		

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Microprocessor		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab Tutorial Practical Seminar
Module Code	MITE3102		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGIII	Semester of Delivery	5
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Digital electronics	Semester	UGII-S4
Co-requisites module	none	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1- The student knows the definition of Microprocessor 8085. 2- How to engage colleagues and stakeholders in managing information, knowledge and communication systems. 3. Design and implementation of 8085 microprocessors. 4- Principles, methods, tools and techniques for keeping information, knowledge and communication secure and how to establish appropriate security levels and approaches. 5- How to evaluate current information, knowledge and communication systems and their capability and capacity to meet future needs. 6- Information, knowledge and communication technologies, their features and benefits for your needs. 7- Suppliers of information, knowledge and 8085MP and their capabilities.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon completion of the course, students should be able to: 1- Understand the difference between microprocessor and microcontroller 2- Understand application of microprocessor in medical devices 3- Know characteristics of 8085 microprocessor 4- Know the architecture of 8085 microprocessor 5- Know the pins of 8085 microprocessor IC 6- Know the op-code of instructions 7- Know how to transfer data between memory and processor programmatically 8- Know how to build program to execute any arithmetic operation 9- Know how to build program to execute any logical operation 10- Know how to build program by using branching instruction for multitask 11- Know how to calculate time delay of any program code 12- Know how to draw time diagram of any instruction 13- Know the types of memories
Indicative Contents المحتويات الإرشادية	1. Microprocessor, microcontroller (6hrs) 2. Microprocessor architecture, registers, accumulator, flag (8 hr.) 3. Carry, auxiliary carry, parity (4 hr.) 4. Stack pointer, decoder, arithmetic/logic unit (6 hr.) 5. Interrupt, serial I/O, address buffer, bus organization (6 hr.) 6. Direct memory access, hold acknowledge (4 hr.) 7. Instructions, data transfer instructions (8 hr.) 8. Arithmetic, logical, branching, control instructions (15 hr.) 9. Time diagram, time delay, opcode (6 hr.)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Daily assessment - weekly assessment - quarterly assessment - objective questions - general questions - practical tests.

Student Workload (SWL)

الحمل الدراسي للطلاب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعياً	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	56	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعياً	4
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	20% (10)	3, 6, 8, 11	LO # 1-2 ,4-5, 6-7, 8-10
	assessment	2	10% (10)	9, 13	LO # 8 and 11-12
	Projects / Lab.	6	10% (10)	7, 12	LO # 1-6 and 7-11
	Report	NA			
Summative assessment	Midterm Exam	2 hr.	10% (10)	7	LO # 1-7
	Final Exam	4hr.	50% (50)	14	All
Total assessment			100% (100)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction to microprocessor and microcomputer
Week 2	MP architecture
Week 3	MP IC pins
Week 4	bus signal
Week 5	Introduction to Instruction set MP and addressing mode

Week 6	Data transfer instructions
Week 7	Mid-term Exam +
Week 8	Arithmetic instructions
Week 9	Logical instructions Branching instructions
Week 10	Review instructions and Tutorial
Week 11	Op-code and machine cycle
Week 12	Timing diagram of instructions
Week 13	Time delay of code
Week 14	Types and architecture for memory
Week 15	Preparatory week before the final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Lab 1: introduction to 8085 simulators
Week 2	Lab 2: move data
Week 3	Lab 3: ADD two data
Week 4	Lab 4: SUB two data
Week 5	Lab 5: multiplication of two 8-bit data
Week 6	Lab 6: division of two 8-bit data
Week 7	Lab 7: OR, AND two data
Week 8	Lab 8: largest number
Week 9	Lab 9: smallest number
Week 10	Lab 10: copy memory locations array
Week 11	Lab 11: count blank memory locations
Week 12	Lab 12: exchange two memory locations array
Week 13	Lab 13: find first and second complement
Week 14	Lab 14: rotate 8-bit data

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Recommended Texts	Microprocessor Architecture, Programming and Applications with the 8085 (6th Edition)	NO
Websites	https://www.mediafire.com/file/xnu0xfknbp9bml/sim8085_win_7.rar/file	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Signals and Systems		Module Delivery
Module Type	Core	☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MITE3104		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGIII	Semester of Delivery	5
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Engineering Mathematics	Semester	UGII-S3
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	✓ Understand and classify signals based on their characteristics and properties. ✓ Study basic continuous-time and discrete-time signals to establish a foundation for signal analysis. ✓ Analyze systems and classify them according to their characteristics and behavior. ✓ Investigate the response of continuous-time LTI systems using convolution integral and understand its implications for signal processing. ✓ Explore the properties and behaviors of LTI systems described by differential equations or difference equations to model and analyze real-world systems. ✓ Learn the Laplace Transform and its applications in analyzing continuous-time signals and systems. ✓ Understand the concept of the system function in the Laplace domain and its role in analyzing continuous-time LTI systems. ✓ Study the Z-Transform and its applications in analyzing discrete-time signals and systems. ✓ Understand and represent periodic signals using Fourier series. ✓ Analyze continuous-time signals using the Fourier transform. ✓ Explore properties of the continuous-time Fourier transform. ✓ Study the frequency response of continuous-time LTI systems, including filtering and bandwidth. ✓ Investigate Fourier analysis of discrete-time signals and systems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of the module, students should be able to: ✓ Demonstrate a comprehensive understanding of signal types. ✓ Demonstrate a systematic knowledge of the classification of signals. ✓ Gain the ability to analyze basic continuous-time and discrete-time signals effectively. ✓ Demonstrate an understanding of the principles of LTI system. ✓ Learn how to use the Laplace transform for signal and system analysis in the frequency domain. ✓ Demonstrate an understanding of time analysis of signals and systems. ✓ Demonstrate an understanding of frequency analysis of signals and systems. ✓ Critically evaluate the LTI system response. ✓ Ability to transform signal and system Z domain -. ✓ Demonstrate the techniques of synthesize signals using Fourier series.
Indicative Contents المحتويات الإرشادية	Signals and classification of signals, basic continuous-time signals, basic discrete-time signals [7 hr.] Systems and classification of systems, response of a continuous-time LTI system and the convolution integral, properties of continuous-time LTI systems, eigenfunctions of continuous-time LTI systems, systems described by differential equations, response of a discrete-time LTI system and convolution sum, properties and eigenfunctions of discrete-time LTI systems [10 hr.] The Laplace transforms, Laplace transform of some common signals, properties of the Laplace transform, the inverse Laplace transform, the system function, the unilateral Laplace transform. The z-transform, z-transform of some common sequences, properties of the z-transform, the inverse z-transform, the system function of discrete-time LTI systems, the unilateral z- transform [14 hr.]. Fourier Analysis of Continuous-Time Signals and Systems, Fourier series representation of periodic signals the Fourier transform, properties of the continuous-time Fourier transform. The

	frequency response of continuous-time LTI systems. Fourier Analysis of Discrete-Time Signals and Systems, discrete Fourier series, the Fourier transform and its properties. System response to sampled continuous-time sinusoids [17 hr.].

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The major strategy for presenting this module will be to encourage students to participate in the tasks while also polishing and improving their critical thinking skills. This will be accomplished through courses, interactive lectures, and the consideration of small experiments involving various sample tasks that are engaging to the students and help them learn more about the module.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	Unstructured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	✓ SIGNALS AND CLASSIFICATION OF SIGNALS
Week 2	✓ BASIC CONTINUOUS-TIME SIGNALS ✓ BASIC DISCRETE-TIME SIGNALS
Week 3	✓ SYSTEMS AND CLASSIFICATION OF SYSTEMS ✓ RESPONSE OF A CONTINUOUS-TIME LTI SYSTEM AND THE CONVOLUTION INTEGRAL ✓ PROPERTIES OF CONTINUOUS-TIME LTI SYSTEMS
Week 4	✓ EIGENFUNCTIONS OF CONTINUOUS-TIME LTI SYSTEMS ✓ SYSTEMS DESCRIBED BY DIFFERENTIAL EQUATIONS ✓ RESPONSE OF A DISCRETE-TIME LTI SYSTEM AND CONVOLUTION SUM
Week 5	✓ PROPERTIES OF DISCRETE-TIME LTI SYSTEMS ✓ EIGENFUNCTIONS OF DISCRETE-TIME LTI SYSTEMS ✓ SYSTEMS DESCRIBED BY DIFFERENCE EQUATIONS
Week 6	✓ THE LAPLACE TRANSFORM ✓ LAPLACE TRANSFORM OF SOME COMMON SIGNALS ✓ PROPERTIES OF THE LAPLACE TRANSFORM ✓ Mid Exam
Week 7	✓ THE INVERSE LAPLACE TRANSFORM
Week 8	✓ THE SYSTEM FUNCTION ✓ THE UNILATERAL LAPLACE TRANSFORM
Week 9	✓ THE Z-TRANSFORM ✓ Z-TRANSFORM OF SOME COMMON SEQUENCES ✓ PROPERTIES OF THE Z-TRANSFORM
Week 10	✓ THE INVERSE Z-TRANSFORM ✓ THE SYSTEM FUNCTION OF DISCRETE-TIME LTI SYSTEMS ✓ THE UNILATERAL Z-TRANSFORM
Week 11	<u>Fourier Analysis of Continuous-Time Signals and Systems</u> ✓ FOURIER SERIES REPRESENTATION OF PERIODIC SIGNALS ✓ THE FOURIER TRANSFORM ✓ PROPERTIES OF THE CONTINUOUS-TIME FOURIER TRANSFORM
Week 12	✓ THE FREQUENCY RESPONSE OF CONTINUOUS-TIME LTI SYSTEMS ✓ FILTERING ✓ BANDWIDTH
Week 13	<u>Fourier Analysis of Discrete-Time Signals and Systems</u> ✓ DISCRETE FOURIER SERIES ✓ THE FOURIER TRANSFORM ✓ PROPERTIES OF THE FOURIER TRANSFORM
Week 14	✓ THE FREQUENCY RESPONSE OF DISCRETE-TIME LTI SYSTEMS ✓ SYSTEM RESPONSE TO SAMPLED CONTINUOUS-TIME SINUSOIDS
Week 15	✓ DIGITAL SIMULATION OF ANALOG SYSTEMS Preparing for final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	SIGNAL REPRESENTATIONS
Week 2	RESPONSE OF A DISCRETE-TIME LTI SYSTEM AND CONVOLUTION SUM
Week 3	
Week 4	
Week 5	SYSTEMS DESCRIBED BY DIFFERENCE EQUATIONS
Week 6	PROPERTIES OF THE Z-TRANSFORM
Week 7	
Week 8	FOURIER SERIES REPRESENTATION OF PERIODIC SIGNALS
Week 9	
Week 10	DISCRETE FOURIER TRANSFORM
Week 11	
Week 12	THE FREQUENCY RESPONSE OF DISCRETE-TIME LTI SYSTEMS
Week 13	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts	S. Palani, SIGNALS AND SYSTEMS, Springer International Publishing, 2021	
Websites		

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Computer Programming and Applications (C++ programming)		Module Delivery
Module Type	Basic		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE3105		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	UGIII	Semester of Delivery	
Administering Department	MITE	College	TEC
Module Leader			e-mail
Module Leader's Acad. Title			Module Leader's Qualification
Module Tutor			e-mail
Peer Reviewer Name			e-mail
Scientific Committee Approval Date			Version Number
			2.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Understanding the fundamental concepts of C++ programming language environment. 2. The students will understand and learn how to use C++ as an effective programming language. 3. The students will be able to solve different mathematical and engineering problems as well as design projects using code. 4. Students will acquire the knowledge of basic C++ syntax such as: variables, input, output, vectors, matrices, functions. 5. The students will gain the necessary skills to design and implement appropriate algorithms that solve problems dealing with different mathematical and engineering applications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Introducing the history and philosophy of C and C++, how C++ adds generic programming concepts to the C language, programming language standards, the mechanics of creating a program. 2. The students learn how to create a C++ program and the general format for a C++ program 3. The “# include directive”, the main () function, how to use the cout object for output, how to place comments in a C++ Program, how and when to use endl, how to declare and use variables, how to use the “cin” object for input, how to define and use simple functions. 4. Learn rules for naming C++ variables, C++ built-in integer types, numeric constants of various integer types, using the const qualifier to create symbolic constants, C++’s built-in floating-point types, C++’s arithmetic operators, automatic type conversions, forced type conversions (type casts). 5. How to create and use arrays, how to create and use C-style strings. 6. How to create and use string class strings, how to use the “getline ()”. 7. Learn how to create and use structures, how to create and use pointers, how to create dynamic arrays, how to create dynamic structures, automatic, static, and dynamic storage. 8. Understand the for loop, expressions and statements, the increment and decrement operators: ++ and --, combination assignment operators, compound statements (blocks). 9. The if statement, the if else statement, logical operators: “&&”, “ ”, and “!”, the “ctype” library of character functions, the conditional operator, the switch statement, the continue and break statements, number-reading loops, basic file input/output. 10. The C++ view of input and output, the “iostream” family of classes redirection,

	ostream class methods, formatting output, “istream” class methods, stream states, file I/O, using the “ifstream” class for input from files, using the “ofstream” class for output to files, using the “fstream” class file input and output, command-line processing, binary files.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Introducing to the history and philosophy of C and of C++, How C++ adds object-oriented, concepts to the C language, How C++ adds generic programming concepts to the C language, programming language standards, and the mechanics of creating a program. How to create a C++ program, the general format for a C++ program the #include directive, the “main ()” function, how to use the cout object for output, how to place comments in a C++ program, how and when to use “endl”, how to declare and use variables, how to use the “cin” object for input, and how to define and use simple functions. Rules for naming C++ variables, C++’s built-in integer types, Numeric constants of various integer types, Using the “const” qualifier to create symbolic constants, C++’s built-in floating-point types, C++’s arithmetic operators, automatic type conversions, and forced type conversions (type casts). [15 hrs.] How to create and use arrays, how to create and use C-style strings ,how to create and use string class strings, How to use the “getline ()” and how to create and use arrays, how to create and use C-style strings, how to create and use string class strings, How to use the “getline (): and “get()” methods for reading strings, How to mix string and numeric input, how to create and use structures, how to create and use pointers, how to create dynamic arrays, and how to create dynamic structures, automatic, static, and dynamic storage. The for loop, Expressions and statements, The increment and decrement operators: ++ and --, Combination assignment operators, Compound statements (blocks), The comma operator, Relational operators: >, >=, ==, <=, <, and !=, The while loop, The do while loop, The get() character input method, The end-of-file condition, Nested loops and two-dimensional arrays.[15 hrs.] The if statement, The if else statement, Logical operators: &&, , and! The ctype library of character functions, The conditional operator?:. The switch statement, the continue and break statements, number-reading loops, and basic File input/output [10 hrs] The C++ view of input and output, the “iostream” family of classes Redirection, “ostream” class methods, formatting output, “istream” class methods, stream states, file I/O, using the “ifstream” class for input from files, using the “ofstream” class for output to files, using the “fstream” class file input and output, command-line processing, binary files, and random file access. [15 hrs.] Revision problem classes [5 hrs.]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

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

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعاً

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	36	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	20% (20)	5 and 10	LO #1, #2 and #10,
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Project/Lab	5	10% (10)	2 and 13	LO #2, #4 and #5, #9
	Report	N/A			
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introducing history and philosophy of C and C++, How C++ adds object-oriented, concepts to the C language, How C++ adds generic programming concepts to the C language, Programming language standards, and the mechanics of creating a program.
Week 2	How to create a C++ program, general format for a C++ program, “#include” directive, The main () function, how to use the “cout” object for output, how to place comments in a C++ program, how and when to use “endl”, how to declare and use variables, how to use the “cin” object for input, and how to define and use simple functions.
Week 3 &4	Rules for naming C++ variables, C++’s built-in integer types, numeric constants of various integer types, using the “const” qualifier to create symbolic constants, C++’s built-in floating-point types, C++’s arithmetic operators, automatic type conversions, and forced type conversions (type casts).
Week 5	How to create and use arrays, how to create and use C-style strings, how to create and use string class strings, how to use the “getline()” and “get ()” methods for reading strings,
Week 6	How to mix string and numeric input, how to create and use structures, how to create and use pointers, and how to create dynamic arrays. How to create dynamic structures, automatic, static, and dynamic storage.
Week 7	Mid-term Exam
Week 8	The for loop, Expressions and statements, increment and decrement operators: ++ and --, combination assignment operators, compound statements (blocks), comma operator, and relational operators: >, >=, ==, <=, <, and !=.
Week 9	While loop, do “while” loop, and “get ()” character input method.
Week 10	The end-of-file condition, nested loops and two-dimensional arrays.
Week 11	if statement, if else statement, logical operators: &&, , and !”, “cctype” library of character functions, and conditional operator: ?.
Week 12	“Switch” statement, “continue” and “break” statements, number-reading loops, and basic File input/output.
Week 13 &14	C++ view of input and output, the “io-stream” family of classes redirection, “io-stream” class methods, formatting output, “io-stream” class methods, stream states, file I/O, using the “ifstream” class for input from files, and using the “ofstream” class for output to files.
Week 15	Command-line processing, binary files, random file access, and “Incore” formatting Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبرات

	Material Covered
Week 1	Introduction, C++ Environment.
Week 2	The general format for a C++ program, the #include directive, The main () function, how to use the cout object for output, how to place comments in a C++ Program, how and when to use endl, how to declare and use variables, how to use the cin object for input, and how to define and use simple functions.
Week 3	
Week 4	Variables and assignment statement, logical operator.
Week 5	
Week 6	Using the const qualifier to create symbolic constants, C++'s built-in floating-point types, and C++'s arithmetic operators.
Week 7	
Week 8	Arrays, Built in functions, Basic Matrix Functions
Week 9	
Week 10	Control Statements (Conditional statements: If, Else, Elseif, switch case)
Week 11	
Week 12	How to create dynamic structures, automatic, static, and dynamic storage.
Week 13	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	P.B. Mahapatra "C++"	yes
Recommended Texts	A Complete Guide to Programming in C++ Ulla Kirch-Prinz Peter Prinz	
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering http://www.lmpt.univ-tours.fr/~volkov/C++.pdf	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Project Management		Module Delivery
Module Type	Support learning activity		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☒ Seminar
Module Code	MITE3106		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	UGIII	Semester of Delivery	5
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. Introduce the fundamental concepts and principles of project management. 2. Develop an understanding of project planning, scheduling, and controlling techniques. 3. Explore cost accounting methods and their application in project management. 4. Gain knowledge of machine replacement, materials handling, and inventory control in projects 5. Learn about time management techniques and their significance in project management.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Define and explain the key elements, objectives, and phases of project management. 2. Apply project planning, scheduling, and controlling techniques effectively. 3. Utilize project planning techniques such as Gantt charts, Critical Path Method (CPM), and Project Evaluation and Review Technique (PERT). 4. Understand the concept of crashing project networks to expedite project completion. 5. Apply cost accounting methods, including unit cost calculations and break-even analysis. 6. Demonstrate knowledge of depreciation accounting methods: straight-line, sum-of-years digits, reducing balance, and double-declining balance. 7. Evaluate machine replacement decisions in project management. 8. Analyze materials handling strategies in project environments. 9. Apply Material Requirements Planning (MRP) concepts in project settings. 10. Understand inventory control techniques and their relevance to project management. 11. Implement time management strategies to optimize project efficiency.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1. Introduction to Project Management: Elements, Objectives, and Phases (5) 2. Planning and Controlling in Projects (5) • Planning • Scheduling • Controlling

	3. Project Planning Techniques (5) • Gantt chart • Critical Path Method (CPM) • Project Evaluation and Review Technique (PERT) 4. Crashing of Project Network (5) 5. Cost Account Methods (5) • Unit Cost Calculations • Break-Even Analysis Method 6. Depreciation Accounting Methods (5) • Straight-line Method • Sum-of-Years Digits (SOYD) Method • Reducing Balance (RB) Method • Double-Declining Balance (DDB) Method 7. Machine Replacement (2) 8. Materials Handling (2) 9. Material Requirements Planning (MRP) (2) 10. Inventory Control (2) 11. Time Management (2)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	• Lectures to introduce key concepts and theories. • Case studies and practical examples to illustrate application in real-world scenarios. • Group discussions and activities to promote active learning and collaboration. • Assignments and projects to apply learned techniques and tools. • Continuous Feedback: Provide regular feedback to support student progress and understanding.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	27	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	2
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	20% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.				
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr.	10% (10)	7	LO # 1-7
	Final Exam	3hr.	50% (50)	16	All
Total assessment			100% (100)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Project Management: Introduction, Elements, Objectives and Phases
Week 2	Planning and Controlling in Projects: Planning, Scheduling and Controlling
Week 3	Project Planning Techniques - Gantt chart
Week 4	Project Planning Techniques - Critical Path Method (CPM)
Week 5	Project Planning Techniques - Project Evaluation and Review Technique (PERT)
Week 6	Crashing of project network Cost Account Methods (Unit Cost Calculations)
Week 7	Mid-Exam
Week 8	Cost Account Methods (Break Even Analysis Method)
Week 9	Depreciation Accounting Methods:

	(1) Straight-line Method (2) Sum-of- Years Digits (SOYD) Method
Week 10	Depreciation Accounting Methods: (3) Reducing Balance (RB) Method (4) Double-Declining Balance (DDB) Method
Week 11	Machine Replacement
Week 12	Materials Handling
Week 13	Material Requirements Planning (MRP)
Week 14	Inventory Control
Week 15	Time Management Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Project Management: Introduction, Elements, Objectives and Phases
Week 2	Planning and Controlling in Projects: Planning Scheduling Controlling
Week 3	Project Planning Techniques Gantt chart
Week 4	Project Planning Techniques Critical Path Method (CPM)
Week 5	Project Planning Techniques Project Evaluation and Review Technique (PERT)
Week 6	Crashing of project network
Week 7	Cost Account Methods Unit Cost Calculations
Week 8	Cost Account Methods Break Even Analysis Method
Week 9	Depreciation Accounting Methods: (1) Straight-line Method (2) Sum-of- Years Digits (SOYD) Method

	(3) Reducing Balance (RB) Method Double-Declining Balance (DDB) Method
Week 10	Machine Replacement
Week 11	Materials Handling
Week 12	Material Requirements Planning (MRP)
Week 13	Inventory Control
Week 14	Time Management

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Project Management: A Systems Approach to Planning, Scheduling, and controlling" by Harold Kerzner	Yes
Recommended Texts	"Project Management: The Managerial Process" by Clifford Gray and Erik Larson	No
Websites	Lecture Slides: Prepared lecture slides covering the key concepts, frameworks, and techniques of project management will be provided to students.	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Medical Communication systems		Module Delivery
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE 3203		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGIII	Semester of Delivery	6
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Signals and systems	Semester	UGIII-S5
Co-requisites module		Semester	

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

Module Aims أهداف المادة الدراسية	1. To learn the types of digital and analog modulation 2. To distinguish the difference between digital and analogue modulation 3. To learn the types of impulse modulation. 4. To learn spread spectrum systems 5. To learn the biomedical sensor network 6. To learn mobile communications (3G / 4G) 7. To learn telemedicine and healthcare systems 8. To learn the Internet of Things in medical applications
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand and mitigate noise in communication systems. 2. Master the basics of sampling. 3. The student learns the types of digital and analog modulation. 4. The student distinguishes the difference between digital and analogue modulation. 5. The student learns the types of impulse modulation. 6. The student learns spread spectrum systems 7. The student learns the biomedical sensor networks. 8. Learn wireless sensor networks. 9. The student learns mobile communications (3G / 4G) 10. The student learns telemedicine and healthcare systems 11. The student learns the Internet of Things in medical applications
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: 1. Communication System and types [4 H]. 2. AM and Fm modulation system and types and examples [4 H]. 3. Sampling, PAM, PWM, PPM, and PCM and examples [10 H]. 4. Digital Modulation Techniques, ASK, FSK, and PSK examples [8 H]. 5. Spread Spectrum Systems, Wireless Sensor Network, Biomedical Sensor Network, and Mobile Communication (3G/4G) and examples [20 H]. 6. Telemedicine and Health care Systems, IoT in Medical Applications and examples [8 H].

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Lectures - means of clarification - intellectual questions - scientific exhibitions - scientific competitions

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10 % (10)	4, 8, 12, 14	LO # 1, 2, 3 LO # 4, 5, 6. LO # 7, 8, 9. LO # 10, 11
	Assignments	2	10 % (10)	5,13	LO # 1-4, and 5-11
	Projects / Lab.	2	10 % (10)	Continuous	
	Report	14	10 % (10)	14	LO # 1-11
Summative assessment	Midterm Exam	2h	10 % (10)	7	LO # 1-6
	Final Exam	4h	50 % (50)	16	ALL
Total assessment			100 % (100)		

Delivery Plan (Weekly Syllabus) المنهاج الأسبوعي النظري	
	Material Covered
Week 1	Noise in Communication Systems
Week 2-3	Sampling, PAM, PWM, PPM, and PCM
Week 4-5	Digital Modulation Techniques
Week 6	Spread Spectrum Systems

Week 7	Mid-Exam
Week 8	Wireless Sensor Network
Week 9-10	Biomedical Sensor Network
Week 11-12	Mobile Communication (3G/4G)
Week 13	Telemedicine and Health care Systems
Week 14	IoT in Medical Applications
Week 15	Preparing for final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1-2	Amplitude Modulation large carrier and Amplitude Modulation suppressed carrier
Week 3	Frequency Modulation
Week 4	Amplitude Demodulation
Week 5	PAM
Week 6	PWM
Week 7	PPM
Week 8	ASK
Week 9	FSK
Week 10	PWM
Week 11	BPSK
Week 12	Biomedical Sensor Network
Week 13	Telemedicine and Health care Systems
Week 14	IoT in Medical Applications

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Introduction to Communication Systems	NO
Recommended Texts	Introduction to Communication Systems (Second edition- by Ferrel. G. Stremler)	YES
Websites	1. https://www.coursera.org/search?query=Electromagnetic%20Fields&=null&index=prod_all_launched_products_term_optimization. 2. www.tallguide.com 3. www.ainfoinc.com 4. www.millitech.com 5. www.rfcafe.com 6. www.globalspec.com	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Medical Diagnostic Instrumentation II		Module Delivery
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☐ Seminar
Module Code	MITE3201		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	UG-III	Semester of Delivery	6
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Medical Diagnostic Instrumentation I	Semester	UG-III - S5
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	The module aims: 1. To provide a grounding in the theory of relevant biomedical measurement systems including sensors, signal acquisition and conditioning principles, measurement techniques and instrumentation and detectors; 2. To impart the basic theory and physiological interactions of medical imaging modalities (including microscopy, endoscopy, x-ray, ultrasound, CT, MRI, PET and IR) and review applications and image-guided interventions; 3. To teach the basic physiological and anatomical principles of surgical interventions, interventional radiology and how the imaging objectives relate to disease and treatment 4. To review the working principles of existing surgical technology including robotics and how this addresses the surgical intent, including current minimal access techniques and understand the implications for image guidance. 5. To provide a basic understanding of the process of invention and its management; an introduction to entrepreneurship and its interface with invention; product development and its relationship to invention, resultant intellectual property and entrepreneurship
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of the module, students should be able to: 1. Understand the principles of operation of relevant sensors and detectors used in biomedical measurement for imaging and their technical specifications. 2. Be able to apply a range of signal analysis and signal processing methods. 3. Understand how medical imaging systems work, how they interact with the tissue, how their images can be interpreted and the limitations of their application. 4. Be familiar with a range of medical imaging applications for different pathologies, including cellular, molecular imaging and interventions. 5. Know how image guidance interacts and operates with instruments and equipment in surgical intervention including robotics. Understand the equipment and instruments required and how it is use. 6. Understand the requirements in quality spatial, contrast and time resolution of imaging modalities used for different outcomes. 7. have knowledge of the research and engineering methods applied in the development of medical imaging. 8. Basic knowledge and understanding of the inventive process and its

	management, the entrepreneurial basis of business development; exploitation and value of Intellectual Property. 9. This gives you a solid understanding of how engineering improves patient care. 10. Having the opportunity to gain valuable experience within a clinical environment – learning about the anatomy and functions of the human biology. 11. Develop research and business management skills within the biomedical industry. 12. the application of engineering principles and design concepts to human biology and medicine, to solve challenges in the healthcare industry. 13. Gain an all-rounded understanding of where and how the technologies you develop will be used.
Indicative Contents المحتويات الإرشادية	The indicative contents of module include: <u>Part A:</u> • Physiologic quantities, basic concepts and principles of medical imaging instrumentation. • Signal types, measurement and sensor system properties, transfer functions, Fourier analysis, spectral analysis and filtering theory. [8 hrs.] <u>Part B:</u> • Characteristics of detection systems, amplification, noise/noise reduction and biomedical sensor and detector types. • Measurement constraints in the physical environment. [8 hrs.] <u>Part C:</u> • Principles and exemplar applications of x-ray and CT imaging. • Principles and exemplar applications of Nuclear and PET imaging. • Principles of MRI imaging, MRI applications and MRI-guided interventions, MRI safety. • Current and future developments of medical optical and photonics imaging, fluorescence, confocal, single/multiphoton, Raman, NIR. [8 hrs.] <u>Part D:</u> • Overview of diagnostic and interventional ultrasound and review of likely future developments. • Introduction to the objectives and practice of clinical diagnostic imaging. [12 hrs.]

	<u>Part E:</u> • Introduction to interventional principles, overview of instrumentation and devices, open, minimally invasive and image guided surgery. [12 hrs.]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The learning and teaching strategies employed in this module can vary depending on the specific course. However, here are some common strategies that may be used with this course: <u>Teaching methods include:</u> • lectures • seminars • tutorials • lab experiments • design assignments • industrial visits • professional training • a variety of projects <u>Assessment :</u> methods of assessment include a combination of: • coursework • group project reports • lab reports • written exams.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	15	10% (10)	Continuous	
	Report	15	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr.	10% (10)	7	LO # 1-7
	Final Exam	4 hr.	50 % (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction to Modern Imaging Systems.
Week 2	X-ray Machines and Digital Radiography.
Week 3	X-ray Machines and Digital Radiography.
Week 4	X-ray Computed Tomography.
Week 5	X-ray Computed Tomography, Electrical Impedance Tomography.
Week 6	Magnetic Resonance Imaging System.
Week 7	Mid-Exam +
Week 8	Nuclear Medical Imaging Systems, Single- Photon – Emission Computed Tomography (SPECT).
Week 9	Nuclear Medical Imaging Systems, Gamma Camera, Positron Emission Tomography (PET) Scanner.

	Ultrasonic Imaging Systems, Three – Dimensional Ultrasound Imaging Systems, Portable Ultrasound Systems.
Week 10	Modern Ultrasound Imaging Systems.
Week 11	Thermal Imaging Systems.
Week 12	Magnetic Resonance Microscopy, Medical Applications of Virtual Reality Technology.
Week 13	Biomedical Telemetry.
Week 14	Telemedicine Technology.
Week 15	Recap and Final Assessments: Review of the Entire Syllabus, Preparing for final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	X-ray Machines and Digital Radiography.
Week2	X-ray Machines and Digital Radiography.
Week 2	X-ray Computed Tomography.
Week 3	X-ray Computed Tomography.
Week 4	Magnetic Resonance Imaging System.
Week 5	Magnetic Resonance Imaging System.
Week 6	Nuclear Medical Imaging Systems.
Week 7	Nuclear Medical Imaging Systems.
Week 8	Ultrasonic Imaging Systems.
Week 9	Ultrasonic Imaging Systems.
Week 10	Modern Ultrasound Imaging Systems.
Week 11	Thermal Imaging Systems.
Week 12	Biomedical Telemetry.
Week 13	Telemedicine Technology.
Week 14	Medical Applications of Virtual Reality Technology.
Week 15	Preparatory Week Before the Final Exam.,

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. Khandpur, R. S. (1990). Handbook of Biomedical Instrumentation, Tata McGraw Hill Publishing Co. 2. Joseph D. Bronzino (2006). The Biomedical Engineering Handbook, 3rd. Edition. Germany: Taylor & Francis.	Yes
Recommended Texts	1. Press. Joseph D. Bronzino (2006). Medical Devices and Human Engineering. (2017). United Kingdom: CRC Press. 2. Khandpur, R. S. (2004). Biomedical Instrumentation: Technology and Applications. India: McGraw Hill LLC. 3. Brown, J. M., Carr, J. J. (2001). Introduction to Biomedical Equipment Technology. India: Prentice Hall.	No
Websites	https://www.intuitive.com/en-us/products-and-services/da-vinci/learning .	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Medical Electronic Systems		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE3202		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGIII	Semester of Delivery	6
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Electronic circuits II	Semester	UGII-S4
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. To provide students with an understanding of electronic systems and their applications in the medical field. 2. To develop students' knowledge and skills in designing, analyzing, and troubleshooting electronic circuits used in medical devices. 3. To familiarize students with the principles and operation of regulated power supplies, switching regulators, clippers, clampers, voltage multiplier circuits, and their practical applications in medical electronic systems. 4. To enhance students' ability to apply theoretical knowledge to practical scenarios and develop critical thinking skills in the context of medical electronics.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Demonstrate a comprehensive understanding of electronic systems and their relevance in the medical field. 2. Design and analyze regulated power supplies, switching regulators, clippers, clampers. 3. Design and analyze voltage multiplier circuits used in medical electronic systems. 4. Explain the principles and operation of regulated power supplies, switching regulators, clippers, clampers, and voltage multiplier circuits. 5. Apply theoretical knowledge to solve problems and troubleshoot electronic circuits used in medical devices. 6. Evaluate the suitability of different electronic circuits for specific medical applications. 7. Critically analyze and interpret data obtained from electronic measurements in medical electronic systems. 8. Communicate effectively and professionally about medical electronic systems, both orally and in writing. 9. Understand analog-to-digital conversion (ADC) 10. Grasp digital-to-analog conversion (DAC)
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A: Regulated power supplies (Rectification) (20hrs)</u> • Introduction to medical electronic systems • Half-wave and full-wave rectification • Understanding diodes and their characteristics

	• Rectifier circuits and waveforms • Capacitor filtering and its role in power supplies • Ripple factor and its significance in regulated power supplies • Calculation of filter capacitance • Design considerations for capacitor filters in medical devices • Linear voltage regulators and their operation • Zener diode regulators • IC regulators <u>Part B: Clippers & Clampers (20hrs)</u> • Introduction to clippers and their role in signal conditioning • Diode clippers and their characteristics • Design considerations for clipping circuits • Applications of clippers in medical electronic systems • Positive and negative clampers • Design and analysis of clamping circuits • Use cases and limitations of clampers in medical devices. <u>Part C: Operational Amplifiers (Op-Amps) (20hrs)</u> • Introduction to operational amplifiers and their applications in medical electronic systems • Op-Amp characteristics and ideal behavior • Practical applications <u>Part D: Filters (LPF, HPF, PBF and PSF) (10hrs)</u>

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• Active Learning: Engage students through hands-on experiments, discussions, and problem-solving activities. • Practical Applications: Connect theoretical knowledge to real-world medical devices and systems. • Hands-on Experiments: Provide laboratory experiences to reinforce theoretical knowledge and develop practical skills. • Technology Integration: Utilize simulation software and virtual labs for circuit analysis and design. • Continuous Feedback: Provide regular feedback to support student progress and understanding.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction to medical electronic systems
Week 2	Regulated power supplies (Rectification)
Week 3	Regulated power supplies (Filtration)
Week 4	Regulated power supplies (Regulation)
Week 5	Clippers
Week 6	Clampers Operations amplifiers OP-AMP applications
Week 7	Mid-Exam
Week 8	OP-AMP applications
Week 9	Active filters (LPF and HPF)
Week 10	Active filters (BPF and BSF)

Week 11	Passive filters (LPF and HPF)
Week 12	Passive filters (BPF and BSF)
Week 13	Analog to digital conversion (ADC)
Week 14	Digital to analog conversion (DAC)
Week 15	Practical applications Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Introduction to Multisim
Week 2	Half-wave rectifier circuits
Week 3	full-wave rectifier circuits
Week 4	Designing capacitor filters for power supplies
Week 5	Building and testing voltage regulation circuits (Zener stages)
Week 6	Building and testing voltage regulation circuits (IC Regulators)
Week 7	Implementing and testing diode clipping circuits (negative and positive clippers)
Week 8	Implementing and testing diode clipping circuits (Full-wave Clippers)
Week 9	Designing and evaluating clamping circuits
Week 10	Constructing and testing operational amplifier circuits (Inverting and non-Inverting Op-Amp)
Week 11	Constructing and testing operational amplifier circuits (Comparator Op-Amp)
Week 12	Constructing and testing operational amplifier circuits (Integrator and Differentiator)
Week 13	Filters (LPF and HPF)
Week 14	Filters (PBF and PSF)

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Electronic Devices and Circuits Theory (Eleventh Edition) by Robert L. Boylestad and Louis Nashelsky	Yes
Recommended Texts		No
Websites	https://www.youtube.com/@aliabdulalah-naji3192	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Power Electronics		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE3204		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGIII	Semester of Delivery	6
Administering Department	MITE	College	ETC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Electronic circuits II	Semester	UGII-S4
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. To develop problem solving skills and understanding of power electronic theory through the application of techniques. 2. To understand thyristor ,transistor as switching from a given circuit. 3. This course deals with the basic concept of rectifier . 4. This is the basic subject chopper. 5. To understand ac-ac converter, inverter. 6. Application of power electronics especially in medical instrument.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize how power electronic works in electrical circuits. 2. List the various terms associated with power electronic. 3. Summarize what is meant by a basic with power electronic. 4. Discuss the reaction and involvement of in rectifier circuit. 5. Describe thyristor, transistor diode. 6. Dc- dc converter. 7. Identify the basic circuit elements and their applications. 8. Discuss the operations of ac-ac converter. 9. Discuss the various properties inverter. 10. Explain the applications of power electronics in industry especially in medical equipment.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A - Circuit Theory</u>] Diode and Transistor Thyristor as switch its characteristic, protection , triggering circuit. [15 hrs.] AC circuits I –Single phase half wave and full wave Rectifier. [10 hrs.] Revision problem classes [5 hrs.]

	<u>Part B Applications</u> dc-dc converter, stepdown and step up chopper. [15 hr.] Single phase and three phase inverters. [15 hr.] Applications of power Electronics UPS, SMPS and Health care application. [10 hr.]

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

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to power electronics. Lect.1and 1a
Week 2	Switching devices, power & control device
Week 3	Types and characteristic, rating (diode, transistor ...).
Week 4	Methods of turning – on & turning – off.
Week 5	Protection of power devices.
Week 6	Triggering & base drive circuits. Controlled rectifiers, 1 – phase
Week 7	Mid-Exam
Week 8	Controlled Rectifier 3 – phase circuits
Week 9	Half – wave & full – wave circuits3 phase Rectifiers.
Week 10	D.C choppers; step – up & step – down choppers
Week 11	A.C phase controllers.
Week 12	Invertors, 1 – phase & 3 – phase bridges
Week 13	Some applications: a – uninterruptible power supply (UPS).
Week 14	switching mode power supply (SMPS)
Week 15	Application of power Electronics in medical instruments Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Uncontrolled Resistive Half Wave Rectifier with Load.
Week 2	Controlled Half Wave Rectifier with Resistive Load.
Week 3	Controlled Half Wave Rectifier with Inductive Load.
Week 4	Single Phase Full Wave Rectifier (Bridge) /Part I.
Week 5	Single Phase Full Wave Rectifier (Bridge) /Part II.
Week 6	Three Phase Half Wave Rectifier.
Week 7	Three Phase Full Wave Rectifier.
Week 8	Single Phase Half Bridge Inverter/ Part 1.
Week 9	Single Phase Half Bridge Inverter/ Part 2.
Week 10	Single Phase Full Bridge Inverter.
Week 11	Single-Phase Half Wave AC Voltage Controller.
Week 12	Single-Phase Full wave AC Voltage Controller.
Week 13	Step-Down DC Chopper.
Week 14	Step-Down DC Chopper.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Power Electronics by Lander	Yes
Recommended Texts	Power Electronics and drive By Mohmmmed T. Lazim	No
Websites	M.T. Lazim	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Python Programming		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MITE3206		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	UGIII	Semester of Delivery	S-6
Administering Department	MITE	College	TEC
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims

أهداف المادة الدراسية

1. Introduce students to the fundamental concepts and principles of Python programming language.
2. Develop students' proficiency in writing Python code and solving programming problems.
3. Familiarize students with essential programming constructs, such as variables, data types, control flow structures, and functions.
4. Provide students with a solid foundation in object-oriented programming (OOP) and its application in Python.
5. Enable students to work with various data structures and perform operations on them.
6. Prepare students for practical application of Python in real-world scenarios, such as data manipulation, web scraping, and GUI development.

Module Learning Outcomes

مخرجات التعلم للمادة
الدراسية

1. Understand the fundamentals of Python programming language, including variables, data types, and basic operators.
2. Demonstrate proficiency in control flow structures, such as conditional statements and loops, to control program execution.
3. Develop functions and utilize function arguments to enhance code modularity and reusability.
4. Utilize exception handling techniques to effectively manage errors and ensure program robustness.
5. Gain familiarity with modules and packages to leverage existing code and extend Python's functionality.
6. Understand object-oriented programming (OOP) concepts and apply them to create classes, objects, and inheritance hierarchies.
7. Manipulate strings, lists, dictionaries, and sets to efficiently store and retrieve data.
8. Perform file handling operations, including reading from and writing to files.
9. Apply Python to practical tasks, such as web scraping, data manipulation, and analysis.
10. Demonstrate proficiency in working with files and directories, including navigating file systems and managing file permissions.
11. Develop graphical user interfaces (GUIs) using Python libraries to create interactive applications.
12. Prepare for exams by reviewing course materials, practicing exercises, and answering sample questions.

Indicative Contents

المحتويات الإرشادية

Indicative content includes the following.

Part A: Introduction to Python and Basic Concepts (Estimated time: 10 hours)

Overview of Python programming language

Installation and setup

Variables and data types

	Basic operators Input and output operations <u>Part B: Control Flow and Functions (Estimated time: 10 hours)</u> Conditional statements (if, else, elif) Loops and iterations (for loop, while loop) Functions and function arguments Recursion <u>Part C: Data Structures and File Handling (Estimated time: 10 hours)</u> Strings and string manipulation Lists and list manipulation Dictionaries and sets File handling and input/output operations <u>Part D: Advanced Topics (Estimated time: 15 hours)</u> Exception handling and error management Modules and packages Object-oriented programming (OOP) concepts Classes, objects, inheritance, and polymorphism <u>Part E: Applications and Practical Projects (Estimated time: 15 hours)</u> Working with files and directories GUI programming Web scraping Data manipulation and analysis

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Effective learning and teaching strategies involve creating an engaging and interactive learning environment. This can be achieved through a combination of various approaches, such as incorporating active learning techniques like group discussions, problem-solving activities, and hands-on experiments. Additionally, employing visual aids, multimedia resources, and real-world examples can enhance comprehension and retention. Encouraging student participation and providing timely feedback also play vital roles in fostering student engagement and understanding. It is important to promote a growth mindset, encourage critical thinking, and create opportunities for collaboration and peer learning. By employing these strategies, educators can facilitate meaningful learning experiences and empower students to become active participants in their own learning journey.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	21	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction to Python, Variables, Data Types, and Basic Operators
Week 2	Control Flow and Conditional Statements
Week 3	Loops and Iterations
Week 4	Strings and String Manipulation
Week 5	Lists and List Manipulation
Week 6	Dictionaries and Sets
Week 7	Midterm Exam
Week 8	Functions and Function Arguments
Week 9	File Handling and Input/Output Operations
Week 10	Exception Handling and Error Management
Week 11	Modules and Packages
Week 12	Object-Oriented Programming (OOP) Concepts
Week 13	Classes and Objects
Week 14	Inheritance and Polymorphism
Week 15	Working with Files and Directories
Week 16	Preparatory Week for Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Introduction to Python, Variables, and Basic Operators
Week 2	Control Flow and Conditional Statements
Week 3	Loops and Iterations
Week 4	Strings and String Manipulation
Week 5	Lists and List Manipulation
Week 6	Dictionaries and Sets
Week 7	Midterm Exam (No lab session).
Week 8	Functions and Function Arguments
Week 9	File Handling and Input/Output Operations
Week 10	Exception Handling and Error Management
Week 11	Modules and Packages
Week 12	Object-Oriented Programming (OOP) Concepts
Week 13	Classes and Objects
Week 14	Inheritance and Polymorphism
Week 15	Working with Files and Directories
Week 16	Final Exam (No lab session).

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Title: "Python Crash Course: A Hands-On, Project-Based Introduction to Programming" Author: Eric Matthes	
Recommended Texts	Title: "Learning Python" Author: Mark Lutz	No
Websites	URL: https://realpython.com	