جامعة البيان

Academic Program Description

Al-Bayan University

Technical College of Engineering

2023 - 2024

Department of Department of Medical Instruments Technical Engineering

April 1, 2024

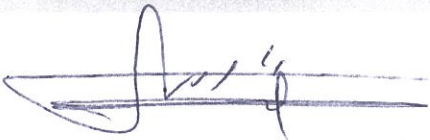|	
University	Al-Bayan University
Faculty/Institute	Technical College of Engineering
Scientific Department	Department of Medical Instruments Technical Engineering
Academic/Professional Program Name	Bachelor of Science in Biomedical Engineering Technology
Final Certificate Name	Bachelor in Medical Instruments Technical Engineering
Academic System	First stage (Bologna path) second and third stages (year)
Description Preparation Date	28-03-2024
File Completion Date	1-4-2024

Head of Department	**Scientific Associate**
Signe	Signe
Name Dr.Nouf thabet mahmmod	**Name** Dr. Assad abd-Alhussein mozan
Date 1-4-2024	**Date** 1-4-2024

This File has been checked by Quality Assurance and University Performance

Director of Quality Assurance and University Performance Department

Head of Quality Assurance Section

Signe

Name Asst. lec. Maryam Qutaiba abdalrazak

Date 1-4-2024

Asis. Prof. Dr.
Mohanad Sameer Al-Ahmedi
Approval of the Dean

1. Program Vision

The vision of the Medical Instruments Technical Engineering Department is to qualify the student to be an applied engineer familiar with modern technologies in the field of medical equipment engineering. In addition to that, providing an academic environment and community services that keep pace with the rapid development in the field of medical devices, and providing the latest study programs to keep pace with the scientific departments corresponding to the Department of Medical Equipment Technology Engineering in reputable Arab and international universities.

2. Program Mission

The mission of the Medical Instruments Technical Engineering Department is to provide an educational, technical and research environment for students through modern educational programs and curricula that demonstrate the importance of this specialization. Providing scientific and practical approaches and advanced applied research to simulate the needs of the labor market, openness to health institutions, and contribute to improving the health situation at the international and regional levels.

3. Program Objectives

- The department aims to educate students on the operation mechanisms of various medical devices, ensuring their quality and safety to enhance healthcare.
- It aims to train students on scheduling and programming periodic maintenance for medical devices, ensuring their continuous and safe use in the medical field.
- The department seeks to enhance students' skills in designing and developing medical devices, contributing to the provision of effective and innovative solutions to improve medical services and patient care.
- The department aims to enhance communication and collaboration with academic, community, and scientific entities, both domestically and internationally, to exchange knowledge and experiences and promote development and innovation in engineering technologies in general, and medical devices in particular.

4. The Program Accreditation

N/A

5. Other External Influences

N/A

6. Program Structure

Course Structure	Number of Courses	Credit Units	(%)	Reviews
Institutional Requirements				
College Requirements				
Department Requirements				
Summer Training				
Other				

7. Program Description

Year / Level	Course Code	Course Name	Credit Hours Theoretical	Practical
1st		Bologna path		
2nd	0701208	Computer Applications 2	1	2
	0701201	Mathematics 2	3	0
	0701203	Clinical Chemistry Devices	2	2
	0701206	Medical Measurements and Converters	2	3
	0701204	Electronic devices and Circuits	2	3
	0701205	Digital Technologies	2	2
	0701207	Medical instruments 1	2	3
	0701202	Anatomy and Physiology	2	2
	0701209	English Language 2	1	0
	0701210	Criminalizing of al baath	2	0
3rd	0701301	Medical Electronic Systems	2	2
	0701303	Medical Communication Systems	2	2

0701309	Medical instruments 2	2	3
0701305	Power Electronics	2	2
0701304	Electrical Technology	2	2
0701302	Digital Signal Processing	2	2
0701306	Computer Applications 3	1	2
0701307	Microprocessor & microcomputer	2	2
0701308	English 3	1	0

8. Expected learning outcomes of the program

➔ Knowledge

Outcome Learning 1 The student should be capable of proposing plans and work programs, especially in the maintenance of medical devices.

Outcome Learning 2 They should be able to handle various types of medical devices, including their installation, operation, applications, and software.

Outcome Learning 3 The student should also be able to analyze and evaluate the performance of medical devices, identify maintenance and improvement needs, enhancing their understanding of maintenance and development processes in the medical field.

Outcome Learning 4 they should be able to analyze the needs of the job market and the aspirations of medical device companies, applying the acquired knowledge and skills effectively to meet those needs.

➔ Skills

Outcome Learning 1 The student should be able to carry out maintenance and repair operations for various medical devices, enhancing their technical and practical skills in the field.

Outcome Learning 2 They should be capable of handling modern technology and tools used in the maintenance and development of medical devices, thus enhancing their capabilities in modern technology and innovation.

Outcome Learning 3 The student should have the ability to analyze data and prepare detailed technical reports on the performance of medical devices and suggest necessary improvements, developing their skills in communication and analysis.

Outcome Learning 4 They should be able to deal with problems and make technical and engineering decisions in the medical work context, fostering their abilities in problem-solving and making independent and responsible decisions.

➔ **Values**

Outcome Learning 1	The student should be capable of developing innovative solutions to enhance patient care and deliver exceptional medical services.
Outcome Learning 2	They should be able to establish partnerships with healthcare institutions to exchange knowledge and practical experiences.
Outcome Learning 3	The student should be able to promote health awareness and educate the community about the importance of health and safety.
Outcome Learning 4	They should be able to contribute to the development of policies and regulations related to medical devices to ensure their quality and safety.

9. Teaching and Learning Strategies

Lectures and theoretical lessons.

Workshops and training courses.

Applied projects and case studies.

training on quality tools and techniques.

Online educational resources.

10. Evaluation Methods

Diagnostic Assessment

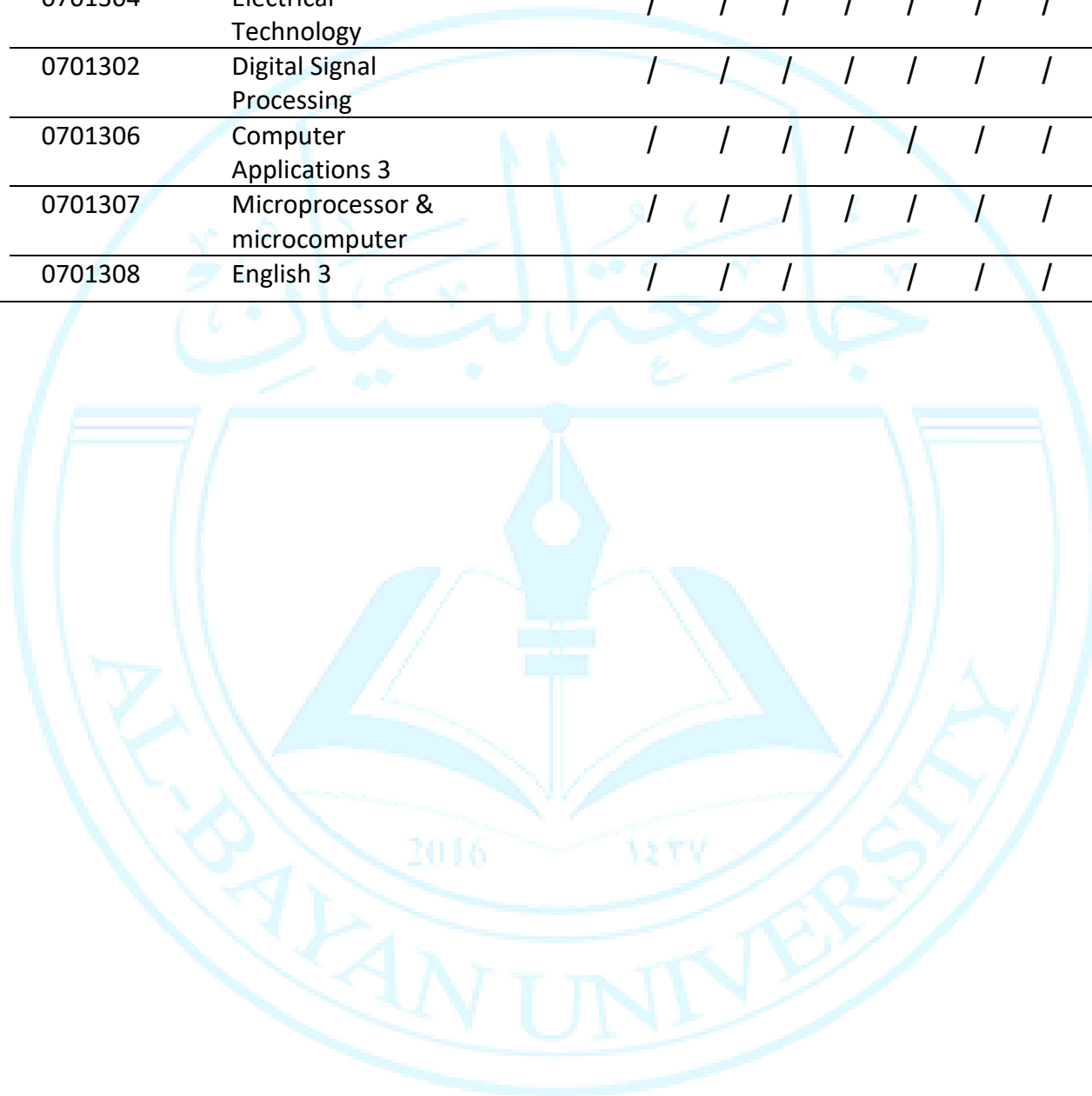Formative Assessment

Summative Assessment

11. Faculty
Faculty Members

| Titles | Specialization | | Numbers | |
	General	Special	Staff	Lec
Prof	Electrical Engineering	Electrical Engineering		1
Ass. Prof	Computer Science: Networks and Communications	Computer Science: Networks and Communications	2	1
	Environmental Engineering	Environmental Engineering		
	Political Science	Political Science		
Lecturers	Information and Communication Engineering	Information and Communication Engineering	8	2
	Applied Physics	Condensed Matter and Nanotechnology Physics		
	Electrical Engineering	Stability		
	Computer Science	Artificial Intelligence		
	Biomedical Engineering	Biomedical Engineering		
	General Medicine	Pathological Tissues		
Ass. Lecturers	Electrical Engineering	Electrical and Computer Engineering	5	1
	Computer Engineering	Network Engineering and International Network Technologies		
	Computer Engineering Technology	Computer Engineering Technologies		
	Information Technology	Artificial Intelligence		
	Biomedical engineer	Biomedical engineer		

Year/Level	Course Code	Course Title	Primary or Optional	Knowledge				Skills				Values			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
2nd	0701208	Computer Applications 2		/	/			/	/						/
	0701201	Mathematics 2		/	/	/		/	/	/		/	/		/
	0701203	Clinical Chemistry Devices		/	/	/		/	/			/			/
	0701206	Medical Measurements and Converters		/	/	/	/	/	/	/		/			/
	0701204	Electronic devices and Circuits		/	/			/				/	/		/
	0701205	Digital Technologies		/	/	/		/	/	/		/			/
	0701207	Medical instruments 1		/	/	/		/	/	/		/			/
	0701202	Anatomy and Physiology		/	/			/				/	/		/
	0701209	English Language 2		/	/	/		/		/		/			/
	0701210	Criminalizing of al baath		/	/							/	/		/
3rd	0701301	Medical Electronic Systems		/	/	/	/	/	/	/		/			/
	0701303	Medical Communication Systems		/	/	/	/	/	/			/			/
	0701309	Medical instruments 2		/	/	/	/	/	/	/		/			/

Code	Course											
0701305	Power Electronics	/	/	/	/	/	/	/		/	/		/
0701304	Electrical Technology	/	/	/	/	/	/	/		/			/
0701302	Digital Signal Processing	/	/	/	/	/	/	/		/	/		/
0701306	Computer Applications 3	/	/	/	/	/	/	/		/			/
0701307	Microprocessor & microcomputer	/	/	/	/	/	/	/		/			/
0701308	English 3	/	/	/		/	/	/		/	/		/

Course Description (1)

1. Course Title	Computer Applications 2
2. Course Code	0701208
3. Semester/Year	2023 – 2024
4. Description Preparation Date	15/3/2024
5. Available Attendance Form	Full Time Course
6. No. of Hours (Total)	90
7. No. of Credits (Total)	2
8. Course Administrator Name	Dr. Sinan Q. Salih
9. E-mail	Sinan.salih@albayan.edu.iq

10. Course Objectives

Knowledge	A1	Introducing students to the fundamental principles of various programming languages.
	A2	Teaching students the possibility of creative programming thinking.
	A3	Educating students about the latest developments in the programming world.
	A4	Instructing students in different programming environments.
Skills	B1	Developing the ability to analyze various scientific problems.
	B2	Developing the ability to design algorithms to solve those problems.
	B3	Acquiring the skill to design programs that facilitate the performance of various tasks.
	B4	Building the capability to research the latest updates in the field of programming languag
Values	C1	Promoting teamwork for solving complex problems through collaborative projects.
	C2	Revamping student mindset for job market with creative thinking methods.
	C3	Introducing students to the fundamental principles of various programming languages.
	C4	

11. Teaching and Learning Strategies

1.	Theoretical Lectures	4.	Oral Questions and Discussions
2.	Practical Lectures	5.	Daily Exams
3.	Projects	6.	Seminars and Presentations

12. The Structure of the Course

Week	Hours	RLOs	Topic/Subject Name	Learning Method	Evaluation Method
1-3	1 T 2 P	Fundamentals of Computer Networks	Computer Networks	Theoretical and Practical Lectures	Oral Exams + Reports
4-6	1 T 2 P	Basics of Algorithm design and analysis	Introduction to Algorithms	Theoretical and Practical Lectures	Oral Exams + HWs
7	1 T 2 P	Basics of Python programming language	Introduction to Python	Theoretical and Practical Lectures	Oral Exams + HWs
8-9	1 T 2 P	Introduction to Mathematical Operators	Operators in Python	Theoretical and Practical Lectures	Oral Exams + HWs
10-13	1 T 2 P	Basics of IF-Else Statement	Controlling Statements in Python	Theoretical and Practical Lectures	Oral Exams + HWs
14	1 T 2 P	Basics of Loops in python	Loops in Python	Theoretical and Practical Lectures	Oral Exams + HWs
15-17	1 T 2 P	Utilizing of FOR loops for solving mathematical problems	For Loop in Python	Theoretical and Practical Lectures	Oral Exams + HWs
18-20	1 T 2 P	Utilizing of WHILE loops for solving mathematical problems	While Loop in Python	Theoretical and Practical Lectures	Oral Exams + HWs
21-24	1 T 2 P	Advanced Topics in Loops	Nested Loops in Python	Theoretical and Practical Lectures	Oral Exams + HWs
25-27	1 T 2 P	Utilizing Libraries and packages	Libraries and Packages in Python	Theoretical and Practical Lectures	Oral Exams + HWs
28-30	1 T 2 P	Define and utilize lists and strings	Lists & String in Python	Theoretical and Practical Lectures	Oral Exams + HWs

- T : Theoretical   P : Practical

13. **Course Evaluation**
Annual grade is 50 points, final exam 50 points .   Annual grade comprises semester exams: (10 points theoretical exam, 10 points practical exam, 5 points for attendance and daily performance).

14. **Learning & Teaching Resources**	
Required textbooks (curricular if any)	1 Introduction to Algorithms 2 Python for Dummies 3 Head-First Python, 2nd edition
Main References (sources)	Think Python: How to Think Like a Computer Scientist, 2nd edition.
Recommended Books & References (Scientific Journals, Reports …)	
Websites or Electronic References	Github Website Datacamp.com Geeks4Geeks.com

Course Description (2)

1. Course Title	Math II
2. Course Code	0701301
3. Semester/Year	2023-2024
4. Description Preparation Date	March 28, 2024
5. Available Attendance Form	Attendance
6. No. of Hours (Total)	81
7. No. of Credits (Total)	6
8. Course Administrator Name	Dr.Asaad.A.H AlZubaiadi
9. E-mail	Asaad.a@albayan.edu.iq

10. Course Objectives

Knowledge	**A1**	Basic concepts of vector analyses and their applications in differential equations.
	A2	Learn how to convert rectangular coordinates into polar, circular and cylinder coordinates and vice versa, as well as use these coordinates in integral equations.
	A3	Understanding complex numbers and their applications in differential equations.
	A4	The task is to identify the types of differential equations and how to solve these equations and understand multiple integrations and ways to solve them.
Skills	**B1**	Understanding the basic concepts of differentiation and integration and applying them to the solution of mathematical and engineering issues.
	B2	Improving the ability to use different laws and methods for calculating out derivatives and integrals is the aim.
	B3	Understanding analytical engineering and the ability to convert coordinates and draw points using polar, spherical and cylinder coordinates.
	B4	Develop skills in differential equation solution using De Marvis theory and Coshi-Reyman equations, enhancing understanding of mathematics and its applications across various fields.
Values	**C1**	<u>Mental skills development</u>: By resolving issues and interacting with mathematical concepts, students can develop critical and analytical thinking skills.
	C2	<u>Promotion of self-confidence</u>: When students can understand and resolve difficult mathematical problems, this can increase their confidence in their abilities and skills.
	C3	<u>Developing mental resilience</u>: Solving mathematical problems requires flexible thinking and resilience to different contexts, which can contribute to the development of mental resilience.
	C4	To develop the scientific and analytical capacities of students and prepare them for scientific and analytical thinking in other fields of life and work.

11. Teaching and Learning Strategies

1.	Interactive lectures.	**4.**	Presentations and multimedia.
2.	Use of technology: Software and applications can be used to clarify concepts and facilitate the resolution of issues.	**5.**	Resolution of practical mathematical problems.
		3.	Discussion and interaction.

Week	Hours	Topic/Subject Name	Learning Method	Evaluation Method
1	3	Vector analysis and vector fields.	**Attendance**	H.W & Quiz
2	3	Vector analysis and vector fields.	**Attendance**	H.W & Quiz
3	3	Scalars and vectors-unit, orthogonal vectors.	**Attendance**	H.W & Quiz
4	3	Scalars and vectors-unit, orthogonal vectors.	**Attendance**	H.W & Quiz
5	3	Linear algebra, vector calculus.	**Attendance**	H.W & Quiz
6	3	Linear algebra, vector calculus	**Attendance**	H.W & Quiz
7	3	Dot product, cross product.	**Attendance**	H.W & Quiz
8	3	Dot product, cross product.	**Attendance**	H.W & Quiz
9	3	Theory for vector fields vector variable function.	**Attendance**	H.W & Quiz
10	3	Theory for vector fields vector variable function	**Attendance**	H.W & Quiz
11	3	Polar and spherical coordinates – gradient in polar coordinates.	**Attendance**	H.W & Quiz
12	3	Polar and spherical coordinates – gradient in polar coordinates.	**Attendance**	H.W & Quiz
13	3	Complex number, polar form of complex number, linear.	**Attendance**	H.W & Quiz
14	3	Complex number, polar form of complex number, linear.	**Attendance**	H.W & Quiz
15	3	Algebra for complex number in polar and spherical coordinates.	**Attendance**	H.W & Quiz
16	3	Algebra for complex number in polar and spherical coordinates.	**Attendance**	H.W & Quiz

17	3	Complex variable, Cauchy – Riemann equations complex series, Taylor series.	**Attendance**	H.W & Quiz
18	3	Complex variable, Cauchy – Riemann equations complex series, Taylor series.	**Attendance**	H.W & Quiz
19	3	Differential equations.	**Attendance**	H.W & Quiz
20	3	Differential equations.	**Attendance**	H.W & Quiz
21	3	Differential equation of the first order and n order.	**Attendance**	H.W & Quiz
22	3	Differential equation of the first order and n order.	**Attendance**	H.W & Quiz
23	3	Applications.	**Attendance**	H.W & Quiz
24	3	Applications.	**Attendance**	H.W & Quiz
25	3	Multiple integrations.	**Attendance**	H.W & Quiz
26	3	Multiple integrations.	**Attendance**	H.W & Quiz
27	3	Infinite Sequences and Series	**Attendance**	H.W & Quiz

12. **Course Evaluation**
The grading distribution out of 100 will be allocated according to tasks such as daily preparation, daily exams, oral assessments, written tests, and reports.

13. **Learning & Teaching Resources**	

Main References
 	
(sources)
	1. **Advanced Engineering Mathematics.**
	   Erwin Kreyszig, Herbert Kreyszig
	   and Edward J. Norminton;
	   10Th Edition.
	2. **Calculus III. Jerrold Marsden.**
	   3nd Edition.

Course Description (3)

1. Course Title	Clinical Chemistry Instrumentation
2. Course Code	0701203
3. Semester/Year	2024-2023
4. Description Preparation Date	28/3/2024
5. Available Attendance Form	Weekly (practical + theoretical)
6. No. of Hours (Total)	120
7. No. of Credits (Total)	6
8. Course Administrator Name	Dr. yasmen Abdulaziz Mustafa
9. E-mail	yasmen.a@albayan.edu.iq

10.   Course Objectives

Knowledge	**A1**	Knowing of the technology used for each device and its working principle
	A2	Knowledge of materials and solutions needed to operate the device and calibrat methods
	A3	Knowing the types of analyzes that can be performed on each device
	A4	Know how to maintain and preserve these devices
Skills	**B1**	How to use the medical device to analyze the required samples
	B2	How to maintain the device and fix the defect
	B3	How to develop the medical device and the possibility of innovating technolog that help facilitate work and reduce costs
	B4	
Values	**C1**	The student should listen to the explanation attentively
	C2	The student learns about the impact of clinical chemistry on life
	C3	The student must adhere to calm and order in the classroom
	C4	

11. Teaching and Learning Strategies

1.	Theoretical and practical lectures	**4.**	Appling for workshops	
2.	Show videos on the topic	**5.**	Participation in scientific fairs related to the topic	
3.	Scientific discussions on the topic in the classroom	**6.**	Summer training	

جامعةالبيان

12.	The Structure of the Course				
Week	**Hours**	**RLOs**	**Topic/Subject Name**	**Learning Method**	**Evaluation Method**
1 - 3	2 theoretic 2 practical	Learn how to protect workers and equipment inside the laboratory	Work security in laboratories.	A theoretical and practical lecture	Daily and monthly exams, laboratory reports and discussions
4 -5	2 theoretic 2 practical	Learn about the optical spectrum technology used in the devices	Spectrum instruments and uses	A theoretical and practical lecture	Daily and monthly exams, laboratory reports and discussions
6 -7	2 theoretic 2 practical	Measurement of ions using a potentiometric technique (pH meter)	Ions measurement instrument.	A theoretical and practical lecture	Daily and monthly exams, laboratory reports and discussions
8 -9	2 theoretic 2 practical	Electrolyte measurement using electrolyte analyzer	Salts measurements instrument and its uses.	A theoretical and practical lecture	Daily and monthly exams, laboratory reports and discussions
10 -11	2 theoretic 2 practical	Identify the parts and operation of the automated analysis device	Auto – analysis instruments.	A theoretical and practical lecture	Daily and monthly exams, laboratory reports and discussions
12 -13	2 theoretic 2 practical	(AAS) Element measuring device	Minerals measurement instrument	A theoretical and practical lecture	Daily and monthly exams, laboratory reports and discussions
14-15	2 theoretic 2 practical	Learn about ELISA technology	Elisa instrument and its uses.	A theoretical and practical lecture	Daily and monthly exams, laboratory reports and discussions
16 -17	2 theoretic 2 practical	Lean about Electrical conduction technology	Electrical conduction.	A theoretical and practical lecture	Daily and monthly exams, laboratory reports and discussions
18 -19	2 theoretic 2 practical	Identify osmotic conduction	Osmotic conduction.	A theoretical and practical lecture	Daily and monthly exams, laboratory reports and discussions
20 -21	2 theoretic 2 practical	Identify enzymes and their measurement devices	Enzymes and their measurements	A theoretical and practical lecture	Daily and monthly exams, laboratory reports and discussions
22-23	2 theoretic 2 practical	Identify proteins and their measuring devices	Proteins and importance	A theoretical and practical lecture	Daily and monthly exams, laboratory reports and discussions
24 -25	2 theoretic 2 practical	Identifying fats and measuring devices	Fats and importance.	A theoretical and practical lecture	Daily and monthly exams, laboratory reports and discussions
26-28	2 theoretic 2 practical	Identify the components of hemoglobin and their effects	Haemoglobin.	A theoretical and practical lecture	Daily and monthly exams, laboratory reports and discussions
29 -30	2 theoretic 2 practical	Learn about immunohistochemistry	Immunological chemistry.	A theoretical and practical lecture	Daily and monthly exams, laboratory reports and discussions

13. Course Evaluation	
Distribution of grades out of 100 according to tasks assigned to the student, such as daily preparation, daily exams, oral exams, monthly exams, written assignments, reports, etc.	
14. Learning & Teaching Resources	
Required textbooks (curricular if any)	Instrumental analysis by David Harvey
Main References (sources)	Instrumental analysis by David Harvey
Recommended Books & References (Scientific Journals, Reports …)	1. Principle of Instrumental Analysis by Skoog 2. Tietz Fundamentals of clinical chemistry and molecular Diagnostics by Burtis and Bruns
Websites or Electronic References	Online Tutorials and YouTube Lecture

Course Description (4)

1. **Course Title**	Measurements and Medical Transducers
2. **Course Code**	0701206
3. **Semester/Year**	2024-2023
4. **Description Preparation Date**	28/3/2024
5. **Available Attendance Form**	Weekly (Practical + Theoretical)
6. **No. of Hours (Total)**	120
7. **No. of Credits (Total)**	7
8. **Course Administrator Name**	Dr. Nouf T. Mahmood
9. **E-mail**	Noof.t@albayan.edu.iq

10. Course Objectives

Knowledge	A1	The ability to apply knowledge in electronic circuits
	A2	The ability to design, formulate and implement electronic circuits and implem them in practice
	A3	The ability to be provided with sufficient information to pursue their acader qualifications
	A4	The ability to work in applied fields
Skills	B1	The ability to apply the skills of electronic circuits and their components
	B2	Participation and success in their professional life through on−the−job training
	B3	Ability to work collectively within a multidisciplinary team
	B4	Problem solving skills
Values	C1	Respecting patients' rights
	C2	Enhancing safety and security
	C3	Commitment to sustainable development.

11. Teaching and Learning Strategies

1.	Theoretical lectures in classrooms	4.	

2.	Practical lectures on transducers and electronic circuit in Lab	5.	
3.	Seminars and workshops	6.	

12.	The Structure of the Course				
Week	**Hours**	**RLOs**	**Topic/Subject Name**	**Learning Method**	**Evaluation Method**
1	2 Pr.+ 2 Th.	Study Measurement and errors.	Measurement and errors.	Lecture/ Laboratory	Quiz, Mid Exam, Seminar, Laboratory
2	2 Pr.+ 2 Th.	Study System of units measurements.	System of units of measurements	Lecture/ Laboratory	Quiz, Mid Exam, Seminar, Laboratory
3	2 Pr.+ 2 Th.	Study Standard of measurement.	Standard of measurement.	Lecture/ Laboratory	Quiz, Mid Exam, Seminar, Laboratory
4 &5	2 Pr.+ 2 Th	Study Measurement device a system.	Measurement device and system	Lecture/ Laboratory	Quiz, Mid Exam, Seminar, Laboratory
6	2 Pr.+ 2 Th.	Study D.C indicating instrument.	D.C indicating instrument.	Lecture/ Laboratory	Quiz, Mid Exam, Seminar, Laboratory
7&8	2 Pr.+ 2 Th.	Study A.C indicating instrument .	A.C indicating instrument	Lecture/ Laboratory	Quiz, Mid Exam, Seminar, Laboratory
9&10	2 Pr.+ 2 Th.	Study Power transducers.	Power transducers.	Lecture/ Laboratory	Quiz, Mid Exam, Seminar, Laboratory
11&12	2 Pr.+ 2 Th.	Study Measurements of R, L and C .	Measurements of R, L and C.	Lecture/ Laboratory	Quiz, Mid Exam, Seminar, Laboratory
13	2 Pr.+ 2 Th.	Study Descriptive lectures.	Descriptive lectures.	Lecture/ Laboratory	Quiz, Mid Exam, Seminar, Laboratory
14 & 1!	2 Pr.+ 2 Th.	Study Review of fundament of electrical measurements.	Review of fundamentals electrical measurements.	Lecture/ Laboratory	Quiz, Mid Exam, Seminar, Laboratory
16	2 Pr.+ 2 Th.	Study General theory of PMMC instrument.	General theory of PMMC instrument.	Lecture/ Laboratory	Quiz, Mid Exam, Seminar, Laboratory

جَامِعَةُ البَيَان

17&18	2 Pr.+ 2 Th	Study Various instrument	Various instrument.	Lecture/ Laboratory	Quiz, Mid Exam, Seminar, Laboratory
19&20	2 Pr.+ 2 Th.	Study Circuits for D measurements.	Circuits for D.C measurements.	Lecture/ Laboratory	Quiz, Mid Exam, Seminar, Laboratory
21, &23	2 Pr.+ 2 Th.	Study Fundamental of A.C measurements.	Fundamental of A.C Measurements.	Lecture/ Laboratory	Quiz, Mid Exam, Seminar, Laboratory
24	2 Pr.+ 2 Th.	Study Electronic measuring instruments oscilloscope .	Electronic measuring instruments, oscilloscope.	Lecture/ Laboratory	Quiz, Mid Exam, Seminar, Laboratory
25	2 Pr.+ 2 Th.	Study Frequency measuremer	Frequency measurements.	Lecture/ Laboratory	Quiz, Mid Exam, Seminar, Laboratory
26&27	2 Pr.+ 2 Th.	Study Magnetic instrument.	Magnetic instrument.	Lecture/ Laboratory	Quiz, Mid Exam, Seminar, Laboratory
28	2 Pr.+ 2 Th.	Study Concepts of cle .	Concepts of cle.	Lecture/ Laboratory	Quiz, Mid Exam, Seminar, Laboratory
29	2 Pr.+ 2 Th.	Study Types of medi transducers.	Types of medical transducers.	Lecture/ Laboratory	Quiz, Mid Exam, Seminar, Laboratory
30	2 Pr.+ 2 Th.	Study Analogue and digital d acquisition systems.	Analogue and digital data acquisition systems.	Lecture/ Laboratory	Quiz, Mid Exam, Seminar, Laboratory

13. **Course Evaluation**
Distributing grades out of 100 according to the tasks assigned to the student, such as daily preparation, daily exams, oral exams, monthly exams, seminars, reports, etc.

14. **Learning & Teaching Resources**	
Required textbooks (curricular if any)	**Measurement, Instrumentation, and Sensors Handbook: Spatial, Mechanical, Thermal, and Radiation Measurement**
Main References (sources)	**Introduction to Measurements and Instrumentation**
Recommended Books & References (Scientific Journals, Reports …)	**Online Tutorials and You Tube Lecture**
Websites or Electronic References	**IEEE journal**

Course Description (5)

1.	Course Title	Electronic Devices and Circuits
2.	Course Code	0701204
3.	Semester/Year	2023/2024
4.	Description Preparation Date	923/2024/
5.	Available Attendance Form	present
6.	No. of Hours (Total)	85
7.	No. of Credits (Total)	7
8.	Course Administrator Name	Dr. Sami Kadhim Hasan
9.	E-mail	Sami.hasan@albayan.edu.iq

10. Course Objectives

Knowledge	A1	Developing the competencies of graduates to meet the needs of various sectors in the field of using med[...] devices.
	A2	Raising students' awareness to respond to the changes in the medical devices labor market.
	A3	Providing students with modern knowledge in the fields of devices and electronic circuits for medical devi[...]
	A4	Developing students' skills and ability to carry out laboratory experiments for electronic devices and circ[...]
Skills	B1	Teach the student the basic concepts, origin, development, importance and principles of electronic dev[...] and circuits.
	B2	The student learned the transformation taking place in medical devices in the field of devices and circuit[...]
	B3	Developing the competencies of graduates to meet the needs of various sectors in the field of using med[...] devices.
	B4	Raising students' awareness to respond to the changes in the medical devices labor market.
Values	C1	Providing students with modern knowledge in the fields of devices and electronic circuits for medical devi[...]
	C2	Developing students' skills and ability to carry out laboratory experiments for electronic devices and circ[...]
	C3	Teach the student the basic concepts, origin, development, importance and principles of electronic dev[...] and circuits.
	C4	The student learned the transformation taking place in medical devices in the field of devices and circuit[...]

11. Teaching and Learning Strategies

1.	Interaction by asking engineering questions in everything related to electronic devices and circuits.	4.	Teaching students how to think, analyze and deduct in a correct scientific manner
2.	Use teaching and learning methods with extensive explanation on the board.	5.	Discuss topics and follow brainstorming to put forward opinions and ideas.

| 3. | Use modern methods available from the data viewer and smart board. | 6. | Teaching and encouraging students to ask technical questions and come up with everything new to serve the scientific aspects and provide them with |

12. The Structure of the Course

Week	Hours	RLOs	Topic/Subject Name	Learning Method	Evaluation Method
1	2/Th. 3/lab.	Understanding Electronic values (review).	Electronic values (review).	Lecture and Lab	Daily exams + semester exams + end-of-year exams + laboratory reports + brainstorming discussions
2-3	10	Understanding Semiconductors materials and junctions.	Semiconductors materials and junctions.	Lecture and Lab	Daily exams + semester exams + end-of-year exams + laboratory reports + brainstorming discussions
4-5	10	Understanding Diode applications.	Diode applications.	Lecture and Lab	Daily exams + semester exams + end-of-year exams + laboratory reports + brainstorming discussions
6-7	10	Understanding Special diodes.	Special diodes.	Lecture and Lab	Daily exams + semester exams + end-of-year exams + laboratory reports + brainstorming discussions
8-9	10	Understanding Bipolar junction's transistor (characteristics and biasing).	Bipolar junction's transis (characteristics and biasing).	Lecture and Lab	Daily exams + semester exams + end-of-year exams + laboratory reports + brainstorming discussions
10-11	10	Understanding Field effect transistor (characteristics and biasing).	Field effect transistor (characteris and biasing).	Lecture and Lab	Daily exams + semester exams + end-of-year exams + laboratory reports + brainstorming discussions
12	2/Th. 3/lab.	Understanding Small single amplifier.	Small single amplifier.	Lecture and Lab	Daily exams + semester exams + end-of-year exams + laboratory reports + brainstorming discussions

				Lecture and Lab	Daily exams + semester exams + end-of-year exams + laboratory reports + brainstorming discussions
13-14	10	Understanding Other semiconductor Devices (UJT, SCR, Diac, Triac,….)	Other semiconductor devices (U SCR, Diac, Triac,….)	Lecture and Lab	Daily exams + semester exams + end-of-year exams + laboratory reports + brainstorming discussions
15-16	10	Understanding Optoelectronic devices.	Optoelectronic devices.	Lecture and Lab	Daily exams + semester exams + end-of-year exams + laboratory reports + brainstorming discussions
17-18	10	Understanding Frequency response.	Frequency response.	Lecture and Lab	Daily exams + semester exams + end-of-year exams + laboratory reports + brainstorming discussions
19-20	10	Understanding Negative feedback.	Negative feedback.	Lecture and Lab	Daily exams + semester exams + end-of-year exams + laboratory reports + brainstorming discussions
21	2/Th. 3/lab.	Understanding Differential amplifier.	Differential amplifier.	Lecture and Lab	Daily exams + semester exams + end-of-year exams + laboratory reports + brainstorming discussions
22	2/Th. 3/lab.	Understanding Operation amplifier.	Operation amplifier.	Lecture and Lab	Daily exams + semester exams + end-of-year exams + laboratory reports + brainstorming discussions
23-24	10	Understanding Basic OP – Amp application.	Basic OP – Amp application.	Lecture and Lab	Daily exams + semester exams + end-of-year exams + laboratory reports + brainstorming discussions
25-26	10	Understanding Sinusoidal oscillator.	Sinusoidal oscillator.	Lecture and Lab	Daily exams + semester exams + end-of-year exams + laboratory reports + brainstorming discussions
27-28	10	Understanding Non – sinusoidal oscillator.	Non – sinusoidal oscillator.	Lecture and Lab	Daily exams + semester exams + end-of-year exams + laboratory reports +

				Lecture and Lab	brainstorming discussions
29-30	10	Understanding Power amplifier.	Power amplifier.		Daily exams + semester exams + end-of-year exams + laboratory reports + brainstorming discussions

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13. Course Evaluation
1- Attendance and participation in daily preparation (10) 2- Laboratory Practical Exams (30) 4- Semi-semester and quarterly exams in addition to the end-of-year exams (60)

14. Learning & Teaching Resources	
Required textbooks (curricular if any)	1. Robert L. Boylestad and Louis Nashelsky, "Electronic devices and circuit theory," Pearson Education Limited, 11th ed. 2. Thomas L. Floyd , "Electronic Devices" Pearson Education Limited, 10th ed. 3. Paul Scherz and Simon Monk, "Practical Electronics for Inventors," McGraw Hill Education, 4Th ed. 4. Paul Horowitz and Winfield Hill, "The Art of Electronics," Cambridge University Press, 3rd ed.
Main References (sources)	Robert L. Boylestad and Louis Nashelsky, "Electronic devices and circuit theory," Pearson Education Limited, 11th ed.
Recommended Books & References (Scientific Journals, Reports …)	• Paul Scherz and Simon Monk, "Practical Electronics for Inventors," McGraw Hill Education, 4Th ed. • Paul Horowitz and Winfield Hill, "The Art of Electronics," Cambridge University Press, 3rd ed.
Websites or Electronic References	Online tutorials and internet lectures

Course Description (6)

1. Course Title	Digital Techniques
2. Course Code	0701205
3. Semester/Year	Year
4. Description Preparation Date	6/2/2024
5. Available Attendance Form	Class attendances
6. No. of Hours (Total)	120
7. No. of Credits (Total)	6
8. Course Administrator Name	Dr. Ahmed Lateef
9. E-mail	Ahmedlateef80@gmail.com

10. Course Objectives

Knowledge	**A1**	The student learns how to use logic gates in digital electronic circuits
	A2	Enabling students to design synchronous and asynchronous counters and storage registers
	A3	Understand the operating principle of analog-to-digital and digital-to-analog converters and their types.
	A4	Teach students how to design electronic circuits.
Skills	**B1**	Teach students how to design electronic circuits and Provide them with the skills to design electronic circuits for digital systems.
	B2	Focus on the applications of electronic circuits.
	B3	Provide them with the skills to implement designs practically and how to use them.
	B4	Ability to use system simulation software such as Logic gates simulator.
Values	**C1**	Awareness of the requirements of the engineering profession and ethical responsibility.
	C2	Understand the impact of engineering solutions on economic, environmental and social activities.
	C3	Awareness of the need for lifelong learning and the ability to engage in it.
	C4	Empower students to think and analyze topics related to digital systems.

11. Teaching and Learning Strategies

1.	Theoretical lectures	**4.**	Scientific laboratories
2.	Scientific exhibitions	**5.**	Workshops

| 3. | Seminars | 6. | Case studies |

12.	The Structure of the Course				
Week	**Hours**	**RLOs**	**Topic/Subject Name**	**Learning Method**	**Evaluation Method**
1-2	2th+2Lab	The students understand the lesson	Number system: Binary numbe Octal numbers, Hexadecin numbers	Theoretical lectures	Quizzes and Discussion
3-4	2th+2Lab	The students understand the lesson	Binary codes.	Theoretical lectures	Quizzes and Discussion
5-6	2th+2Lab	The students understand the lesson	Logic gates.	Theoretical lectures	Quizzes and Discussion
7-8	2th+2Lab	The students understand the lesson	De Margan's theorems.	Theoretical lectures	Quizzes and Discussion
9-10	2th+2Lab	The students understand the lesson	Laws and theorem of Boole algebra.	Theoretical lectures	Quizzes and Discussion
11-12	2th+2Lab	The students understand the lesson	Arithmetic circuit.	Theoretical lectures	Quizzes and Discussion
13-15	2th+2Lab	The students understand the lesson	Simplifying logic circu fundamentals products, sum products, algebr simplification.	Theoretical lectures	Quizzes and Discussion
16-18	2th+2Lab	The students understand the lesson	Truth table to Karnaugh map.	Theoretical lectures	Quizzes and Discussion
19-21	2th+2Lab	The students understand the lesson	Flip – Flop: RS, RST, JK, D, F	Theoretical lectures	Quizzes and Discussion

22-23	2th+2Lab	The students understand the lesson	Counters.	Theoretical lectures	Quizzes and Discussion
25-26	2th+2Lab	The students understand the lesson	Special counters and sh registers.	Theoretical lectures	Quizzes and Discussion
27-28	2th+2Lab	The students understand the lesson	Digital to analogue conversion	Theoretical lectures	Quizzes and Discussion
29-30	2th+2Lab	The students understand the lesson	Analogue to digital conversion	Theoretical lectures	Quizzes and Discussion

13. **Course Evaluation**

Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.

14. **Learning & Teaching Resources**	
Required textbooks (curricular if any)	• Thomas L.Floyed, " Digital Fundamentals", 9th Edition. • Digital Fundamentals 10th ED By Floyd, Thomas
Main References (sources)	1- Stephen Brown and Zvonko Vranesic , "Fundamentals of Digital Logic with VHDL Design", Third Edition. M. Morris Mano, "Digital Design" PEARSON, 4th Edition,2007.
Recommended Books & References (Scientific Journals, Reports …)	ScienceDirect, Wiley
Websites or Electronic References	*"Digital Logic techniques, Introduction"*, Tutorials Point website, http://www.tutorialspoint.com/dip/Digital_logic_techniques_introduction.htm

Course Description (7)

1. Course Title	Medical Instrumentation/ 1
2. Course Code	0701207
3. Semester/Year	2024- 2023
4. Description Preparation Date	28/3/2024
5. Available Attendance Form	Weekly (Theoretical + Practical)
6. No. of Hours (Total)	120 hours
7. No. of Credits (Total)	7
8. Course Administrator Name	Dr.Safa Layth Kailan
9. E-mail	Safa.l@albayan.edu.iq

10. Course Objectives

Knowledge	A1	Using medical devices correctly to obtain the desired results
	A2	Interacting with modern medical technology
	A3	Understanding how to design medical devices
	A4	Knowing medical device maintenance
Skills	B1	Operating and maintenance skills
	B2	Design and development skills
	B3	Problem−solving skills
	B4	Teamwork skills
Values	C1	Respecting patients' rights
	C2	Enhancing safety and security
	C3	Commitment to sustainable development

11. Teaching and Learning Strategies

1.	Theoretical lectures in classrooms	4.	
2.	Practical lectures in medical device laboratories	5.	
3.	Seminars and workshops	6.	

12.	The Structure of the Course				
Week	**Hours**	**RLOs**	**Topic/Subject Name**	**Learning Method**	**Evaluation Method**
1	2 th+ 2 pr	General introduction to medical devices their classifications	Introduction	Lecture Laboratory	Quiz, Mid Exam, Seminar
2&3	2 th+ 2 pr	Study of the electronic balance and its use in the medical field	Electronic balance	Lecture Laboratory	Quiz, Mid Exam, Seminar
4&5	2 th+ 2 pr	Study of the operation and maintenance of the water bath device and its use in laboratories	Water bath	Lecture Laboratory	Quiz, Mid Exam, Seminar
6&7	2 th+ 2 pr	Study of the Oven device and its use in dry heat sterilization, understanding its malfunctions maintenance procedures	Hot air oven	Lecture Laboratory	Quiz, Mid Exam, Seminar
8&9	2 th+ 2 pr	Study of the autoclave and its use in steam sterilization, understanding malfunctions and maintenance procedures	Autoclave	Lecture Laboratory	Quiz, Mid Exam, Seminar
10&11	2 th+ 2 pr	Study of the purpose of the paraffin wax device in physical therapy, understanding its malfunctions maintenance procedures	Wax bath	Lecture Laboratory	Quiz, Mid Exam, Seminar
12&13	2 th+ 2 pr	Study of the purpose of laboratory incubators, their types, understanding their malfunctions and maintenance procedures	Laboratory incubator	Lecture Laboratory	Quiz, Mid Exam, Seminar
14&15	2 th+ 2 pr	Study of the distillation apparatus understanding its malfunctions maintenance procedures	Water distiller	Lecture Laboratory	Quiz, Mid Exam, Seminar
16&17	2 th+ 2 pr	Study of the microscope and its types, common malfunctions	Microscope	Lecture Laboratory	Quiz, Mid Exam, Seminar
18&19	2 th+ 2 pr	Study of the centrifuge device, components, common malfunctions, maintenance procedures	Centrifuge	Lecture Laboratory	Quiz, Mid Exam, Seminar

20&21	2 th+ 2 pr	Study of the cautery device, its medical uses, and maintenance	Cautery	Lecture Laboratory	Quiz, Mid Exam, Seminar
22&23	2 th+	Study of the X-ray machine, learning how X-rays are generated inside the device, how images are obtained, in addition to the device malfunctions and maintenance	X-ray	Lecture Laboratory	Quiz, Mid Exam, Seminar
24&25	2 th+ 2 pr	Study of the infant incubator device, understanding the medical purpose of the device, its main components, malfunctions, maintenance	Infant incubator	Lecture Laboratory	Quiz, Mid Exam, Seminar
26&27	2 th+ 2 pr	Knowledge of devices used in physical therapy	Other thermal instruments	Lecture Laboratory	Quiz, Mid Exam, Seminar
28	2 th+ 2 pr	Understanding the gas system within hospitals, its design, and major risks	Medical gases system	Lecture Laboratory	Quiz, Mid Exam, Seminar
29&30	2 th+ 2 pr	Study of the devices used in treatment rehabilitation	Rehabilitation equipment	Lecture Laboratory	Quiz, Mid Exam, Seminar

13. Course Evaluation
Distributing grades out of 100 according to the tasks assigned to the student, such as daily preparation, daily exams, oral exams, monthly exams, seminars, reports, etc.

14. Learning & Teaching Resources	
Required textbooks (curricular if any)	R S Khandpur - Handbook of Biomedical Instrumentation
Main References (sources)	Handbook of Biomedical Instrumentation Introduction to Biomedical Equipment Technology essential laboratory equipment
Recommended Books & References (Scientific Journals, Reports …)	Journals of medical device
Websites or Electronic References	YouTube Lecture

Course Description (8)

1. Course Title		ANATOMY & PHYSIOLOGY
2. Course Code		0701202
3. Semester/Year		2023-2024
4. Description Preparation Date		30−3− 2024
5. Available Attendance Form		Weakly (Theoretical and practice)
6. No. of Hours (Total)		120 ((Theoretical and practice)
7. No. of Credits (Total)		6
8. Course Administrator Name		Prof.Dr. Kadhim A Mohsin Alzaidy
9. E-mail		**Kadhim.muhsin@albayan.edu.lq**
10. Course Objectives		
Knowledge	A1	Study and understand medical devices through the physiological changes that occur wh... organs perform their function
	A2	The relationship of medical devices to the functions of various organs in the bo...
	A3	Understanding the nature of the human body's organs and its functions
	A4	Functional integration of the organs and systems of the human body with ea... other
Skills	B1	The skill of linking the performance of organs in the human body and the caus... of the diseases it suffers from
	B2	The skill of knowing the different organs of the human body and their functions
	B3	The skill of understanding the nature of the work of medical devices in light of ... performance of the devices in the human body
	B4	The skill of anticipating diseases caused by poor performance in the human bod... systems
Values	C1	Understand the patients' situation
	C2	Promoting a healthy culture
	C3	Scientific communication to learn about developments in the uses of medi... devices
	C4	Spreading scientific health awareness among members of society

11. Teaching and Learning Strategies

1.	Theoretical lectures in classrooms	4.	Understanding the shortcomings and inefficiency in the performance of the body's organs
2.	Illustrate schematic and realistic drawings of the human body	5.	
3.	Conducting scientific seminars and seminars for a broader understanding of the systems in the human body and their relationship to performance and physical activity	6.	

12.	The Structure of the Course				

Week	Hours	RLOs	Topic/Subject Name	Learning Method	Evaluation Method
1	2T-2P	Cells	Cell	Lecture and data show	Quiz and monthly exam
2	2T-2p	Tissues	Tissue	Lecture and data show	Quiz and monthly exam
3	2T-2P	Integumentary system	Integumentary system	Lecture and data show	Quiz and monthly exam
4	2T-2P	The skeletal system	The skeletal system	Lecture and data show	Quiz and monthly exam
5	2T-2P	Articulations	Articulations	Lecture and data show	Quiz and monthly exam
6	2T-2P	Articulations continued	Articulations continued	Lecture and data show	Quiz and monthly exam
7	2T-2P	The Muscular system	The Muscular system	Lecture and data show	Quiz and monthly exam
8	2T-2P	The nervous tissues	The nervous tissues	Lecture and data show	Quiz and monthly exam
9	2T-2P	The nervous system	The nervous system	Lecture and data show	Quiz and monthly exam
10	2T-2P	Autonomic nervous system	Autonomic nervous system	Lecture and data show	Quiz and monthly exam
11	2T-2P	Sensory organs and function	Sensory organs and function	Lecture and data show	Quiz and monthly exam
12	2T-2P	Motor and integrativeive functions	Motor and integrativeive functions	Lecture and data show	Quiz and monthly exam
13	2T-2P	The endocrine system	The endocrine system	Lecture and data show	Quiz and monthly exam
14	2T-2P	The cardiovascular system : Blood	The cardiovascular system : Blood	Lecture and data show	Quiz and monthly exam
15	2T-2P	The cardiovascular system : Blood	The cardiovascular system : Blood	Lecture and data show	Quiz and monthly exam
16	2T-2P	The cardiovascular systemm: heart :	The cardiovascular systemm: heart :	Lecture and data show	Quiz and monthly exam
17	2T-2P	The cardiovascular system : heart	The cardiovascular systemm: heart :	Lecture and data show	Quiz and monthly exam
18	2T-2P	The cardiovascular system : Blood vessels	The cardiovascular system : Blood vessels	Lecture and data show	Quiz and monthly exam
19	2T-2P	The cardiovascular system : Blood vessels	The cardiovascular system : Blood vessels	Lecture and data show	Quiz and monthly exam
20	2T-2P	The lymphatic systemem structures	The lymphatic systemem structures	Lecture and data show	Quiz and monthly exam
21	2T-2P	The lymphatic system em immunity	The lymphatic system em immunity	Lecture and data show	Quiz and monthly exam
22	2T-2P	The respiratory system	The respiratory system	Lecture and data show	Quiz and monthly exam
23	2T-2P	The respiratory system em continu	The respiratory system em continue	Lecture and data show	Quiz and monthly exam

24	2T-2P	The digestive system	The digestive system	Lecture and data show	Quiz and monthly exam
25	2T-2P	The Digestive system em continued	The Digestive system em continued	Lecture and data show	Quiz and monthly exam
26	2T-2P	Metabolism	Metabolism	Lecture and data show	Quiz and monthly exam
27	2T-2P	The urinary system	The urinary system	Lecture and data show	Quiz and monthly exam
28	2T-2P	Fluid, electrolyte and Acid – B balance	Fluid, electrolyte and Acid – Base balance	Lecture and data show	Quiz and monthly exam
29	2T-2P	Fluid, electrolyte and Acid – B balance . continued	Fluid, electrolyte and Acid – Base balance . continued	Lecture and data show	Quiz and monthly exam
30	2T-2P	The Reproductive system	The Reproductive system	Lecture and data show	Quiz and monthly exam

13. Course Evaluation	
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.	

14. Learning & Teaching Resources	
Required textbooks (curricular if any)	**Human Anatomy and Medical Terminology**
Main References (sources)	Human Anatomy and Medical Terminology
Recommended Books & References (Scientific Journals, Reports …)	**Structure and function of the body** **Gary A. Thibodeau, ,Kevin T. Patton** **2012 Elsevier**
Websites or Electronic References	**Google**

Course Description (9)

1.	Course Title	English
2.	Course Code	1106
3.	Semester/Year	2023-2024
4.	Description Preparation Date	30−3−2024
5.	Available Attendance Form	All second stage students
6.	No. of Hours (Total)	90
7.	No. of Credits (Total)	2
8.	Course Administrator Name	Assist.Lec Noor Najem
9.	E-mail	Noornajem1996@gmail.com

10.	Course Objectives	
Knowledge	A1	Explanation of English grammar
	A2	An explanation of how to practice the language
	A3	Learn vocabulary.
	A4	Knowing and understanding the absorptive pieces.
Skills	B1	Language practice
	B2	Speaking and listening
	B3	Vocabulary
	B4	Learn the basics of grammar
Values	C1	on building To introduce beginner-level learners to the English language, focusing vocabulary and acquiring essential language structures.
	C2	To provide foundational writing skills, including sentence formation paragraph writing, and completing basic forms.
	C3	To enhance reading comprehension abilities by introducing simple texts and emphasizing vocabulary and sentence structures.
	C4	and engaging To develop listening and speaking skills through interactive activities in basic conversational practice.

11.	Teaching and Learning Strategies		
1.	Encouraging the student to participate in activities	3.	Enhancing confidence in one's own mental abilities.
2.	Refine and develop their critical thinking skills	4.	That the student enjoys learning the language.

12.	The Structure of the Course				
Week	Hours	RLOs	Topic/Subject Name	Learning Method	Evaluation Method
1	1	Getting to know you	Getting to know you	theoretical	sharing Students + daily exam
2	1			theoretical	sharing Students + daily exam
3	1	The way we live	The way we live	theoretical	sharing Students + daily exam
4	1			theoretical	sharing Students + daily exam
5	1	It all went wrong	It all went wrong	theoretical	sharing Students + daily exam
6	1			theoretical	sharing Students + daily exam
7	1	Let's go shopping!	Let's go shopping!	theoretical	sharing Students + daily exam
8	1			theoretical	sharing Students + daily exam
9	1	What do you want to do?	What do you want to do?	theoretical	sharing Students + daily exam
10	1			theoretical	sharing Students + daily exam
11	1	Tell me! What's it like?	Tell me! What's it like?	theoretical	sharing Students + daily exam
12	1			theoretical	sharing

					Students + daily exam
13	1	My favorites	My favorites	theoretical	sharing
					Students + daily exam
14	1			theoretical	sharing
					Students + daily exam
15	1	Do's and does	Do's and does	theoretical	sharing
					Students + daily exam
16	1			theoretical	sharing
					Students + daily exam
17	1	Going Places	Going Places	theoretical	sharing
					Students + daily exam
18	1			theoretical	sharing
					Students + daily exam
19	1	Scared to death	Scared to death	theoretical	sharing
					Students + daily exam
20	1			theoretical	sharing
					Students + daily exam
21	1	Things that changed the wo	Things that changed the wor	theoretical	sharing
					Students + daily exam
22	1			theoretical	sharing
					Students + daily exam
23	1			theoretical	sharing
					Students + daily exam
24	1	Dreams and Reality	Dreams and Reality	theoretical	sharing
					Students + daily exam
25	1			theoretical	sharing
					Students + daily exam

26	1	Earning a Living	Earning a Living	theoretical	sharing Students + daily exam
27	1			theoretical	sharing Students + daily exam
28	1	Love you and leave you	Love you and leave you	theoretical	sharing Students + daily exam
29	1			theoretical	sharing Students + daily exam
30	3	Preparatory week before the final Exam	Preparatory week before the final Exam	theoretical	sharing Students + daily exam

13. Course Evaluation
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.

14. Learning & Teaching Resources	
Required textbooks (curricular if any)	New Headway Plus: Beginner Students Book
Main References (sources)	Soars, J., Sors, L.(2014).New Headway Plus: Beginner Students Book. United Kingdom. Oxford University Press . Soars, J., Soars, L. (2006). New Headway Plus: Pre intermediate. United Kingdom: Oxford University Press
Recommended Books & References (Scientific Journals, Reports …)	Audio CDs or Online Audio: Recordings of listening . exercises dialogues, and pronunciation practice,
Websites or Electronic References	/

Course Description (10)

1. Course Title	Crimes of the Baath regime in Iraq
2. Course Code	0701210
3. Semester/Year	2024 - 2023
4. Description Preparation Date	2024-3-30
5. Available Attendance Form	Weekly attendance
6. No. of Hours (Total)	160
7. No. of Credits (Total)	2
8. Course Administrator Name	Asst. Prof. Dr. Haidar Adeb Kadhum
9. E-mail	haidar.abid@copolicy.uobaghdad.edu.iq

10. Course Objectives

Knowledge	**A1**	The student's knowledge of crime sections, types and applications at the national level.
	A2	The student's knowledge of the mechanisms of applying crimes in society and their most important forms.
	A3	The student's knowledge of the time period in which the previous Baath regime ruled, which spanned about four decades
	A4	
Skills	**B1**	Enable the student to distinguish between the types of crimes and classify them, whether international local
	B2	Increasing the student's awareness of the most important objective differences between the authorita system and the pluralistic democratic system
	B3	The student's awareness of the importance of political awareness of public rights and freedoms and no neglect them
	B4	
Values	**C1**	Developing the student's culture from a political point of view
	C2	Activating the intellectual ability (brainstorming) capable of consolidating the concept of fair Governance
	C3	Refine the student's personality to be a creative member of society.
	C4	

11. Teaching and Learning Strategies

1.	Demonstrate a comprehensive understanding of Baath Party crimes	**4.**	The student's knowledge of the basic concepts related to the subject of crimes of the Baath regime in Iraq.
2.	Enable students to know the most important crimes of extremism, genocide and against humanity,	**5.**	Enable the student to distinguish between the types of crimes and classify them, whether international or local.

	especially in documenting the crimes of the former Baath regime in Iraq		
3.	Studying the crimes of the Baath regime according to the law of the Supreme Iraqi Criminal Tribunal in 2005	**6.**	Develop students' knowledge, awareness and political culture

12.	The Structure of the Course				
Week	**Hours**	**RLOs**	**Topic/Subject Name**	**Learning Method**	**Evaluation Method**
1	1 theory	The concept of crimes and their divisions.	Chapter One: Crimes of the Baath Regime According to the Law	Theory	Daily and monthly exams
2	1 theory	Definition of crime linguistically and idiomatically.	Supreme Iraqi Criminal Tribunal in 2005.	Theory	Daily and monthly exams
3	1 theory	Crime sections	Chapter One: Crimes of the Baath Regime According to the Law	Theory	Daily and monthly exams
4	1 theory	Crimes of the Baath regime according to the documentation of the law	Supreme Iraqi Criminal Tribunal in 2005.	Theory	Daily and monthly exams
5	1 theory	Decisions of the Criminal Court	Chapter One: Crimes of the Baath Regime According to the Law	Theory	Daily and monthly exams
6	1 theory	Supreme.	Supreme Iraqi Criminal Tribunal in 2005.	Theory	Daily and monthly exams
7	1 theory	Psychological crimes.	Chapter Two: Psychological and social crimes their effects, and the most prominent violations of the Baathist regime in Iraq.	Theory	Daily and monthly exams
8	1 theory	Mechanisms of psychological crimes	Chapter Two: Psychological and social crimes their effects, and the most prominent violations of the Baathist regime in Iraq.	Theory	Daily and monthly exams
9	1 theory	Effects of psychological crimes.	Chapter Two: Psychological and social crimes their effects, and the most prominent violations of the Baathist regime in Iraq.	Theory	Daily and monthly exams
10	1 theory	Photos of human rights violations and crimes Nutrition	Chapter Two: Psychological and social crimes their effects, and the most prominent violations of the Baathist regime in Iraq.	Theory	Daily and monthly exams
11	1 theory	Some decisions of political Violations and military of the Baath regime.	Chapter Two: Psychological and social crimes their effects, and the most prominent violations of the Baathist regime in Iraq.	Theory	Daily and monthly exams
12	1 theory	Places of prisons and detention of the Baath regime.	Chapter Two: Psychological and social crimes their effects, and the most prominent violations of the Baathist regime in Iraq.	Theory	Daily and monthly exams

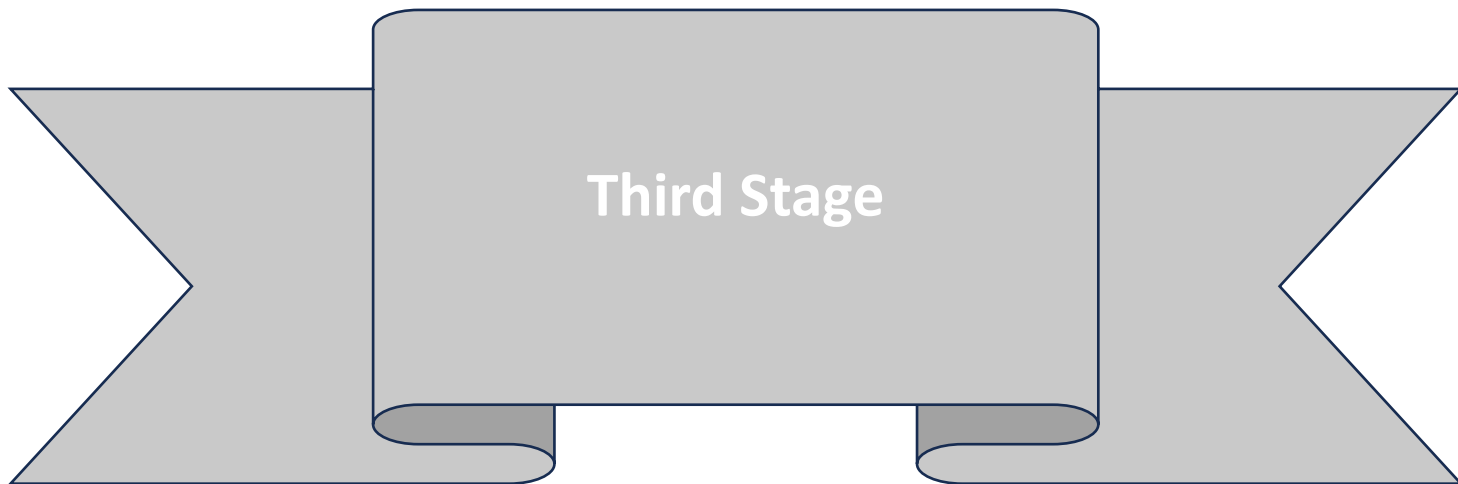| 13	1 theory	War and radioactive contamination and mine explosion.	Chapter Three: Environmental Crimes of the Baath Regime in Iraq.	Theory	Daily and monthly exams
14	1 theory	Destruction of cities and villages (scorched earth policy).	Chapter Three: Environmental Crimes of the Baath Regime in Iraq.	Theory	Daily and monthly exams
15	1 theory	Drying the marshes.	Chapter Three: Environmental Crimes of the Baath Regime in Iraq.	Theory	Daily and monthly exams
16	1 theory	Bulldozing palm groves and trees and plantings.	Chapter Three: Environmental Crimes of the Baath Regime in Iraq.	Theory	Daily and monthly exams
17	1 theory	The use of internationally prohibited weapons and the dangers mines.	Chapter Three: Environmental Crimes of the Baath Regime in Iraq.	Theory	Daily and monthly exams
18	1 theory	Contamination with radioactive materials	Chapter Three: Environmental Crimes of the Baath Regime in Iraq.	Theory	Daily and monthly exams
19	1 theory	Halabja City	Chapter Three: Environmental Crimes of the Baath Regime in Iraq.	Theory	Daily and monthly exams
20	1 theory	Bombing cities and villages.	Chapter Three: Environmental Crimes of the Baath Regime in Iraq.	Theory	Daily and monthly exams
21	1 theory	Bombing of holy shrines and mosques and husseiniyat	Chapter Three: Environmental Crimes of the Baath Regime in Iraq.	Theory	Daily and monthly exams
22	1 theory	Battle of Nahr Jassim.	Chapter Three: Environmental Crimes of the Baath Regime in Iraq.	Theory	Daily and monthly exams
23	1 theory	Burning oil wells.	Chapter Three: Environmental Crimes of the Baath Regime in Iraq.	Theory	Daily and monthly exams
24	1 theory	The displacement of the inhabitants of the marshes to the cities.	Chapter Three: Environmental Crimes of the Baath Regime in Iraq.	Theory	Daily and monthly exams
25	1 theory	Mass graves.	Chapter Four: Mass Grave Crimes.	Theory	Daily and monthly exams
26	1 theory	The events of the genocide cemeteries committed by the Baathist regime in Al-Ara.	Chapter Four: Mass Grave Crimes.	Theory	Daily and monthly exams
27	1 theory	The events of 1963 and their relationship to mass graves.	Chapter Four: Mass Grave Crimes.	Theory	Daily and monthly exams
28	1 theory	Events from 1979-2003 and their relationship to mass graves.	Chapter Four: Mass Grave Crimes.	Theory	Daily and monthly exams
29	1 theory	The events of the popular uprising in 1991 AD and its relationship to mass graves.	Chapter Four: Mass Grave Crimes.	Theory	Daily and monthly exams

30	1 theory	Chronological classification of genocide graves in Iraq for the period 1963 AD - 2003 AD.	Chapter Four: Mass Grave Crimes.	Theory	Daily and monthly exams

13. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports .... etc

14. Learning & Teaching Resources

Required textbooks (curricular if any)	Crimes of the Baath regime in Iraq
Main References (sources)	Crimes of the Baath regime in Iraq
Recommended Books & References (Scientific Journals, Reports …)	Crimes of the Baath regime in Iraq
Websites or Electronic References	

Third Stage

Course Description (1)

1. Course Title	Medical Electronic Systems
2. Course Code	0701301
3. Semester/Year	2023-2024
4. Description Preparation Date	5/2/2024
5. Available Attendance Form	Weekly attendance
6. No. of Hours (Total)	120
7. No. of Credits (Total)	6
8. Course Administrator Name	Dr. Ahmed Rasheed
9. E-mail	

10. Course Objectives

Knowledge	**A1**	Explanation of the concept of medical electronic systems.
	A2	Understand and recognize the basic components of electronic systems
	A3	Describe the types of filter circuits and methods of analysis, as well as analysis and des of straightening, pruning and jumping circuits by reference
	A4	Identify the different areas of application as well as describe the different circuits methods of designing and simplifying them
Skills	**B1**	Learn the basics of numerical and directional quantities and electronic elements
	B2	Learn the types of signals and distinguish between them and the methods of calculat related to them from the rate and effective value.
	B3	How to calculate the frequency response of circuits and various filtration methods
	B4	Knowing the elements of the signal and the process amplifier and its various applicatio
Values	**C1**	Attracting students and gaining their love for the material and respecting the lesson
	C2	Achieving pleasure with the benefit of the study material and thus stimulating follow-u the student
	C3	Generating new ideas when understanding the subject from the theoretical and pract side and asking smart questions in order to achieve full and optimal benefit
	C4	Achieving the concept of support and teamwork as a team

11. Teaching and Learning Strategies

1.	Demonstrate a thorough understanding of electronic systems and relevance in the medical field.	**4.**	Critical analysis and interpretation of data obtained from electronic

			measurements in medical electronic systems
2.	Apply theoretical knowledge to solve problems and troubleshoot electronic circuits used in medical devices.	**5.**	Effective and professional communication about medical electronic systems, both orally and in writing
3.	Evaluate the suitability of different electronic circuits for specific medicine applications	**6.**	Develop students' knowledge and skills in designing, analyzing, and troubleshooting electronic circuits used in medical devices

12.	The Structure of the Course				
Week	**Hours**	**RLOs**	**Topic/Subject Name**	**Learning Method**	**Evaluation Method**
1	2 theory + 2 practical	Study & understand the regulated power supply circuit design	Regulated power supply	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
2	2 theory + 2 practical	Study & understand the Monolithic regulators IC type	Monolithic regulators	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
3	2 theory + 2 practical	Study & understand the Switching regulators circuits	Switching regulators	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
4	2 theory + 2 practical	Study & understand the Additional switching regulator topologies	Additional switching regulator Topologies	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
5	2 theory + 2 practical	Study & understand the Additional switching regulator topologies	Additional switching regulator Topologies	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
6	2 theory + 2 practical	Study & understand the Active filter circuit design	Active filters	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
7	2 theory + 2 practical	Study & understand the Butter worth filter in practice	Butter worth filter , practical Realization	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
8	2 theory + 2 practical	Study & understand the Butter worth filter in practice	Butter worth filter , practical Realization	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
9	2 theory + 2 practical	Study & understand the Band pass and , band – reject filter	Band pass filter , band – reject filter	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
10	2 theory + 2 practical	Study & understand the Band pass and , band – reject filter	Band pass filter , band – reject filter	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
11	2 theory + 2 practical	Study & understand the active resonant and band pass filter	Active resonant and band pass Filter	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
12	2 theory + 2 practical	Study & understand the Active resonant and band	Active resonant and band pass filter	Theory + Lab	Daily and monthly exams, Lab reports, and discussions

		pass filter		Theory + Lab	Daily and monthly exams,
13	2 theory + 2 practical	Study & understand the Active RC band pass filter circuit	Active RC band pass filter	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
14	2 theory + 2 practical	Study & understand the Digital to analogue converters (DAC)	Digital to analogue converters (DAC)	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
15	2 theory + 2 practical	Study & understand the A lodder – type DAC , multiplying DAC	A lodder – type DAC , multiplying DAC	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
16	2 theory + 2 practical	Study & understand the Analogue to digital converters (ADC)	Analogue to digital converters (ADC)	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
17	2 theory + 2 practical	Study & understand the The counting ADC , successive approximation ADC	The counting ADC , successive approximation ADC	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
18	2 theory + 2 practical	Study & understand the The counting ADC , successive approximation ADC	The counting ADC , successive approximation ADC	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
19	2 theory + 2 practical	Study & understand the The parallel – comparator ADC , dual – slope or radiometric ADC	The parallel – comparator ADC , dual – slope or radiometric ADC	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
20	2 theory + 2 practical	The parallel – comparator ADC , dual – slope or radiometric ADC	The parallel – comparator ADC , dual – slope or radiometric ADC	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
21	2 theory + 2 practical	Study & understand the Medical data acquisition system	Medical data acquisition system	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
22	2 theory + 2 practical	Study & understand the Medical data acquisition system	Medical data acquisition system	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
23	2 theory +	Study & understand the	Medical data acquisition system	Theory + Lab	Daily and monthly exams,

	2 practical	Medical data acquisition System			Lab reports, and discussions
24	2 theory + 2 practical	Study & understand the Microcomputer based system	Microcomputer based system	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
25	2 theory + 2 practical	Study & understand the Monitoring	Monitoring	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
26	2 theory + 2 practical	Study & understand the Control	Control	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
27	2 theory + 2 practical	Study & understand the Control	Control	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
28	2 theory + 2 practical	Study Other medical Electronic systems	Other medical electronic systems	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
29	2 theory + 2 practical	Study Other medical Electronic systems	Other medical electronic systems	Theory + Lab	Daily and monthly exams, Lab reports, and discussions
30	2 theory + 2 practical	Study Other medical Electronic systems	Other medical electronic systems	Theory + Lab	Daily and monthly exams, Lab reports, and discussions

13. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports .... etc

14. Learning & Teaching Resources

Required textbooks (curricular if any)	Electronic Devices and Circuits Theory (Eleventh Edition) by Robert L. Boylestad and Louis Nashelsky
Main References (sources)	
Recommended Books & References (Scientific Journals, Reports …)	
Websites or Electronic References	https://www.youtube.com/@aliabdulelahal-naji3192

Course Description (2)

1. Course Title	**Medical Communication System**
2. Course Code	**0701303**
3. Semester/Year	**2023 - 2024**
4. Description Preparation Date	**28\3\2024**
5. Available Attendance Form	In Person
6. No. of Hours (Total)	120
7. No. of Credits (Total)	6
8. Course Administrator Name	**Dr. Istabraq M. Al-Joboury**
9. E-mail	istabraq.m@albayan.edu.iq

10.   Course Objectives

Knowledge	**A1**	Integration of Technical Knowledge: Teach students to integrate their understanding of medical instrumentation with effective communication skills to convey technical information clearly to healthcare professionals and patients.
	A2	Documentation Proficiency: Develop students' ability to produce accurate and comprehensive documentation related to medical devices and equipment, adhering to industry standards and regulatory requirements.
	A3	Interdisciplinary Collaboration: Foster collaboration between medical instrumentation engineers and healthcare professionals by equipping students with the communication skills necessary to engage in productive interdisciplinary dialogue and teamwork.
	A4	User Training and Support: Prepare students to effectively communicate user manuals, training materials, and technical support information to healthcare professionals, ensuring the safe and effective use of medical devices and equipment.
Skills	**B1**	Technical Communication: Ability to convey complex technical information related to medical devices and equipment clearly and effectively to healthcare professionals and patients.

	B2	Documentation Skills: Proficiency in producing accurate and comprehensive technical documentation, including user manuals, maintenance guides, and troubleshooting instructions.
	B3	Interdisciplinary Collaboration: Capacity to collaborate effectively with healthcare professionals from different disciplines, facilitating communication and teamwork in the development, implementation, and maintenance of medical instrumentation systems.
	B4	Training and Support: Capability to provide training and technical support to healthcare professionals on the proper use, maintenance, and troubleshooting of medical devices and equipment, ensuring optimal performance and safety.
Values	C1	Accuracy: Emphasizing the importance of conveying information precisely and without ambiguity to ensure the safe and effective use of medical devices and equipment.
	C2	Collaboration: Promoting interdisciplinary collaboration between medical instrumentation engineers and healthcare professionals to enhance patient care and technological advancements in the field.
	C3	Ethics: Instilling a commitment to ethical communication practices, including respect for patient confidentiality and adherence to professional standards and regulations.
	C4	Empowerment: Empowering students with the skills and knowledge to effectively communicate technical information, thereby enabling them to contribute meaningfully to healthcare delivery and innovation.

11. Teaching and Learning Strategies

1.	Interactive Workshops	4.	Field Visits
2.	Guest Lectures	5.	Simulations
3.	Technological Tools Integration	6.	Feedback and Reflection

12. The Structure of the Course

Week	Hours	RLOs	Topic/Subject Name	Learning Method	Evaluation Method
1	4	Reviewing fundamental concepts such as Coulomb's law, electric field, electric potential, and Gauss's law to ensure a solid understanding of electrostatic principles and their applications.	General review in electrostatic	Interactive Lectures, Small Group Discussions, Video Analysis, Practical	Daily test and student participation
2	4	Understanding how to apply Gauss's law to calculate the electric flux through closed surfaces surrounding various charge distributions, aiding in the determination of the net electric field produced by these distributions.	Gauss's law	Interactive Lectures, Small Group Discussions, Video Analysis, Practical	Daily test and student participation
3	4	Understanding the concept of magnetic flux and its relationship with magnetic field strength, aiding in the analysis of magnetic fields produced by steady current distributions and permanent magnets.	Steady magnetic field	Interactive Lectures, Small Group Discussions, Video Analysis, Practical	Daily test and student participation

4 and 5	4	Understanding Faraday's law of electromagnetic induction and Lenz's law, which describe how changes in magnetic flux induce electromotive force (emf) and currents in conductors, facilitating the analysis of electromagnetic phenomena such as electromagnetic induction and transformers.	Time – varying magnetic field	Interactive Lectures, Small Group Discussions, Video Analysis, Practical	Daily test and student participation
6	4	Understanding the concept of wave propagation in uniform plane waves, including parameters such as wavelength, frequency, amplitude, and phase velocity, facilitating the analysis of electromagnetic wave behavior in various mediums and applications.	Uniform plane waves	Interactive Lectures, Small Group Discussions, Video Analysis, Practical	Daily test and student participation
7 and 8	4	Understanding the concept and mathematical principles behind the Fourier transform, including its application in decomposing complex signals or functions into simpler sinusoidal components, aiding in the analysis and synthesis of	Fourier transform	Interactive Lectures, Small Group Discussions, Video Analysis, Practical	Daily test and student participation

		signals in various engineering and scientific fields.			
9 and 1	4	Understanding the concept of system properties such as linearity, time-invariance, causality, and stability, and their effects on signal processing, aiding in the analysis and design of systems for various engineering applications.	Signals & system	Interactive Lectures, Small Group Discussions, Video Analysis, Practical	Daily test and student participation
11 and 12	4	Differentiating between periodic and non-periodic signals, understanding their characteristics, such as frequency content, amplitude variations, and time-domain behavior, aiding in the analysis and processing of signals in various engineering applications.	Periodic, non-periodic signals	Interactive Lectures, Small Group Discussions, Video Analysis, Practical	Daily test and student participation
13 and 1	4	Understanding the principles of modulation, including how amplitude and frequency variations in carrier waves encode information in AM and FM systems, facilitating the	AM & FM systems	Interactive Lectures, Small Group Discussions, Video Analysis, Practical	Daily test and student participation

		analysis and design of communication systems for transmitting audio, data, and other signals.			
15, 16, and 17	2	Understanding the principles and applications of various modulation techniques in digital communication systems, including how sampling, pulse modulation, and pulse code modulation methods are used to encode analog signals into digital formats for transmission, storage, and processing.	Sampling, PAM, PWM, PPM, PCM	Interactive Lectures, Small Group Discussions, Video Analysis, Practical	Daily test and student participation
18, 19, and 20	4	Understanding the principles and characteristics of ASK, FSK, and PSK modulation schemes, including how they encode digital data onto carrier signals through variations in amplitude, frequency, or phase, facilitating the analysis and design of digital communication systems for transmitting and receiving digital information.	Digital modulation (ASK, FSK, PSK)	Interactive Lectures, Small Group Discussions, Video Analysis, Practical	Daily test and student participation

Week	Hours	Learning Outcomes	Topic	Teaching Methods	Assessment
21 and 22	4	Understanding the types and characteristics of noise in analog and digital systems, including thermal noise, shot noise, and quantization noise, as well as their impact on signal quality and methods for noise reduction and mitigation in communication systems.	Noise in analogue & digital systems	Interactive Lectures, Small Group Discussions, Video Analysis, Practical	Daily test and student participation
23 and 24	4	Understanding the fundamental properties and modes of propagation in rectangular waveguides, including the concept of cutoff frequency, waveguide dispersion, and characteristic impedance, aiding in the analysis and design of waveguide-based communication systems and components.	Rectangular wave – guides	Interactive Lectures, Small Group Discussions, Video Analysis, Practical	Daily test and student participation
25 and 26	4	Understanding the principles and applications of microwave passive devices such as couplers, splitters, filters, and attenuators, including their design considerations,	Microwave passive devices	Interactive Lectures, Small Group Discussions, Video Analysis, Practical	Daily test and student participation

		performance characteristics, and roles in microwave circuitry, aiding in the analysis, design, and optimization of microwave communication systems and components.			
27 and 28	4	Understanding the operation principles and characteristics of microwave generators such as klystrons, magnetrons, and traveling-wave tubes (TWTs), including their frequency range, power output, efficiency, and applications in radar systems, microwave ovens, and communication transmitters.	Microwave generators	Interactive Lectures, Small Group Discussions, Video Analysis, Practical	Daily test and student participation
29 and 30	4	Understanding the principles of antenna design, radiation patterns, impedance matching, and polarization, aiding in the analysis, design, and optimization of antennas for various applications in communication systems, radar systems, and wireless technologies.	Antennas	Interactive Lectures, Small Group Discussions, Video Analysis, Practical	Daily test and student participation

13. Course Evaluation
Distributing grades out of 100 based on tasks assigned to the student, such as daily preparation, daily exams, oral and monthly exams, written exams, reports, etc.

14. Learning & Teaching Resources	
Required textbooks (curricular if any)	Stremler, F. G. (1982, January 1). Introduction to Communication Systems. Addison Wesley Publishing Company.
Main References (sources)	Stremler, F. G. (1982, January 1). Introduction to Communication Systems. Addison Wesley Publishing Company.
Recommended Books & References (Scientific Journals, Reports …)	Ray, E. B., & Donohew, L. (2013, November 5). Communication and Health. Routledge.
Websites or Electronic References	https://www.coursera.org/learn/human-body-communication-systems

Course Description (3)

1. **Course Title**		Medical Instrumentation (II)
2. **Course Code**		0701309
3. **Semester/Year**		2023-2024
4. **Description Preparation Date**		28−3−2024
5. **Available Attendance Form**		Attendance (weekly)
6. **No. of Hours (Total)**		30 hours (theoretical) + 30 hours (practical)
7. **No. of Credits (Total)**		7
8. **Course Administrator Name**		Assist. Lect. Saad M. Sarhan
9. **E-mail**		saadbme8@gmail.com
10. **Course Objectives**		
Knowledge	**A1**	Developing the scientific ability of students in the maintenance and development of medical devices
	A2	Develop students' skills in the field of medical devices
	A3	Practical training for students on all electronic circuits in medical devices
	A4	
Skills	**B1**	Training in the operation and maintenance of medical devices
	B2	Installation and operation of medical devices (supervision and implementation)
	B3	Providing advice in the field of medical devices
	B4	Repair of medical equipment
Values	**C1**	Providing students with modern knowledge in the fields of devices and power electronic circuits for medical devices.
	C2	Developing students' skills and ability to carry out laboratory experiments for power electronic devices and circuits.
	C3	Teach the student the basic concepts, origin, development, importance and principles of power electronic devices and circuits.
	C4	The student learned the transformation taking place in medical devices in the field of power devices and circuits
11. **Teaching and Learning Strategies**		

1.	Present, electronic and video lectures	4.	workshops	

| 2. | scientific laboratories (medical devices) | 5. | use of the smart board to explain the vocabulary of the curriculum |
| 3. | use of data show | 6. | |

12.	The Structure of the Course				
Week	**Hours**	**RLOs**	**Topic/Subject Name**	**Learning Method**	**Evaluation Method**
1	3	Lecture + Lab	Cardiac function recorders and monitors.	The student understands the lesson	Direct questions
2	3	Lecture + Lab	Cardiac function recorders and monitors.	The student understands the lesson	Direct questions
3	3	Lecture + Lab	Cardiac function recorders and monitors.	The student understands the lesson	Direct questions
4	3	Lecture + Lab	Surgical scope	The student understands the lesson	Direct questions
5	3	Lecture + Lab	Surgical scope	The student understands the lesson	Direct questions
6	3	Lecture + Lab	Audiological system	The student understands the lesson	Direct questions
7	3	Lecture + Lab	Ophthalmic system	The student understands the lesson	Direct questions
8	3	Lecture + Lab	Ophthalmic system	The student understands the lesson	Direct questions
9	3	Lecture + Lab	Pulmonary function system	The student understands the lesson	Direct questions
10	3	Lecture + Lab	Pulmonary function system	The student understands the lesson	Direct questions

11	3	Lecture + Lab	Ultrasound, Radiation, X-ray	The student understands the lesson	Direct questions
12	3	Lecture + Lab	Ultrasound, Radiation, X-ray	The student understands the lesson	Direct questions
13	3	Lecture + Lab	Computed Tomography	The student understands the lesson	Direct questions
14	3	Lecture + Lab	Magnetic Resonance Imaging	The student understands the lesson	Direct questions
15	3	Lecture + Lab	Magnetic Resonance Imaging	The student understands the lesson	Direct questions
16	3	Lecture + Lab	Pathological units.	The student understands the lesson	Direct questions
17	3	Lecture + Lab	Pathological units.	The student understand the lesson	Direct questions
18	3	Lecture + Lab	Coronary care units	The student understands the lesson	Direct questions
19	3	Lecture + Lab	Coronary care units	The student understands the lesson	Direct questions
20	3	Lecture + Lab	Cardiac function recorders and monitors	The student understands the lesson	Direct questions
21	3	Lecture + Lab	Cardiac function recorders and monitors	The student understands the lesson	Direct questions
22	3	Lecture + Lab	Surgical scope	The student understands the lesson	Direct questions
23	3	Lecture + Lab	Surgical scope	The student understands the lesson	Direct questions

24	3	Lecture + Lab	Audiological system	The student understands the lesson	Direct questions
25	3	Lecture + Lab	Audiological system	The student understands the lesson	Direct questions
26	3	Lecture + Lab	Ophthalmic system	The student understands the lesson	Direct questions
27	3	Lecture + Lab	Ophthalmic system	The student understands the lesson	Direct questions
28	3	Lecture + Lab	Therapeutic Diathermy	The student understands the lesson	Direct questions
29	3	Lecture + Lab	Therapeutic Diathermy	The student understands the lesson	Direct questions
30	3	Lecture + Lab	Therapeutic Diathermy	The student understands the lesson	Direct questions

13. Course Evaluation
Daily assessment - quarterly assessment - practical assessment - final assessment -   presentation - daily attendance - weekly reports

14. Learning & Teaching Resources	
Required textbooks (curricular if any)	The_Biomedical_Engineering_Handbook Medical Devices and Systems Joseph D. Bronzeno
Main References (sources)	
Recommended Books & References (Scientific Journals, Reports …)	
Websites or Electronic References	

Course Description (4)

1. Course Title	Power Electronics
2. Course Code	0701305
3. Semester/Year	2023/2024
4. Description Preparation Date	29/3/2024
5. Available Attendance Form	In person
6. No. of Hours (Total)	90
7. No. of Credits (Total)	6
8. Course Administrator Name	Dr. Sami Kadhim Hasan
9. E-mail	Sami.hasan@albayan.edu.iq

10. Course Objectives

Knowledge	**A1**	Developing the competencies of graduates to meet the needs of various sectors in the field of using medical devices.
	A2	Raising students' awareness to respond to the changes in the medical devices labor market
	A3	Providing students with modern knowledge in the fields of devices and power electronic circuits for medical devices.
	A4	Developing students' skills and ability to carry out laboratory experiments for power electronic devices and circuits.
Skills	**B1**	Teach the student the basic concepts, origin, development, importance and principles of Power electronic devices and circuits.
	B2	The student learned the transformation taking place in medical devices in the field of Power devices and circuits
	B3	Developing the competencies of graduates to meet the needs of various sectors in the field of using medical devices.
	B4	Raising students' awareness to respond to the changes in the medical devices labor market
Values	**C1**	Providing students with modern knowledge in the fields of devices and power electronic circuits for medical devices.
	C2	Developing students' skills and ability to carry out laboratory experiments for power electronic devices and circuits.
	C3	Teach the student the basic concepts, origin, development, importance and principles power electronic devices and circuits.
	C4	The student learned the transformation taking place in medical devices in the field of power devices and circuits

11. Teaching and Learning Strategies

1.	Interaction by asking engineering questions in everything related to power electronic devices and circuits.	**4.**	Teaching students how to think, analyze and deduct in a correct scientific manner
2.	Use teaching and learning methods with extensive explanation on the board.	**5.**	Discuss topics and follow brainstorming to put forward opinions and ideas.
3.	Use modern methods available from the data viewer and smart board.	**6.**	Teaching and encouraging students to ask technical questions and come up with everything new to serve the scientific aspects and provide them with

12. The Structure of the Course

Week	Hours	RLOs	Topic/Subject Name	Learning Method	Evaluation Method
1	2/Th. 2/lab.	Understanding Introduction to power electronics. 1st	Introduction to power electronics. 1st	Lecture and Lab	Daily exams + semester exams +end-of-year exams + laboratory reports +brainstorming discussions
2-3	8	Understanding Switching devices, power & control device. 2nd , 3rd	2. Switching devices, power & control device. 2nd , 3rd	Lecture and Lab	Daily exams + semester exams +end-of-year exams + laboratory reports +brainstorming discussions
4-5	8	Understanding Types and characteristic, rating (diode, transistor …). 4th , 5th	3 .Types and characteristic, rating (diode, transistor …). 4th , 5th	Lecture and Lab	Daily exams + semester exams +end-of-year exams + laboratory reports +brainstorming discussions
6-8	12	Understanding Methods of turning – on & turning – off. 6th , 7th , 8th	4. Methods of turning – on & turning – off. 6th , 7th , 8th	Lecture and Lab	Daily exams + semester exams +end-of-year exams + laboratory reports +brainstorming discussions

9-10	10	Understanding Protection of power devices. 9th , 10th	5. Protection of power devices. 9th , 10th	Lecture and Lab	Daily exams + semester exams +end-of-year exams + laboratory reports +brainstorming discussions
11-12	10	Understanding Triggering & base drive circuits. 11th , 12th	6. Triggering & base drive circuits. 11th , 12th	Lecture and Lab	Daily exams + semester exams +end-of-year exams + laboratory reports +brainstorming discussions
13-15	12	Understanding Controlled rectifiers, 1 – phase & 3 – phase circuits. 13th , 14th , 15th	7. Controlled rectifiers, 1 – phase & 3 – phase circuits. 13th , 14th , 15th	Lecture and Lab	Daily exams + semester exams +end-of-year exams + laboratory reports +brainstorming discussions
16-18	12	Understanding Half – wave & full – wave circuits. 16th , 17th , 18th	8 .Half – wave & full – wave circuits. 16th , 17th , 18th	Lecture and Lab	Daily exams + semester exams +end-of-year exams + laboratory reports +brainstorming discussions
19-21	12	Understanding D.C choppers; step – up & step – down choppers. 19th , 20th , 21st	9. D.C choppers; step – up & step – down choppers. 19th , 20th , 21st	Lecture and Lab	Daily exams + semester exams +end-of-year exams + laboratory reports +brainstorming discussions

22-23	8	Understanding A.C phase controllers. 22nd , 23rd	10. A.C phase controllers. 22nd , 23rd	Lecture and Lab	Daily exams + semester exams +end-of-year exams + laboratory reports +brainstorming discussions
24-26	12	Understanding Invertors, 1 – phase & 3 – phase bridges. 24th , 25th , 26th	11. Invertors, 1 – phase & 3 – phase bridges. 24th , 25th , 26th	Lecture and Lab	Daily exams + semester exams +end-of-year exams + laboratory reports +brainstorming discussions
27-28	8	Understanding Some applications: a – uninterruptible power supply(UPS). 27th , 28th	12. Some applications: a – uninterruptible power supply(UPS). 27th , 28th	Lecture and Lab	Daily exams + semester exams +end-of-year exams + laboratory reports +brainstorming discussions
29-30	8	Understanding b – switching mode power sup (SMP). 29th , 30th	13. b – switching mode pow supply (SMP). 29th , 30th	Lecture and Lab	Daily exams + semester exams +end-of-year exams + laboratory reports +brainstorming discussions

13. **Course Evaluation**
1- Attendance and participation in daily preparation (10) 2- Laboratory Practical Exams (30) 4- Semi-semester and quarterly exams in addition to the end-of-year exams (60)

14. **Learning & Teaching Resources**	
Required textbooks (curricular if any)	1. Robert L. Boylestad and Louis Nashelsky, "Electronic devices and circuit theory," Pearson Education Limited, 11th ed. **2.** M.H. Rashid, "Power Electronic: Circuits, Devices and Applications" Prentice Hall, 3th ed.
Main References (sources)	J.S. Chitode, "Power Electronic-III," Technical publication Pune, 2nd ed.
Recommended Books & References (Scientific Journals, Reports …)	B. Grzesik and M. Stepien, "Power electronics in biomedical applications - An overview," 2012 15th International Power Electronics and Motion Control Conference (EPE/PEMC), Novi Sad, Serbia, 2012, pp. LS5a.1-1-LS5a.1-4.
Websites or Electronic References	Online tutorials and internet lectures

Course Description (5)

1. Course Title	Electrical Technology
2. Course Code	0701304
3. Semester/Year	2023-2024
4. Description Preparation Date	2024/3/29
5. Available Attendance Form	In Person
6. No. of Hours (Total)	120
7. No. of Credits (Total)	6
8. Course Administrator Name	Ali Mustafa Salman
9. E-mail	Ali.m@albayan.edu.iq

10.   Course Objectives

Knowledge	A1	Study the basics of electricity
	A2	Study of electric motors
	A3	Study of electrical transformers
	A4	Study of maintenance of motors and transformers and detection of faults
Skills	B1	Design and Maintenance of Electrical Circuits: Students learn how to design, analyze, and maintain electrical circuits including digital and analog circuits.
	B2	Students learn how to use mathematical models and electrical computing to analyze, design and improve electrical circuits and electrical machines
	B3	Students acquire the skills necessary to design and operate a variety of electrical machines such as motors, generators, and transformers.
	B4	Students are trained to use the engineering approach to solve complex problems in the field of electricity, machines, and transformers.
Values	C1	Efficiency: Electricity technology aims to improve the efficiency of machines a transformers, whether through developing new designs or using advanc manufacturing techniques, with the aim of increasing the electrical conversion r and reducing losses in energy.

C2	Reliability: Electrical technology seeks to improve the reliability of machines a transformers, which means designing them In a way that ensures the continuity work with high efficiency for long periods without malfunction or interruption operation	
C3	Competitiveness: Electricity technology aims to develop machines and transform that are competitive in terms of performance and cost, to meet market needs a compete with other available products.	
C4	Innovation: Technology in the field of machines and transformers is a platform continuous innovation and development, as researchers and engineers seek develop new technologies and innovative solutions to improve the performance these devices.	

11. Teaching and Learning Strategies

1.	Use of interactive media: Interactive media such as interactive videos and interactive web applications can be used to explain basic concepts and engineering processes in the field of electrical machines.	**4.**	Interactive assessment techniques: Interactive assessment techniques such as quizzes and interactive assessment tools can be used to assess students' progress and effectively guide them towards improving their performance and understanding.
2.	Virtual Reality and Augmented Reality Applications: Virtual Reality and Augmented Reality applications can be used to directly demonstrate the internal structures of electrical machines and equipment, helping students better understand systems and processes.	**5.**	Electrical circuit simulation and modeling: Simulation software such as PSpice or MATLAB/Simulink can be used to create virtual models of electrical circuits and machines. These tools enable students to experiment and analyze circuits and machines without the need for actual materials.
3.	Search for faults and provide appropriate solutions	**6.**	

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12.	The Structure of the Course				
Week	Hours	RLOs	Topic/Subject Name	Learning Method	Evaluation Method
1-2	4	Daily exams + discussions	Transformers : single phase transformer and construction	Presence	Daily exams + discussions
3	4	Daily exams + discussions	Theory of operation , no load and short circuit test	Presence	Daily exams + discussions
3-4	4	Daily exams + discussions	Equivalent circuit auto–transformers, instrument transformers .	Presence	Daily exams + discussions
5-6	4	Daily exams + discussions	Three phase transformers , constructions methods of connection	Presence	Daily exams + discussions
8-9	4	Daily exams + discussions	Electromechanical energy conversion principles , relay operation .	Presence	Daily exams + discussions
10-12	4	Daily exams + discussions	D.C machines : e.m.f and torque equation , equivalent circuit , methods of excitation , generator characteristics .	Presence	Daily exams + discussions
13-15	4	Daily exams + discussions	Motor characteristics , testing , calculation of losses and efficiency .	Presence	Daily exams + discussions

16-18	4	Daily exams + discussions	Induction machines : equivalent circuit , basic equation , simple analysis testing .	Presence	Daily exams + discussions
19-21	4	Daily exams + discussions	Single phase induction motor , methods of starting , siplitphase , capacitor short , capacitor run and shaded pole motors .	Presence	Daily exams + discussions
22-23	4	Daily exams + discussions	Synchronous machines, generators and motors , equivalent circuit , basic equation .	Presence	Daily exams + discussions
24-25	4	Daily exams + discussions	linear motor, stepper motor , dray cup type motor , servo motor , etc	Presence	Daily exams + discussions
26-27	4	Daily exams + discussions	Control switches : pilot switches , push bottoms , limits	Presence	Daily exams + discussions
28	4	Daily exams + discussions	Switches , flost switches , contactors , pressure switches .	Presence	Daily exams + discussions
29-30	4	Daily exams + discussions	High voltage circuits .	Presence	Daily exams + discussions

13. **Course Evaluation**
Distribution of grades out of 100 according to tasks assigned to the student, such as daily preparation, daily exams, oral exams, monthly exams, written assignments, reports, etc.

14. **Learning & Teaching Resources**	
Required textbooks (curricular if any)	**Not exist**
Main References (sources)	Theraga of electrical technology fourth generati
Recommended Books & References (Scientific Journals, Reports …)	IEEE, google scholar ,Pdf driver
Websites or Electronic References	https://byjus.com/physics/dc-generator http://bpie.org.in/online-study/humanities-and-science/EM-2%20Notes-2600.pdf

Course Description (6)

1. Course Title	Digital Signal Processing
2. Course Code	0701302
3. Semester/Year	Year
4. Description Preparation Date	6/2/2024
5. Available Attendance Form	Class attendances
6. No. of Hours (Total)	120
7. No. of Credits (Total)	6
8. Course Administrator Name	Dr. Ahmed Lateef
9. E-mail	Ahmedlateef80@gmail.com

10. Course Objectives

Knowledge	**A1**	Understanding and classifying digital signal processing systems.
	A2	Understand how to convert an analogue signal to digital.
	A3	Understanding pulse and frequency analysis of intermittent signals.
	A4	Design digital filters and study their response.
Skills	**B1**	The student must be able to apply engineering-mathematical analyses.
	B2	The ability to identify, formulate and solve engineering problems.
	B3	Mastery of the mathematical, basic, and engineering sciences necessary to conduct the analysis and design of electrical engineering systems.
	B4	The ability to use systems simulation programs such as MATLAB.
Values	**C1**	Realizing the requirements of the engineering profession and ethical responsibility.
	C2	Understanding the impact of engineering solutions on economic and environmental activities and the societal context.
	C3	Recognizing the need for lifelong learning and the ability to engage in it.
	C4	

11. Teaching and Learning Strategies

1.	Theoretical lectures	**4.**	Scientific laboratories
2.	Scientific exhibitions	**5.**	Workshops
3.	Seminars	**6.**	Case studies

12.	The Structure of the Course				
Week	**Hours**	**RLOs**	**Topic/Subject Name**	**Learning Method**	**Evaluation Method**
1	2th+2Lab	The students understand the lesson	Introduction to digital signal processing	Theoretical lectures	Quizzes and Discussion
2	2th+2Lab	The students understand the lesson	Basic elements of DSP, DSP vs. ASP, application of DSP,	Theoretical lectures	Quizzes and Discussion
3	2th+2Lab	The students understand the lesson	Continues time signals vs. discrete time signals	Theoretical lectures	Quizzes and Discussion
4	2th+2Lab	The students understand the lesson	Discrete time signals and sequences	Theoretical lectures	Quizzes and Discussion
5	2th+2Lab	The students understand the lesson	Discrete time signals and sequences	Theoretical lectures	Quizzes and Discussion
6	2th+2Lab	The students understand the lesson	Discrete time signals and sequences	Theoretical lectures	Quizzes and Discussion
7	2th+2Lab	The students understand the lesson	Standard of discrete time signals (sequences)	Theoretical lectures	Quizzes and Discussion
8	2th+2Lab	The students understand the lesson	Unit sample sequence, Unit step sequence,	Theoretical lectures	Quizzes and Discussion
9	2th+2Lab	The students understand the lesson	Unit ramp sequence Exponential sequence.	Theoretical lectures	Quizzes and Discussion
10	2th+2Lab	The students understand the lesson	(classification of discrete time signals) system properties	Theoretical lectures	Quizzes and Discussion

11	2th+2Lab	The students understand the lesson	Static and dynamic system, shift invariant and shift variant system,	Theoretical lectures	Quizzes and Discussion
12	2th+2Lab	The students understand the lesson	Causal and non-causal system, linear and nonlinear system, stable and unstable	Theoretical lectures	Quizzes and Discussion
13	2th+2Lab	The students understand the lesson	Convolution: Direct form method,	Theoretical lectures	Quizzes and Discussion
14	2th+2Lab	The students understand the lesson	graphical method, slide rule method	Theoretical lectures	Quizzes and Discussion
15	2th+2Lab	The students understand the lesson	Correlation of discrete time sequence cross correlation and auto correlation	Theoretical lectures	Quizzes and Discussion
16	2th+2Lab	The students understand the lesson	Correlation of discrete time sequence cross correlation and auto correlation	Theoretical lectures	Quizzes and Discussion
17	2th+2Lab	The students understand the lesson	Frequency domain representation	Theoretical lectures	Quizzes and Discussion
18	2th+2Lab	The students understand the lesson	Find Frequency response	Theoretical lectures	Quizzes and Discussion
19	2th+2Lab	The students understand the lesson	Discrete Fourier transform (DFT)	Theoretical lectures	Quizzes and Discussion
20	2th+2Lab	The students understand the lesson	Linear convolution using DFT	Theoretical lectures	Quizzes and Discussion
21	2th+2Lab	The students understand the lesson	Invers Discrete Fourier transform IDFT	Theoretical lectures	Quizzes and Discussion
22	2th+2Lab	The students understand the lesson	Fast Fourier transform(FFT)	Theoretical lectures	Quizzes and Discussion
23	2th+2Lab	The students understand the lesson	Butterfly computation	Theoretical lectures	Quizzes and Discussion
24	2th+2Lab	The students understand the lesson	Invers Fast Fourier transform (IFFT)	Theoretical lectures	Quizzes and Discussion

25	2th+2Lab	The students understand the lesson	Introduction to Z transform Definition of Z transform and Roc	Theoretical lectures	Quizzes and Discussion
26	2th+2Lab	The students understand the lesson	Properties of Z transform, Inverse z transform, application of Z transform (pole & zero plot,	Theoretical lectures	Quizzes and Discussion
27	2th+2Lab	The students understand the lesson	Speech processing	Theoretical lectures	Quizzes and Discussion
28	2th+2Lab	The students understand the lesson	Realization of digital filter: Basic FIR filter structure, direct form of F1R structure,	Theoretical lectures	Quizzes and Discussion
29	2th+2Lab	The students understand the lesson	Cascaded form of FIR structure, Basic IIR fi er structure, direct form of structure,	Theoretical lectures	Quizzes and Discussion
30	2th+2Lab	The students understand the lesson	Cascaded form of IIR structure. Parallel form of IR structure + Image processing	Theoretical lectures	Quizzes and Discussion

13. Course Evaluation
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.

14. Learning & Teaching Resources	
Required textbooks (curricular if any)	* Hwei P. Hsu, "Schaum's Outlines of Theory and Problems of Signals and System" McGraw- Hill Companies. *Monson H. Hayes," Schaum's Outline of Theory and Problems of Digital Signal Processing", McGraw- Hill Companies.
Main References (sources)	*John G. Proakis, Dimitris G. Manolakis," Digital Signal Processing", 3rd Edition. *Pall A. lynn," Digital signal processing with computer applications", 2nd edition. *John W. Leis,"Digital Signal Processing Using Matlab for Students And Researchers". *Vinay K. Ingle,John G. Proakis," Digital Signal Processing Using MATLAB".
Recommended Books & References (Scientific Journals, Reports …)	ScienceDirect, Wiley
Websites or Electronic References	*"Signals and systems Introduction"*, Tutorials Point website, http://www.tutorialspoint.com/dip/signals_and_system_introduction.htm

Course Description (7)

1. Course Title	Computer Applications 3
2. Course Code	0701306
3. Semester/Year	2024-2023
4. Description Preparation Date	2024/3/28
5. Available Attendance Form	Theoretical and Practical Lectures
6. No. of Hours (Total)	90
7. No. of Credits (Total)	4
8. Course Administrator Name	Asst.lec . Mariam Qutaiba
9. E-mail	Mariam.q@albayan.edu.iq

10. Course Objectives

Knowledge	**A1**	Understand the concepts and fundamentals of the MATLAB programming language.
	A2	Learn how to utilize MATLAB in various fields such as digital signal processing, numerical computation, and data analysis.
	A3	Familiarize yourself with the main tools and functions in the MATLAB working environment.
Skills	**B1**	Perform basic operations in MATLAB programming such as arithmetic, logical, and matrix operations.
	B2	Develop the ability to write simple programs using MATLAB to solve specific problems.
	B3	Utilize MATLAB for data analysis and visualization.
Values	**C1**	Enhance mental flexibility and creative problem-solving skills using computational applications with MATLAB.
	C2	Promote teamwork and knowledge exchange in utilizing MATLAB for solving engineering and scientific problems.
	C3	Strengthen discipline and perseverance through programming with MATLAB to solve a variety of problems and challenges.

11. Teaching and Learning Strategies

1.	Interactivity: Encouraging active engagement and participation of	**5.**	Collaboration: Promoting teamwork

	students in learning processes.		and exchange of knowledge and expertise among students.
2.	Assessment: Employing comprehensive and varied assessment methods to measure the achievement of educational objectives.	5.	Flexibility: Adapting educational processes to the diverse needs and learning styles of students.
3.	Innovation: Using innovative methods and techniques to stimulate learning and achieve objectives.	6.	Applicability: Linking knowledge to practical application in real- life contexts.
4.	Continuity: Enhancing continuous learning and skill development throughout life.	7.	Multimedia: Utilizing a diverse range of media and educational resources

12. The Structure of the Course

Week	Hours	RLOs	Topic/Subject Name	Learning Method	Evaluation Method
1-3	3	Introduction, MATLAB Environment, MATLAB Windows (Command Window, Workspace Window, Command History window, Help Window, Editor Window)	INTRODUCTION	Theoretical + Practical	Classroom Participation
4-5	3	A First Program, Expressions, Constants, Entering Matrices, Useful Matrix Generators, Subscripting ,End as a subscript, Colon Operator, Transpose Deleting Rows or Columns.	A First Program	Theoretical + Practical	Daily Exam
6	3	Variables and assignment statement, logical operator.	Variables	Theoretical + Practical	Practical Application
7-9	3	Arrays, Built in functions, Basic Matrix Functions (sum, max, min, mean, magic, diag, length, size, median, prod, sort).	Arrays	Theoretical + Practical	Report + Daily Exam
10-11	3	Basic Plotting	Basic Plotting	Theoretical + Practical	Daily Exam
12-15	3	Control statements	Control statements	Theoretical + Practical	Student Participation
16-18	3	Repetition statements	Repetition statements	Theoretical + Practical	Student Participation

19-20	3	Procedures and Functions (a custom-made Matlab function, define the name of the function, the input and the output variables, Calling Functions)	Procedures	Theoretical + Practical	Student Participation
21-27	3	GUI	GUI	Theoretical + Practical	Student Participation Homework
28-30	3	Review and exam			

13. Course Evaluation
Mid exam 20% Lab exam 20% Quizzes 5% Attendance 5% Final 40% Final lab exam 10%

14. Learning & Teaching Resources	
Required textbooks (curricular if any)	MATLAB Programming for Engineers
Main References (sources)	
Recommended Books & References (Scientific Journals, Reports …)	
Websites or Electronic References	WWW.MATHWORKS.COM

Course Description (8)

1. Course Title	**Microprocessors and Microcontrollers**	
2. Course Code	**0701307**	
3. Semester/Year	**2023 – 2024**	
4. Description Preparation Date	**15/3/2024**	
5. Available Attendance Form	**Full Time Course**	
6. No. of Hours (Total)	**120**	
7. No. of Credits (Total)	**3**	
8. Course Administrator Name	Dr. Sinan Q. Salih	
9. E-mail	Sinan.salih@albayan.edu.iq	

10. Course Objectives

Knowledge	**A1**	Introducing students to key computer components, including processors and memories.
	A2	Educating students about the history of processors and semiconductor materials used in their production.
	A3	Teaching students the theoretical and practical operation of microprocessors.
	A4	Informing students about important developments in the field of microprocessors.
Skills	**B1**	Ability to differentiate microprocessors based on speed and performance.
	B2	Identifying the basic specifications for configuring computers for personal and scientific use.
	B3	Building simple programming concepts using Assembly language.
	B4	Ability to measure device speed based on the type of processor used.
Values	**C1**	Promoting teamwork for solving complex problems through collaborative projects.
	C2	Revamping student mindset for job market with creative thinking methods.
	C3	Introducing students to the fundamental principles of various programming languages.
	C4	

11. Teaching and Learning Strategies

1.	Theoretical Lectures	**4.**	Oral Questions and Discussions
2.	Practical Lectures	**5.**	Daily Exams
3.	Projects	**6.**	Seminars and Presentations

12.	The Structure of the Course				
Week	**Hours**	**RLOs**	**Topic/Subject Name**	**Learning Method**	**Evaluation Method**
1-3	2 T 2 P	Understanding microprocessors their significance.	Introduction to microprocessor and microcomputer	Theoretical and Practical Lectures	Oral Exams + Reports
4-6	2 T 2 P	Basic memory units: ROM and RAM.	Semiconductor memories .	Theoretical and Practical Lectures	Oral Exams + HWs
7	2 T 2 P	Secondary memory.	Auxiliary memories	Theoretical and Practical Lectures	Oral Exams + HWs
8-9	2 T 2 P	8085 processor architecture.	Microprocessor architecture	Theoretical and Practical Lectures	Oral Exams + HWs
10-13	2 T 2 P	Time intervals and calculations.	Bus signal timing & I/O timing	Theoretical and Practical Lectures	Oral Exams + HWs
14	2 T 2 P	Methods of interacting with microprocessors.	Microprocessor interfacing	Theoretical and Practical Lectures	Oral Exams + HWs
15-17	2 T 2 P	Instruction sets and addressing methods.	Instruction sets & addressing mod	Theoretical and Practical Lectures	Oral Exams + HWs
18-20	2 T 2 P	Digital input and output devices.	Digital I/O	Theoretical and Practical Lectures	Oral Exams + HWs
21-24	2 T 2 P	Analog input and output devices.	Analogue I/O	Theoretical and Practical Lectures	Oral Exams + HWs
25-27	2 T 2 P	Basic channels (serial and parallel).	Standard buses (serial & parallel buses).	Theoretical and Practical Lectures	Oral Exams + HWs
28-30	2 T 2 P	Exploring practical applications of microprocessors.	Some practical microprocessor	Theoretical and Practical Lectures	Oral Exams + HWs

- T : Theoretical   P : Practical

13. **Course Evaluation**

Annual grade is 50 points, final exam 50 points .
Annual grade comprises semester exams: (10 points theoretical exam, 10 points practical exam, 5 points for attendance and daily performance).

14. **Learning & Teaching Resources**	
Required textbooks (curricular if any)	1. An Introduction to Microprocessor 8085 2. Introduction to the Microprocessors with Intel 8085
Main References (sources)	
Recommended Books & References (Scientific Journals, Reports …)	
Websites or Electronic References	https://www.sim8085.com https://web8085.appspot.com

Course Description (9)

1. Course Title	English language
2. Course Code	0701409
3. Semester/Year	2023-2024
4. Description Preparation Date	28-3-2024
5. Available Attendance Form	Attendance (weekly)
6. No. of Hours (Total)	30 hours (theoretical)
7. No. of Credits (Total)	2
8. Course Administrator Name	Assist. Lect. Saad M. Sarhan
9. E-mail	saadbme8@gmail.com

10. Course Objectives

Knowledge	**A1**	The student Understands the basic structures of English sentences
	A2	Learns the basic vocabulary for any school stage
	A3	Listens and understands simple words and sentences in English
	A4	Learning Outcomes, Teaching ,Learning and Assessment Methods
Skills	**B1**	Understands the meanings of synonyms in English
	B2	Reads and understands words and phrases written in English
	B3	Writes sentences and phrases in English
	B4	talks to his colleague in English
Values	**C1**	Expresses ideas clearly and confidently in speech (verbal communication)
	C2	Work confidently with group (Team work)
	C3	Uses the steps of the method of collecting information in a systematic and scientific manner, especially within his competence
	C4	

11. Teaching and Learning Strategies

1.	Present, electronic and video lectures	4.	seminars

2.	scientific laboratories (medical devices)	5.	use of the smart board to explain the vocabulary of the curriculum
3.	use of data show	6.	

12.	The Structure of the Course				
Week	Hours	RLOs	Topic/Subject Name	Learning Method	Evaluation Method
1	2	Lecture	Tenses Questions Questions words	The student understands the lesson	Direct questions
2	2	Lecture	Present tenses Present simple	The student understands the lesson	Direct questions
3	2	Lecture	Present continuous	The student understands the lesson	Direct questions
4	2	Lecture	Have /have got	The student understands the lesson	Direct questions
5	2	Lecture	Past tenses Past simple	The student understands the lesson	Direct questions
6	2	Lecture	Past continuous	The student understands the lesson	Direct questions
7	2	Lecture	Quantity Much and many Some and any	The student understands the lesson	Direct questions
8	2	Lecture	Something, anyone, nobody, everywhere A few, a little, a lot of	The student understands the lesson	Direct questions
9	2	Lecture	Articles	The student understands the lesson	Direct questions
10	2	Lecture	Future intentions Going to and will	The student understands the lesson	Direct questions

11	2	Lecture	comparative and superlative	The student understands the lesson	Direct questions
12	2	Lecture	comparative and superlative	The student understands the lesson	Direct questions
13	2	Lecture	For and since	The student understands the lesson	Direct questions
14	2	Lecture	Tense revision	The student understands the lesson	Direct questions
15	2	Lecture	Have(got) to Should, must	The student understands the lesson	Direct questions
16	2	Lecture	conditional clauses	The student understands the lesson	Direct questions
17	2	Lecture	What, etc. Infinitive Something, etc. Infinitive	The student understand the lesson	Direct questions
18	2	Lecture	indirect questions	The student understands the lesson	Direct questions
19	2	Lecture	Second conditional might	The student understands the lesson	Direct questions
20	2	Lecture	Present Perfect simple	The student understands the lesson	Direct questions
21	2	Lecture	Present Perfect continuous	The student understands the lesson	Direct questions
22	2	Lecture	Present perfect and past perfect	The student understands the lesson	Direct questions
23	2	Lecture	Reported statements	The student understands the lesson	Direct questions
24	2	Lecture	revision	The student understands the lesson	Direct questions

25	2	Lecture	Components and assemblies	The student understands the lesson	Direct questions
26	2	Lecture	Engineering Design	The student understands the lesson	Direct questions
27	2	Lecture	Describing types of techni problems	The student understands the lesson	Direct questions
28	2	Lecture	Technical development	The student understands the lesson	Direct questions
29	2	Lecture	revision	The student understands the lesson	Direct questions
30	2	Lecture	Final exam	The student understands the lesson	Direct questions

13. Course Evaluation	
Daily assessment - quarterly assessment - practical assessment - final assessment - presentation - daily attendance - weekly reports	
14. Learning & Teaching Resources	
Required textbooks (curricular if any)	Cambridge English for Engineering English Vocabulary In Use
Main References (sources)	
Recommended Books & References (Scientific Journals, Reports …)	
Websites or Electronic References	