نموذج وصف البرنامج الأكاديمي

اسم الجامعة: جامعة ...ذي قار...

الكلية/ المعهد: كلية ...الهندسة

القسم العلمي: قسم هندسة الطب الحياتي

اسم البرنامج الأكاديمي او المهني: بكالوريوس هندسة طب حياتي

اسم الشهادة النهائية: بكالوريوس في هندسة الطب الحياتي

النظام الدراسي:

تاريخ اعداد الوصف:

تاريخ ملء الملف:

جامعة ذي قار - كلية الهندسة

التوقيع :

اسم رئيس القسم: أ. د. راقد معلا موسى

التاريخ :

التوقيع :

اسم المعاون العلمي: أ. د. مشتاق كامل

التاريخ : ٢١ / ٢ / ٢٠٢٤م

دقــق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي:

التاريخ 21/3/2024

التوقيع

مصادقة السيد العميد

٢١ / ٣ / ٢٠٢٤م

c of Iraq - Ministry of Higher Education and Scientific R

University of Thi-Qar

achelor's degree in Biomedical Engineering (First cycle

years (Ten semesters) - 300 ECTS credits - 1 ECTS = 2

Program Curriculum (2023 - 2024)

جمهورية العراق - وزارة التعليم العالي والبحث العلمي

جامعة ذي قار

بكالوريوس في هندسة الطب الحياتي (الدورة الأولى)

خمس سنوات (عشرة فصول دراسية) - ٣٠٠ وحدة اوربية - كل وحدة اوربية = ٢٥ ساعة

المنهاج الدراسي للعام ٢٠٢٣-٢٠٢٤

Level	Semester	No.	Module Code	e Name in I	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	M Type	te Module(s)
		1	BME101	Engineering	الميكانيك الهندسي	English	6				2		3	123	77	200	8.00	B	
		2	BME102	Intro to Bior	مقدمة في الطب الحياتي I	English	3	2			2		3	108	67	175	7.00	C	
	One	3	ER104	General Bio	بايلوجي	English	2						3	33	67	100	4.00	B	
		4	ER105	Calculas	التفاضل والتكامل	English	4	2			2		3	123	52	175	7.00	B	
		5	UTQEN11	English lang	اللغة الإنكليزية	English	1	1					3	33	17	50	2.00	B	
		6	UTQAR11	Arabic langı	مهارات اللغة العربية	Arabic	1	1					3	33	17	50	2.00	B	
						Total	17	6	0	0	6	0	18	453	297	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s)
UGI	Two	1	BME103	Anatomy I	تشريح I	English	2		2				3	63	87	150	6.00	C	
		2	BME104	Intro to Bior	مقدمة في الطب الحياتي II	English	3	2					3	78	97	175	7.00	C	BME102
		3	UTQCO12	Computer S	علم الحاسبات	English	2		2				4	64	36	100	4.00	B	
		4	BME105	Mediacl Phy	الفيزياء الطبية	English	3						3	48	52	100	4.00	B	
		5	ER108	Engineering	ورش هندسية	English	1			2			3	48	2	50	2.00	B	
		6	ER106	Engineering	الرسم الهندسي	English	1	2		2			3	78	47	125	5.00	B	
		7	UTQ102	Democracy	حقوق الانسان والديمقراطية	English	1	1					3	33	17	50	2.00	S	
						Total	13	5	4	4	0	0	22	412	338	750	30.00		

University of Thi-Qar
جامعة ذي قار

First Cycle – Bachelor's Degree (B.Sc.) –Biomedical Engineering

بكالوريوس - هندسة الطب الحياتي

Table of Contents

1. Overview

This catalog is about the courses (modules) offered in the Biomedical Engineering program to earn the Bachelor of Engineering degree. The program includes (300) modules with a total of (7496) student work hours and a total of 300 ECTS. The modules offered are based on the Bologna Process.

نظره عامه

يتناول هذا الدليل المواد الدراسية التي يقدمها برنامج الهندسة الطب الحياتي للحصول على درجة بكالوريوس الهندسة. يقدم البرنامج (60) مادة دراسية، على سبيل المثال، مع (7496) إجمالي ساعات حمل الطالب و 300 إجمالي وحدات أوروبية. يعتمد تقديم المواد الدراسية على عملية بولونيا.

2. Undergraduate Courses 2023-2024

Module 1

Code	Course/Module Title	ECTS	Semester
BME101	**Engineering Mechanics**	8	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
6	0/0/0/2	123	77
Description			
Statics. Fundamentals of forces and force systems. Internal and external forces. Support reactions. Definition of a free-body diagram (FBD). Emphasis on development of FBD-drawing skills. Moment of a force. Force system resultants. Vector methods in two and three dimensions. Equilibrium analysis of particles and rigid bodies. Truss analysis by methods of joints and sections. Analysis of simple frames			

and machines. Analysis of friction. Centroids of composite areas and volumes. Resultants of distributed loads.

Dynamics.
Fundamentals of motion of particles and rigid bodies. Application of Newton's laws. Principles of position, velocity, and acceleration. Use of work-energy and impulse-momentum methods. Introduction to vibrations. Analytical and computational analysis of the kinematics and kinetics of planar multi-body mechanical systems. Vibration analysis of single degree of freedom systems. Engineering applications including dynamic balancing, vibration absorption and vibration isolation.

Module 2

Code	Course/Module Title	ECTS	Semester
BME102	**Intro to Biomedical Engineering I**	7	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2/0/0/2	108	67
Description			
Introduction to biomedical engineering design and problem solving using. Key elements include physiologic signals and data acquisition, instrumentation, graphics, measurement and error, teamwork and decision-making. Problem-solving elements will be applied to real-world biomedical problems introduced by practicing biomedical engineers as well as faculty.			

Module 3

Code	Course/Module Title	ECTS	Semester
ER104	**General Biology**	4	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0/0/0/0	33	67
Description			
Ecology. Theory of evolution. Taxonomy. Animal diversity. Structures of biological molecules. Cell structure and function. Vertebrate animal anatomy, physiology, and development. Glycolysis and cellular respiration. Photosynthesis. Mitosis and meiosis. Mendelian and molecular genetics. Microbial diversity. Plant form and function. 3 hrs. lec., disc.			

Module 4

Code	Course/Module Title	ECTS	Semester
ER105	**Calculus**	7	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
4	2/0/0/2	123	52
Description			
This course aims to provide the student with an understanding of functions, limits, Derivatives, Exponential, Logarithmic, and Inverse Trigonometric Functions, Applications of Derivatives, and Integrals			

Module 5

Code	Course/Module Title	ECTS	Semester
ER108	**Engineering Workshop**	2	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
1	0/0/2/0	48	2
Description			
This course aims to provide students with hands-on experience and practical skills in various engineering disciplines. The workshops will cover a range of topics related to mechanical, electrical, civil, and computer engineering. Students will have the opportunity to apply theoretical knowledge gained in other engineering courses to real-world scenarios. The course will also focus on fostering teamwork, problem-solving, and communication skills. Course Objectives: By the end of this course, students will be able to: Apply engineering principles and theories to practical workshop activities. Demonstrate proficiency in using engineering tools, equipment, and software. Work effectively in a team and communicate technical information clearly. Analyze and solve engineering problems through hands-on activities. Understand the importance of safety protocols in engineering workshops. Course Outline: Module 1: Introduction to Engineering Workshops Overview of workshop safety protocols Introduction to workshop tools and equipment Demonstration of basic workshop skills Module 2: Mechanical Engineering Workshop Introduction to mechanical workshop tools and machines Practical activities on machining, drilling, and shaping Assembly and disassembly of mechanical components.			

Module 6

Code	Course/Module Title	ECTS	Semester

UTQAR11	مهارات اللغة العربية	2	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
1	1/0/0/0	33	17
Description			
This course is designed to develop students' proficiency in the Arabic language, focusing on the four language skills: listening, speaking, reading, and writing. Students will learn fundamental Arabic grammar and vocabulary to facilitate communication in various real-life situations. The course will also explore aspects of Arab culture and civilization to enhance students' cultural understanding.			

Module 7

Code	Course/Module Title	ECTS	Semester
BME103	**Anatomy I**	6	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0/2/0/0	63	87
Description			
Introduction (anatomy position, section and planes, anatomic directions). Upper limb Breast. Pectoral region. Brachial Plexus and its branches and their clinical applications. Scapular region (anastamoses around the scapula, muscles attaching the scapula to the trunk, muscles attaching the scapula to the humerus, movement of scapula). Axilla and Brachium. Lymphatic system, axillary lymph node. Joints or articulation (classification of joints according to their functions, structures).type of cartilaginous joints, synovial joints, shoulder joint (sternoclavicular joint, acromioclavicular joint). Cubital fossa. Elbow joint ,wrist joint, the muscles of the arm, Fore arm. , the muscles of the hand and palm. The lower limb. Gluteal region, the thigh, the leg, the foot, inguinal legments, femoral triangle, General blood supply. Anterior components of the thigh. Femoral artery and nerve, Adductor canal and femoral hernia. Posterior components of the thigh, cutanous innervations of the thigh. Hip joint. Politeal fossa. Parallel resonance. Transients in R-C ccts. (capacitors in series and parallel and energy stored by a capacitor, R-L ccts., Faraday's law, transients in R-L ccts., inductors in series and parallels and energy stored by end). the TTL nand gate, TTL logic families, Emitter – coupled Logic (ECL) circuits, comparison of logic families).ems, type of energy pneumatic circuit, type of control valves, actuators, basic pneumatic circuit, pneumatic control.			

Module 8

Code	Course/Module Title	ECTS	Semester
BME104	**Intro to Biomedical Engineering II**	7	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	0/2/0/0	78	97
Description			
Continuation of BIEN 1100. Key elements include modeling, fluid mechanics, rehabilitation engineering, and entrepreneurship. Problem-solving and design elements are applied to real-world biomedical problems introduced by practicing biomedical engineers as well as faculty.			

Module 9

Code	Course/Module Title	ECTS	Semester
UTQCO12	**Computer Science**	4	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0/2/0/0	64	36
Description			
The Computer Science course provides students with a comprehensive understanding of the principles and practices of computer science. It covers a wide range of topics, including programming, algorithms, data structures, computer architecture, software development, and computer networks. The course aims to equip students with the necessary knowledge and skills to design, develop, and analyze computer systems and software applications.			

Module 10

Code	Course/Module Title	ECTS	Semester
BME105	**Medical Physics**	4	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	0/0/0/0	48	52
Description			
Students learn how light, X-rays, radiopharmaceuticals, ultrasound, magnetic fields, and other energy probes are generated and how they interact with tissues and detectors to produce useful image contrast. Practical issues such as beam generation, dose limitations, patient motion, spatial resolution and dynamic range limitations, and cost-effectiveness will be addressed. Emphasis is placed upon diagnostic radiological imaging physics, including the planar X-ray, digital subtraction angiography mammography, computed tomography, nuclear medicine, ultrasound, and magnetic resonance imaging modalities.			

Module 11

Code	Course/Module Title	ECTS	Semester
ER106	**Engineering Drawing**	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
1	2/0/2/0	78	47
Description			

The Engineering Drawing course is designed to develop students' skills in creating and interpreting technical drawings used in engineering design and manufacturing processes. The course focuses on principles and techniques of drafting, including geometric constructions, orthographic projection, dimensioning, and tolerancing. Students will learn to use industry-standard computer-aided design (CAD) software and develop the ability to communicate engineering designs effectively through drawings.

Module 12

Code	Course/Module Title	ECTS	Semester
UTQEN11	**Basics of English language**	2	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
1	1/0/0/0	33	17
Description			
This course covers: Grammar (nouns, pronouns, questions and short answers, possessive adjectives, possessive's, adjective + noun, present simple, question words, prepositions, past simple, past simple-regular and irregular verbs, adverbs, present continuous, future plans). Vocabulary, Reading, Writing, Listening and speaking skills.			

Module 13

Code	Course/Module Title	ECTS	Semester
UTQ102	**Human rights and democracy**	2	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
1	1/0/0/0	33	17
Description			
The Human Rights and Democracy course explores the principles, theories, and practices of human rights and democracy. It examines the historical development, philosophical foundations, and legal frameworks of human rights, as well as the key elements of democratic governance. The course aims to foster a critical understanding of the importance of human rights and democracy in promoting social justice, equality, and the rule of law. Students will explore various case studies, analyze contemporary human rights issues, and examine the role of international organizations and civil society in advancing human rights and democracy.			

Biomedical Engineering Dept.| College of Engineering | The university of Thi Qar

قسم هندسة الطب الحياتي | كلية الهندسة | جامعة ذي قار

Table of Contents | جدول المحتويات

1. Mission & Vision Statement

Vision Statement

The Biomedical Engineering bachelor's degree program at the university of Thi Qar is designed to be a leader in biomedical engineering education. The program will be known for its rigorous curriculum, its commitment to innovation, and its focus on preparing students for careers in biomedical engineering.

Mission Statement

The Biomedical Engineering program at university of Thi Qar is designed to prepare students to become leaders in the field of biomedical engineering. The program will provide students with a strong foundation in the fundamentals of engineering, biology, and medicine, as well as the skills and knowledge necessary to design, develop, and apply biomedical technologies to improve human health.

2. Program Specification

Programme code:	**BSc-BIO**	ECTS	**300**
Duration:	**5 Levels, 10 Semesters**	Method of Attendance:	**Full Time**

Biomedical engineering is a relatively new field, but it has been growing rapidly in recent years. Thi Qar University was one of the first universities in Iraq to offer a biomedical engineering program, and it has been a leader in the field ever since. The biomedical engineering program at Thi Qar University was established in 2013-2014. The program was established in response to the

growing demand for biomedical engineers in Iraq. The program is accredited by the Iraqi Commission for the Accreditation of Higher Education.

The biomedical engineering program at Thi Qar University offers a five-year bachelor's degree program. The program is designed to provide students with the knowledge and skills they need to be successful in the field of biomedical engineering. The program covers a wide range of topics, including biomechanics, biomaterials, bioinstrumentation, biotechnology, and computational biology.

The biomedical engineering program at Thi Qar University is taught by a team of experienced and qualified faculty members. The faculty members have extensive experience in the field of biomedical engineering, and they are committed to providing students with a high-quality education.

The biomedical engineering program at Thi Qar University has a strong focus on research. The faculty members are actively involved in research, and they encourage students to participate in research projects.

The biomedical engineering program at Thi Qar University has a strong alumni network. The alumni network is active in the field of biomedical engineering, and they are committed to helping students succeed. The alumni network provides students with opportunities for internships, jobs, and mentorship.

The biomedical engineering program at Thi Qar University is a great option for students who are interested in a career in this growing field. The program provides students with the knowledge and skills they need to be successful in biomedical engineering.

Here are some of the notable achievements of the biomedical engineering program at Thi Qar University:

- The program has produced a number of successful biomedical engineers who are working in a variety of industries, including healthcare, medical device manufacturing, and biotechnology.
- The program has won a number of awards, including the Iraqi Ministry of Higher Education's Award for Excellence in Biomedical Engineering.

- The program has been featured in a number of publications, including the Iraqi Journal of Biomedical Engineering and the International Journal of Biomedical Engineering.

In addition, to obtain the B.Sc. degree, the student must complete his summer training summer training over a period of 30 days excluding weekends and official holidays, and must be undertaken in companies or establishments accepted by the college. Summer training is supervised by a coordinator in each department and a college training coordinator. The student's performance is evaluated by the training company and by both the department and college coordinators.

The Biomedical engineering program offers morning and evening schedules. Thus, the interested students would have more flexibility to choose join our program depending on their preference, time, and availability.

The Baccalaureate Degree of Biomedical engineering program in College of Engineering at the University Thi-Qar is compatible with Bologna process. The offered tables of the program match the European Credit Transfer System (ECTS), where 1 ECTS is equivalent to 25 hours per week.

3. Program Objectives

The biomedical engineering program at Thi Qar University has a number of objectives. These objectives are designed to prepare students for successful careers in the field of biomedical engineering. The following are the objectives of the biomedical engineering program at Thi Qar University:

- To provide students with a strong foundation in the fundamentals of engineering, biology, and medicine.
- To develop students' skills in problem solving, design, and innovation.
- To foster students' creativity and entrepreneurial spirit.

- To prepare students for graduate school and careers in biomedical engineering.

4. Student Learning Outcomes

- Apply the principles of engineering, biology, and medicine to solve problems in human health: Students can demonstrate this by completing projects or research that use engineering principles to solve problems in biology or medicine. For example, they could design a new medical device, develop a new drug delivery system, or create a new computer model of a biological system.
- Design and develop biomedical devices and systems: Students can demonstrate this by completing projects or research that involve the design and development of biomedical devices or systems. For example, they could design a new prosthetic limb, develop a new medical imaging system, or create a new software program for medical diagnosis.
- Conduct research in biomedical engineering: Students can demonstrate this by conducting research in a biomedical engineering lab. They could work on a project that investigates a new biomedical technology, develops a new biomedical device, or studies a biological system using engineering principles.
- Communicate effectively with engineers, scientists, and clinicians: Students can demonstrate this by communicating effectively with engineers, scientists, and clinicians. They could do this by writing reports, giving presentations, or participating in team meetings.
- Work effectively in teams: Students can demonstrate this by working effectively in teams. They could do this by participating in group projects, working on research teams, or volunteering for community service projects.
- Apply ethical and professional principles in biomedical engineering. This outcome requires students to be aware of the ethical and professional responsibilities of

biomedical engineers. They should be able to make ethical decisions in their work and to uphold the professional standards of the field.

- Be lifelong learners. This outcome requires students to be committed to lifelong learning. They should be able to identify and acquire new knowledge and skills as needed to stay current in the field.
- Be creative and innovative. This outcome requires students to be able to think creatively and to come up with new and innovative solutions to problems. They should be able to see the world in new ways and to find new ways to solve problems.
- Be entrepreneurial. This outcome requires students to be able to think and act like entrepreneurs. They should be able to identify and develop new business opportunities in the field of biomedical engineering.

5. Academic Staff

No.	Full Name (in English Language)	Qualification	E mail	Mobile Phone Number
1	Haider Jabaur Abid	PhD	haider-jabaur-abid@utq.edu.iq	07707015858
4	Nabil Jalil Aklo	PhD	nabilj.aklo@utq.edu.iq	07810959626
5	Ahmed Kareem Abed	PhD	Ahmed.abed@utq.edu.iq	07834184593
6	Hussein Hadi Mossa Mishbak	PhD	Hussein.mishbak@utq.edu.iq	07803676679
7	Noor Omran Abdul-Kareem	PhD	noor.omran@utq.edu.iq	07840085558
9	Afaq Hameed Nasir	PhD	afaq.hameed@utq.edu.iq	07816065878
10	Assad Ibrahim Khayoon	PhD	assad-i@utq.edu.iq	07827241232
12	Salih Khudair Mohkawer	PhD	salihkh74@utq.edu.iq	07831371112
14	Ahmed Ghazi Hassan	PhD	ahmed.ghazi@utq.edu.iq	07840333011
15	Ahmed Ghazi Hassan	PhD	ahmed.ghazi@utq.edu.iq	07840333011
16	Hussein Tokan Abdullah	PhD	hussein-tokan@utq.edu.iq	07829318426
20	Satar Habib Mnaathr	PhD	satar.hab@utq..edu.iq	07827239140
22	husam Faisal hammood	PhD	husam.f.hammood@utq.edu.iq	07813981191
24	Abdurrahman Abdulhessen Gata	PhD	Rahmanhessen@utq.iq	07803677687
2	Aqeel Ahmed Abed	MSc	aqeel.ahmed@utq.edu.iq	07832047769
3	Saad Azeez Taher	MSc	Saadazeez97@utq.edu.iq	07801065078
8	Sarah abd alhussein shadoud	MSc	sara.a.hussein@utq.edu.iq	07816010651
11	Watheq Abdulkareem Neamah	MSc	watheq.neamah@utq.edu.iq	07707779400
17	Hassanen Latef Jaber Aeklah	MSc	hassanen.jaber@utq.edu.iq	+36202894136
18	Zahraa Abd Alhussein Mousa Al-Inraheemi	MSc	Zahraa-a@utq.edu.iq	07829320700

19	Ali Basim Mahdi	MSc	ali-bassem@utq.edu.iq	07829320701
21	Zaher Mohammed Abed Alsulaiei	MSc	Zaheralsulaiei@utq.edu.iq	07822286085
23	Ahmed Abudl kadhem Salih	MSc	ahmed.kadhem300@utq.edu.iq	07803003282

6. Credits, Grading and GPA

Credits

The university of Thi Qar is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 300, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs workload, including structured and unstructured workload.

Grading

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

GRADING SCHEME مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	A - Excellent	**امتياز**	90 - 100	Outstanding Performance
	B - Very Good	**جيد جدا**	80 - 89	Above average with some errors
	C - Good	**جيد**	70 - 79	Sound work with notable errors
	D - Satisfactory	**متوسط**	60 - 69	Fair but with major shortcomings
	E - Sufficient	**مقبول**	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	**راسب - قيد المعالجة**	(45-49)	More work required but credit awarded
	F – Fail	**راسب**	(0-44)	Considerable amount of work required
Note:				
Number Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Calculation of the Cumulative Grade Point Average (CGPA)

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

   CGPA of a 5-year B.Sc. degree:

   CGPA = [(1st module score x ECTS) + (2nd module score x ECTS) + ……] / 300

7. Curriculum/Modules

Semester 1 / 30-ECTS / ECTS = 25 hrs

No.	Module Code	Module Name in English	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
1	BME101	Engineering Mechanics	168	57	225	9	B	
2	BME102	Intro to Biomedical Engineering I	108	42	150	6	C	
3	ER104	General Biology	33	67	100	4	B	
4	ER105	Derivative and integration	123	52	175	7	B	
5	ER108	Engineering WorkShop	33	17	50	2	B	
6	UR101	Arabic language skills	33	17	50	2	S	

Semester 2 / 30-ECTS / ECTS = 25 hrs

No.	Module Code	Module Name in English	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
1	BME103	Anatomy I	93	82	175	7	C	
2	BME104	Electric Circuits I	93	57	150	6	B	
3	ER107	Computer Science	64	36	100	4	B	
4	ER103	Chemistry	33	67	100	4	B	
5	ER106	Engineering Drawing	108	67	175	7	B	
6	UR102	Basics of english language	33	17	50	2	S	

Semester 3 / 30-ECTS / ECTS = 25 hrs

No.	Module Code	Module Name in English	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
1	ER205	Applied Mathematics	123	52	175	7	B	
2	BME201	Science and Strength of Materials	78	22	100	4	B	BME101
3	BME202	Anatomy II	93	82	175	7	C	BME103
4	BME203	Intro to Biomedical Engineering II	93	57	150	6	C	
5	BME204	Medical Physics	33	67	100	4	B	
6	UR202	English language skills	33	17	50	2	S	

Semester 4 / 30-ECTS / ECTS = 25 hrs

No.	Module Code	Module Name in English	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
1	BME205	Digital Electronics	93	57	150	6	B	
2	ER207	Computer programming	64	36	100	4	B	
3	BME206	Electric Circuits II	93	57	150	6	B	BME104
4	BME207	Biochemistry	78	72	150	6	B	
5	BME208	Biomaterials Engineering	78	72	150	6	C	
6	UR201	Human rights and democracy	33	17	50	2	S	

Semester 5 / 30-ECTS / ECTS = 25 hrs

No.	Module Code	Module Name in English	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
1	BME301	Analog Electronics	78	47	125	5	B	
2	BME302	Physiology	93	32	125	5	C	BME202
3	BME303	Advanced Biomaterials: Bio Printing and Bio Fabrication	60	65	125	5	B	BME208
4	BME304	Medical Measurements I	93	57	150	6	C	
5	BME305	Transport Phenomena in BME	63	62	125	5	B	
6	BME306	Optics in Biomedical Engineering	48	52	100	4	S	BME204

Semester 6 / 30-ECTS / ECTS = 25 hrs

No.	Module Code	Module Name in English	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
1	BME307	Biomedical Signals processing	93	57	150	6	B	
2	BME308	Engineering Analysis and Numerical Methods	123	52	175	7	B	ER205
3	BME309	Rehabilitation Science	63	62	125	5	C	
4	BME310	Thermodynamics in BME	63	37	100	4	S	
5	BME311	Medical Lasers	48	52	100	4	S	
6	BME312	Biomedical Circuits & Electronic	63	37	100	4	B	BME301

Semester 7 / 30-ECTS / ECTS = 25 hrs

No.	Module Code	Module Name in English	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
1	BME401	Pathology	63	37	100	4	S	BME302
2	BME402	Control Systems I	78	47	125	5	B	
3	BME403	Medical Measurements II	108	67	175	7	C	
4	BME404	Biomedical Engineering Systems	63	62	125	5	S	
5	BME405	Tissue Engineering	63	37	100	4	C	BME208
6	BME406	Biomedical CAD/CAM	78	47	125	5	S	

Semester 8 / 30-ECTS / ECTS = 25 hrs

No.	Module Code	Module Name in English	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
1	BME407	Control Systems II	93	32	125	5	B	BME402
2	BME408	Artificial Organs	78	47	125	5	C	
3	BME409	Microprocessor & Microcontroller	78	47	125	5	B	
4	BME410	Bio Electronic Devices & Applications	63	62	125	5	C	BME312
5	BME411	Surgical Robots	63	37	100	4	S	
6	BME412	BIO Instrumentation Design I	93	57	150	6	C	

Semester 9 / 30-ECTS / ECTS = 25 hrs

No.	Module Code	Module Name in English	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
1	BME501	Engineering Project I	108	67	175	7	C	
2	BME502	Biomedical sensors	93	32	125	5	C	
3	BME503	Biomedical Statistics	48	27	75	3	S	
4	BME504	BIO Instrumentation Design II	93	57	150	6	C	
5	BME505	Clinical Engineering	48	52	100	4	B	
6	BME506	Biomedical Computer Desgin	63	62	125	5	C	

Semester 10 / 30-ECTS / ECTS = 25 hrs

No.	Module Code	Module Name in English	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
1	BME507	Engineering Project II	108	67	175	7	C	
2	BME508	Medical Image Processing	63	62	125	5	C	
3	BME509	BIO Instrumentation Design III	93	57	150	6	C	
4	BME510	Biomechanics	93	57	150	6	C	
5	BME511	Artificial Neural Network in BME	63	37	100	4	B	
6	ER401	Engineering Ethics	33	17	50	2	S	

8. Contact

Program Manager:

Haider J. Abid | Ph.D. in Mechanical Engineering |
Email: hadier-jabaur-abid@utq.edu.iq
Mobile no.: +964 7707015858
+964 7814624499

Program Coordinator:

Nabeel Jalil Aklo | Ph.D. in Electrical Engineering |
Email: nabilj.aklo@utq.edu.iq
Mobile no.: +964 7810959626

	Ministry of Higher Education and Scientific Research - Iraq University of Thi-Qar College of Engineering Department of Biomedical Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

	Ministry of Higher Education and Scientific Research - Iraq University of Thi-Qar College of Engineering Department of Biomedical Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

	Ministry of Higher Education and Scientific Research - Iraq University of Thi-Qar College of Engineering Department of Biomedical Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	ENGINEERING WORKSHOP			**Module Delivery**	
Module Type	BASIC			✓ **Theory** ✓ **Lecture** ✓ **Lab** ✓ **Tutorial** ✓ **Practical** ✓ **Seminar**	
Module Code	ER108				
ECTS Credits	2				
SWL (hr/sem)	50				
Module Level		1	**Semester of Delivery**		1
Administering Department		BME	**College**	Engineering	
Module Leader	Dr. Ahmed Ghazi		**e-mail**	ahmed.ghazi@utq.edu.iq	
Module Leader's Acad. Title		Lecturer	**Module Leader's Qualification**		Ph.D.

Module Tutor	None		**e-mail**	None
Peer Reviewer Name		Dr. XXX	**e-mail**	XXXX @ utq.edu.iq
Review Committee Approval		15/06/2023	**Version Number**	1

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	دراسة المبادئ الاساسية لعلم وهندسة المعامل والورش الهندسية مبتدأ بالخوض في السلامة الصناعية وطرق التصنيع واساليب الانتاج المختلفة وطرق التعامل مع المواد المختلفة ودراسة خواصها واطلاع الطالب على الورش الهندسية المختلفة ذات العلاقة ولتهيئته للعمل فيها. ان هذه الفصل الدراسي يركز على دراسة المبادئ الاساسية لعلم وهندسة المعامل والورش الهندسية من خلال دراسة اساسيات التشغيل الميكانيكي لتوفر المكائن التقليدية داخل الكلية وتعليم وتدريب على مبادئ الخراطة وانواعها واساليبها والادوات والمكائن المستخدمة فيها والعمليات الصناعية الاساسية على ماكينة الخراطة وتعليم وتدريب على مبادئ التفريز وانواعها واساليبها والادوات والمكائن المستخدمة فيها والعمليات الصناعية الاساسية على ماكينة التفريز وانواع المعادن والادوات المستخدمة فيها. كل ذلك يتيح فهم واستيعاب مفردات تلك المادة وكذلك عمليات التشكيل الاولية وعمليات التشغيل الميكانيكي وعمليات وصل المعادن ودراسة الاسس الكهربائية بما يوفر رؤية واضحة لاستغلالها أفضل استغلال لمختلف التطبيقات الهندسية وتوظيفها لكل الاقسام الهندسية في الكلية.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	في نهاية الفصل سيكون الطالب قادراً على: 1. فهم اساسيات السلامة الصناعية وطرق تجنب المخاطر المحتملة. 2. فهم اساسيات المعامل والورش الهندسية وكيفية استخدام المعرفة من هذا الكورس لتحسين قدرت الطالب في التعامل مع المسائل ذات الصلة. 3 .تطبيق المفاهيم الرياضية والعلمية الاساسية لوصف وحل المشكلات الهندسية في مجال

	المعامل والورش الهندسية. 4 .تطوير الكفاءة الاولية في تخصص هندسة المعامل والورش الهندسية. 5 .تنمية القدرة على تشغيل المنتج وتقيمه وتشغيل المكائن وادامتها. 6 .القيام بتصميم هندسي متكامل للأنظمة او المكونات او العمليات لهندسة الورش من خلال الخبرات العملية (المشاريع الجماعية). 7 .تحديد وصياغة وحل مشاكل هندسة المعامل والورش باستخدام الادوات والتقنيات والمهارات الهندسية الحديثة. 8 .تطوير مهارات الاتصال الكتابي والشفوي من خلال عروض تقديمية والتقارير لنتائج المشاريع المقترحة. 9 .اكتساب وفهم لبعض المسائل الاخلاقية التي تنشأ عند ممارسة المهنة. 10. فهم ودراسة انواع المواد وخصائصها المختلفة وطرق التعامل معها.
Indicative Contents المحتويات الإرشادية	يوفر توصيف الدورة التدريبية هذا ملخصًا موجزًا للسمات الرئيسية للدورة ونتائج التعلم التي قد يُتوقع من الطالب النموذجي تحقيقها وإثبات ما إذا كان قد استفاد بالكامل من فرص التعلم التي يتم توفيرها. يجب أن يتم الرجوع إليها مع مواصفات البرنامج. يتضمن وصف الدورة أساسيات السلامة الصناعية وطرق تجنب المخاطر المحتملة مع وصف أساسيات الورش الهندسية وكيفية استخدام المعرفة من هذا الكورس لتحسين قدرة الطالب في التعامل مع المسائل ذات الصلة. حيث يتناول دراسة اساسيات التشغيل الميكانيكي وتعليم وتدريب على مبادئ الخراطة وانواعها واساليبها والادوات والمكائن المستخدمة فيها والعمليات الصناعية الاساسية على ماكينة الخراطة وتعليم وتدريب على مبادئ التفريز وانواعها واساليبها والادوات والمكائن المستخدمة فيها والعمليات الصناعية الاساسية على ماكينة التفريز وانواع المعادن والادوات المستخدمة فيها. وتعليم وتدريب الطالب على عدة ورش تخصصية اخرى منها البرادة والتنعيم واللحام والنجارة والورشة الكهربائية مع تطبيق المفاهيم الرياضية والعلمية الاساسية لوصف وحل المشكلات الهندسية في مجال المعامل.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	تتمثل الإستراتيجية الرئيسية التي سيتم تبنيها في تقديم هذه الوحدة في تشجيع الطلاب على المشاركة في التدريبات، مع تحسين مهارات التفكير النقدي لديهم وتوسيعها في نفس

	الوقت. سيتم تحقيق ذلك من خلال الفصول والبرامج التعليمية التفاعلية ومن خلال التفكير في نوع التجارب البسيطة التي تتضمن بعض أنشطة أخذ العينات التي تهم الطلاب.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	المواضيع المعطاة
Week 1	-
Week 2	-
Week 3	-
Week 4	-
Week 5	-
Week 6	-

Week 7	-
Week 8	-
Week 9	-
Week 10	-
Week 11	-
Week 12	-
Week 13	-
Week 14	-
Week 15	-
Week 16	

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**السلامة الصناعية**
Week 2	**مقدمة عن الورش الهندسية**
Week 3	**الورشة الكهربائية:** التشغيل والصيانة
Week 4	**ورشة التفريز:** مفهوم التفريز العام وشرح عن ماكينة التفريز العمليات التشغيلية التي تجري على ماكينة التفريز
Week 5	ادوات التفريز والمعادن المستعملة في صناعتها عمل المسننات ادامة ماكينة التفريز وعمليات الصيانة لها
Week 6	**ورشة الخراطة :** مفهوم الخراطة العام وشرح عن ماكينة الخراطة العمليات التشغيلية التي تجري على ماكينة الخراطة
Week 7	اقلام الخراطة والمعادن المستعملة في صناعتها التثقيب وعمل المسننات زوايا القلم المستخدمة في الخراطة ادامة ماكينة الخراطة وعمليات الصيانة
Week 8	**اللحام:** مقدمة حول اللحام وأنواعه لحام المونة والقصدير ولحام النقطة ولحام الضغط ولحام الثرميت.
Week 9	لحام الطرق الحديثة

Week 10	**ورشة التنعيم :** مفهوم التنعيم العام وطرق التنعيم ادوات القياس (الفرنية، المايكرومتر، ادوات قياس اخرى) المكائن والمواد والادوات المستخدمة في عمليات التنعيم
Week 11	**ورشة البرادة** مفهوم البرادة العام وطرق البرادة المواد والادوات المستخدمة في عمليات البرادة نظرة عامة عن المواد المستخدمة في صناعة المبارد وانواع المبارد والمعاملات الحرارية اللازمة لصنع المبارد المكائن الخاصة بعملية البرادة
Week 12	**ورشة النجارة:** نظرة عامة عن مفهوم النجارة وانواع الاخشاب المستخدمة في النجارة وعيوبها ادوات القياس والتأشير والمكائن المستخدمة في النجارة وكيفية استخدامها عمليات تصفية الاخشاب وعملية قطع وتثقيب الاخشاب
Week 13	مقدمة عن المكائن المؤتمتة وانواعها
Week 14	المكائن المؤتمتة: برمجتها وتشغيلها
Week 15	الأسبوع التحضيري
Week 16	امتحان نهائي

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. مدخل في هندسة الانتاج, حسن حسين فهمي, د. جلال شوقي, الطبعة الاولى القاهرة,1966 2. عمليات تصنيع المعادن ,عبد الخالق علي حسن, مازن عبد الستار المفتي. 3. مبادئ عمليات الانتاج, د.قحطان خلف الخزرجي, د.عادل محمود حسن . 4.محاضرات معدة من قبل الورش الهندسية	Yes
Recommended Texts	1. Manufacturing Processes. by U.K. Singh and Manish Dwivedi , Second Edition. 2. The science and Engineering of Materials, Donald R. Askeland & Pradeep P. Phule, 4th edition, Thomson (BROOKS/COLE).	Yes
Websites	https://edisciplinas.usp.br/pluginfile.php/7275123/mod_resource/content/0/DONALD~2.PDF	

APPENDIX:

GRADING SCHEME

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

Note:

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

	Ministry of Higher Education and Scientific Research - Iraq University of Thi-Qar College of Engineering Department of Biomedical Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**MEDICAL PHYSICS**	**Module Delivery**	
Module Type	**BASIC**	✓ Theory ✓ Lecture ✓ Projects ✓ Assignments ✓ Report And Seminar ✓ Tests and Exams	
Module Code	**BME105**		
ECTS Credits	**4**		
SWL (hr/sem)	**100**		
Module Level	**1** **BIO-M-E**	**Semester of Delivery**	**2**
Administering Department	**Department of Biomedical Engineering. UGV**	**College**	**Engineering College**
Module Leader	**Assist. prof. Dr .Satar Habib .M**	**e-mail**	**satar.hab@utq.edu.iq**
Module Leader's Acad. Title	**Assist. prof**	**Module Leader's Qualification**	**Ph.D.**
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Review Committee Approval		**Version Number**	

Relation With Other Modules			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	Students learn general Introduction about Medical Physics. As well A Medical Physics graduate will be knowledgeable Knowledge of the normal structure and function of the body and its major organ systems with emphasis on content applicable to clinical diagnostic imaging and/or radiation oncology. ,Knowledge of radiation and radioactivity, its properties, units of measure, dosimetry measurement concepts and methods. Knowledge of the radiation safety practices and procedures including the determination of radiation shielding requirements. Knowledge of the biological effects of radiation and its application for radiation safety and for radiation treatment. Knowledge of the operation and principles used in the systems and procedures associated with the clinical track. students will have a foundation in physics commensurate with the Biomedical engineering .
Module Learning Outcomes	**On successful completion of this module the student will be able to:** 1- Learn and understand the basic definitions and applications which used in physics such as Laws of Force , Motion And Static Equilibrium, Elasticity, Energy , power, Temperature , Sound Wave , Light, Electricity And Radiation. 2- Student able to show real knowledge of medical physics concepts during the school year and their applications in different areas of biomedical engineering. 3- Learn and understand the medical devices, measurements, and how they are used. 4- The ability to perform the clinical support procedures required to the medical physicist or in institutions health care.

	5- The ability to retrieve, manage, and utilize information for solving problems relevant to completion of research projects, or for the implementation of clinical operations or procedures.
Indicative Contents	**Indicative content includes the following.** Introduction To Medical Physics. [6 hrs]. Physics And Measurement Regarding (Laws Of Force , Motion And Static Equilibrium). [12 hrs] Physics And Measurement Regarding (Elasticity, Energy , Power And Fluid Mechanics, Temperature And Heat). [12 hrs] Medical Physics In Terms Of Sound Wave , Light, Electricity And Radiation.. [12 hrs] Application Of Physics In Medicine (Diagnostic). [9 hrs] Application Of Physics In Medicine (Therapy) [9 hrs] Application Of Physics In Medicine (Patient Monitoring). [9 hrs] Basis of X-Ray Imaging And Technology And Radiotherapy. Use Of Lasers, UV And IR In Medicine. [9 hrs] Basis Of Magnetic Resonance Imaging And Technology. Radiation, Ultrasound Imaging Technology. [9 hrs] Basis of ultrasound imaging and technology. [9 hrs] Use of lasers, UV and IR in medicine. [3 hrs] Revision. [3 hrs]
Learning and Teaching Strategies	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	80	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	20	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.8
Total SWL (h/sem)	100		

الحمل الدراسي الكلي للطالب خلال الفصل	

Module Evaluation

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

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction To Medical Physics.
Week 2	Physics And Measurement Regarding (Laws Of Force , Motion And Static Equilibrium)
Week 3	Physics And Measurement Regarding (Laws Of Force , Motion And Static Equilibrium)
Week 4	Physics And Measurement Regarding (Elasticity, Energy , Power And Fluid Mechanics, Temperature And Heat)
Week 5	Physics And Measurement Regarding (Elasticity, Energy , Power And Fluid Mechanics, Temperature And Heat)
Week 6	Medical Physics In Terms Of Sound Wave , Light, Electricity And Radiation.
Week 7	Medical Physics In Terms Of Sound Wave , Light, Electricity And Radiation.
Week 8	Application Of Physics In Medicine (Diagnostic)
Week 9	Application Of Physics In Medicine (Diagnostic)
Week 10	Application Of Physics In Medicine (Therapy)
Week 11	Application Of Physics In Medicine (Therapy)
Week 12	Application Of Physics In Medicine (Patient Monitoring)
Week 13	Basis of X-Ray Imaging And Technology And Radiotherapy. Use Of Lasers, UV And IR In Medicine
Week 14	Basis Of Magnetic Resonance Imaging And Technology. Radiation, Ultrasound Imaging Technology
Week 15	**Preparatory Week**
Week 16	**Final Exam**

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Tooley, M. A. (2000). Medical physics and biomedical engineering. Physiological Measurement, 21(4), 549-549.	No
Recommended Texts	1- Mls 314 Lecture Note, Medical Physics, Lecturer: Dr. Y. Ajiboye. 2- Stacy, R. W. (1955). Essentials of biological and medical physics. McGraw-Hill Book.. 3- Podgoršak, E. B. (2006). Radiation physics for medical physicists (Vol. 1). Berlin: Springer.	No
Websites	1- Flower, M. A. (Ed.). (2012). Webb's physics of medical imaging. CRC press. 2- Johnson, T. E., & Birky, B. K. (2012). Health physics and radiological health. Lippincott Williams & Wilkins.	

:

APPENDIX

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

Note:

Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54.

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	ARABIC LANGUAGE			**Module Delivery**	
Module Type	CORE			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	UTQAR11				
ECTS Credits	2				
SWL (hr/sem)	50				
Module Level	1 1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Name: Nagam Adnan		**e-mail**	E-mail	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

نرى ان اللغة العربية هي لغة بينية ومتداخلة وذات صلة بجميع العلوم الاخرى لا سيما وانها اكتسبت قداستها لارتباطها الوثيق بالقرآن الكريم, وقال ابن كثير معللاً اختيار العربية لغة للقرآن الكريم: «وذلك لأن لغة العرب أفصح اللغات وأبينها وأوسعها، وأكثرها تأدية للمعاني التي تقوم بالنفوس؛ فلهذا أنزل أشرف الكتب بأشرف اللغات»[4]. كما أن «اختيار الله للعربية، أو اللسان

. العربي، ليكون أداة التوصيل، ووسيلة الإبانة، ووعاء التفكير لها

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. التعرّف على مواطن الجمال في اللّغة العربيّة وآدابها، وأن يكتسب الطالب القدرة على دراسة فروع اللّغة العربيّة. 2. تنمية الذوق الأدبي لدى الطالب حتى يدرك النواحي الجمالية في أساليب الكلام 3. تمكين الطالب من القراءة الصحيحة، وأن يكتسب القدرة على استعمال اللغة استعمالاً صحيحاً في الاتّصال مع الآخرين؛ كالسرعة وجودة الإلقاء وحسن التعبير. 4. تعويد الطالب التعبيرات السليمة الواضحة عن أفكاره وما يقع تحت حواسه نطقاً وكتابة وحسن استخدام علامات الترقيم 5. تنمية قدرة ومهارة الطالب الإملائية والخطية بحيث يستطيع الكتابة الصحيحة من جميع النواحي. 6. تعويد الطلاب على قواعد الحديث واحترام الرأي الآخر وكذلك التغلب على عامل الخجل.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. الاهداف المعرفية 2. تذكر المعلومات التي درسها واستدعاؤها عند الحاجة 3. فهم المعلومات والشروح التي تفسر بعض الظواهر اللغوية والأدبية 4. تطبيق جميع ما تعلمه ودرسه الطلبة في حياتهم العملية 5. تحليل المشكلة او الموضوع الذي يتالف من اجزاء مختلفة ودراستها 6. تركيب اجزاء الجملة لمعرفة معنى كل جزء على حدة مع الاطلاع على المفاهيم الأدبية والأغراض الشعرية
Indicative Contents المحتويات الإرشادية	اللغة العربيّة أو لغة الضاد هي واحدة من أكثر اللغات انتشاراً ضمن مجموعة اللغات الساميّة، في دول الوطن العربي إضافةً للعديد من المناطق الأخرى مثل تركيّا، والأحواز، ومالي وتشاد، والسنغال، وإثيوبيا، وأريتيريا، وإيران، وجنوبي السودان. اللغة العربيّة تعتبر لغةً مقدسة على اعتبار أنها لغة القرآن، حيث لا تتم الصلاة والعبادات الأخرى في الدين الإسلامي إلا بإتقان اللغة العربيّة، كما أنها لغة شعائريّة لدى عددٍ من الكنائس المسيحيّة على امتداد الوطن العربي، وقد تمّت كتابة العديد من الأعمال الفكريّة والدينيّة اليهوديّة بها وتحديداً في العصور الوسطى. كان لانتشار الدين الإسلامي تأثيراً مباشراً وغير مباشر في رفع شأن ومكانة اللغة العربيّة، حيث أصبحت لغة العلم والأدب والسياسة لأزمنةٍ طويلة في الديار التي حكمها المسلمون، بالإضافة لهذا فقد كان للغة العربيّة تأثيرٌ كبير على عددٍ من اللغات الأخرى على امتداد العالم الإسلامي.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم	
Strategies	1.إثارة اسئلة متنوعة يمكن عبرها استدعاء المعلومات 2. شرح موضوع ما عبر مصادر متنوعة ومحاولة ربط المصادر بعضها ببعض 3. مشاهدة بعض البرامج والندوات العلمية والمؤتمرات العلمية والتربوية

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	60	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	40	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	اقسام الكلام
Week 2	الفعل الماضي
Week 3	الفعل المضارع
Week 4	فعل الامر
Week 5	همزة الوصل وهمزة القطع
Week 6	التاء المربوطة والتاء المبسوطة
Week 7	قصيدة احمد شوقي
Week 8	العدد والمعدود
Week 9	ادب
Week 10	اسلوب الشرط
Week 11	الالف الممدودة والالف المقصورة
Week 12	حروف الجر
Week 13	ادب
Week 14	قصيدة بدر شاكر السياب
Week 15	الافعال الخمسة
Week 16	

Learning and Teaching Resources
مصادر التعلم والتدريس

1. شرح ابن عقيل
2. معجم اللغة العربية
3. شذا العرف في فن الصرف
4. كتب الادب والشعر

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

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

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

	Ministry of Higher Education and Scientific Research - Iraq University of Thi-Qar College of Engineering Department of Biomedical Engineering	

MODULE DESCRIPTOR FORM

Module Information		
Module Title	**HUMAN RIGHTS AND DEMOCRACY**	**Module Delivery**
Module Type	**SUPLEMENT**	✓ **Theory** ✓ **Lecture** ✓ **Tutorial** ✓ **Practical** ✓ **Seminar**
Module Code	**UR201**	
ECTS Credits	**1**	

SWL (hr/sem)	**50**		
Module Level	**UGII**	**Semester of Delivery**	**4**
Administering Department	**Department of Biomedical Engineering. UGV**	**College**	**Engineering College**
Module Leader	**Msc. Saad azeez**	**e-mail**	**Saad azeez 97@utq.edu.iq**
Module Leader's Acad. Title	**Msc.**	**Module Leader's Qualification**	**Msc.**
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Review Committee Approval	**20/6/2023**	**Version Number**	

Relation With Other Modules			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	
Module Aims, Learning Outcomes and Indicative Contents			
Module Aims	تعريف الطلبة بحقوقهم في كافة المجالات السياسية والاجتماعية والاقتصادية والدينية والثقافية وعرفة حدوده في المطالبة بتلك الحقوق على ان لا يضر ذلك بحقوق الاخرين وحرياتهم . مستندا بذلك على المواثيق الدولية والاقليمية والوطنية المتمثلة بالهياة الامم المتحدة ذات العلاقة والاعلان العالمي لحقوق الانسان سنة 1940 والعهدين الدوليين لسنة 1966 .		
Module Learning Outcomes	On successful completion of this module the student will be able to:		

	1- قدرة الطالب على فهم حقوق الانسان. 2- المساهمة الفعالة الفرد في المجتمع من خلال مشاركته في الانتخابات. 3- التمييز لين المرشحين للانتخابات واختيار الافضل منهز للتمثيل الشعبي في مجلس النواب 4- معرفة الحقوق الخاصة والعامة بما لا يضر مع حقوق الاخرين واحترام توجهاتهم وعقائدهم وافكارهم وعدم المساس بها . 5- العمل في منظمات المجتمع المدني بشكل طوعي وبإرادته الحرة للمساهمة في بناء وطن حر ودولة ملتزمة بالقانون 6- المطالبة بالحقوق والحريات وفق الاليات الدستورية و القوانين التي كفلت احرامها 7- احترام القوانين والسير بها وعدم تجاوزها 8- عدم المساس بكرامة الاخرين والتجاوز على حرياتهم والممتلكات العامة والخاصة
Indicative Contents	**Indicative content includes the following.** 1. مقدمة عن حقوق الانسان. (hrs.5) 2. الجذور التاريخية للديمقراطية وحقوق الانسان. (hrs.5) 3. التعريف بحق الفرد بالانتخابات . (hrs4) 4. معرفة الاصلح من المرشحين للتمثيل الشعبي . (hrs3) 5. معرفة الفرد لحقوقه وحقوق الاخرين . (hrs3) 6. سيادة القانون وعلاقته بالمنظمات المدنية . (hrs3) 7. الاليات التي كفلها الدستور لاحترام الحقوق والحريات . (hrs6) 8. مبدا احترام حقوق الاخرين وعدم التجاوز عليها . (hrs4) 9. الحقوق السياسية والاجتماعية والاقتصادية والثقافية والدينية للفرد. (hrs5)
Learning and Teaching Strategies	
Strategies	

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

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	40	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	10	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	0.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	1, 2	LO #1, 3, 4
	Assignments	2	5% (5)	2, 5	LO # 3, 4, and 5
	Projects	1	5% (5)	Continuous	
	Report	1	10% (10)	6	LO # 4, 6
Summative assessment	**Midterm Exam**	2 hr	10% (10)	6	LO # 1-5
	Final Exam	2hr	60% (60)	14	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	مقدمة عن حقوق الانسان

Week 2	الجذور التاريخية للديمقراطية وحقوق الانسان
Week 3	الجذور التاريخية للديمقراطية وحقوق الانسان
Week 4	التعريف بحق الفرد بالانتخابات
Week 5	معرفة الاصلح من المرشحين للتمثيل الشعبي
Week 6	معرفة الاصلح من المرشحين للتمثيل الشعبي
Week 7	معرفة الفرد لحقوقه وحقوق وحريات الاخرين
Week 8	معرفة الفرد لحقوقه وحقوق الاخرين
Week 9	سيادة القانون وعلاقته بالمنظمات المدنية
Week 10	سيادة القانون وعلاقته بالمنظمات المدنية
Week 11	مبدا احترام حقوق الاخرين وعدم التجاوز عليها
Week 12	الحقوق السياسية والاجتماعية والاقتصادية والثقافية والدينية للفرد
Week 13	الحقوق السياسية والاجتماعية والاقتصادية والثقافية والدينية للفرد
Week 14	الحقوق السياسية والاجتماعية والاقتصادية والثقافية والدينية للفرد
Week 15	**Preparatory Week**
Week 16	**Final Exam**

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	ميثاق الامم المتحدة (1945)	No
Recommended Texts	الاعلان العالمي لحقوق الانسان (1948)	No
Websites	Headley, J. M. (2008). The Europeanization of the world: On the origins of human rights and democracy. Princeton University Press.	

APPENDIX

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

	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				

Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54.

	Ministry of Higher Education and Scientific Research - Iraq University of Thi-Qar College of Engineering Department of Mechanical Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية		
Module Title	ANATOMY	**Module Delivery**

Module Type	CORE	✓ **Theory** **Lecture** ✓ **Lab** **Tutorial** **Practical** **Seminar**	
Module Code	BME		
ECTS Credits	6		
SWL (hr/sem)	200		

Module Level	UGIV	**Semester of Delivery**	2
Administering Department	Biomedical Engineering Dept.	**College**	College of Engineering
Module Leader	Dr. Amer Alasadi	**e-mail**	Dr.amer@utq.edu.iq
Module Leader's Acad. Title	Assist.Prof.	**Module Leader's Qualification**	Ph.D.
Module Tutor	None	**e-mail**	None
Peer Reviewer Name		**e-mail**	
Review Committee Approval		**Version Number**	

Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

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

Module Aims أهداف المادة الدراسية	1-Learning the anatomical terms are an important step in preparing for your career as a healthcare professional. 2-Learning the anatomy structure of the trunk parts of the human body. 3-Understanding the trunk anatomy becomes easier with the discovery. that many of these organs help you to know the site of each organ.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1-Anatomy Learning Outcomes for biomedical students provides learning opportunities that maximize students' anatomical potential as future health professionals. 2-It addresses and simplifies the time-consuming challenge of sourcing quality and trustworthy digital resources to enhance students' anatomical

	knowledge – the foundation of safe and effective clinical practice.
Indicative Contents المحتويات الإرشادية	This model provides medical students, dental students, allied health students, and nursing students with a basic knowledge of anatomy that is clinically relevant. In this new edition, further efforts have been made to weed out unnecessary material and reduce the size of the text. The following changes have been introduced. 1. The text and tables have been reviewed and trimmed where necessary. 2. All the illustrations have been reviewed and some have been discarded where duplication occurs. 3. The anatomy of common medical procedures has been carefully reviewed. Sections on the complications caused by the ignorance of normal anatomy have been retained. Each chapter of Clinical Anatomy is constructed in a similar manner. This gives students ready access to material and facilitates moving from one part of the book to another. Each chapter is divided into the following categories:
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the class while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, discussion and by considering type of the training.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	32	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem)	125		

الحمل الدراسي الكلي للطالب خلال الفصل	

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Anatomy, terms of description and movements, basic anatomical structures I,
Week 2	Basic anatomical structures II, radiological and cross sectional anatomy
Week 3	osteology of the upper limbs, joints of the shoulder girdle, scapular
Week 4	Shoulder muscles, axilla and brachial plexus, arm and elbow joint, cubital fossa and forearm, wrist and hand
Week 5	Exam-1
Week 6	Functional anatomy of the hand, fascia, veins and lymphatics of the upper limb
Week 7	Nerve injuries in the upper limb, the hip joint and osteology of the femur
Week 8	The thigh, and the gluteal region
Week 9	The knee joint and popliteal fossa,
Week 10	The leg and its compartments
Week 11	Exam-2
Week 12	venous system of lower limb,
Week 13	Ankle joint and arches of the foot
Week 14	The foot, and knee joint
Week 15	Nerve injuries in the lower limb.
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Chest Anatomy
Week 2	Lab 2: CVS anatomy
Week 3	Lab 3: Serous membranes
Week 4	Lab 4: Inguinal region
Week 5	Lab 5: Blood supply of GIT tract
Week 6	Lab 6: Accessory digestive organs
Week 7	Lab 7: Kidney anatomy
Week 8	Lab 8: Lymphatic system
Week 9	Lab 9: Muscles of pelvic region
Week 10	Lab 10: Internal genital organs
Week 11	Lab11: Anatomy of male and female perineum
Week 12	Lab 12: Anatomy of pelvic region
Week 13	Lab13: Abdominal Aorta
Week 14	Lab 14: Cranial nerve

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	**Clinical Anatomy by Regions Ninth edition** **Clinical Anatomy: A revision and applied anatomy for clinical students** **Textbook Of Anatomy Upper Limb and Thorax**	Yes
Recommended Texts		No

APPENDIX:

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

Note:

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

	Ministry of Higher Education and Scientific Research - Iraq University of Thi-Qar College of Engineering Department of Biomedical Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	ENGINEERING DRAWING			**Module Delivery**	
Module Type	BASIC			✓ **Theory Lecture** **Lab** **Tutorial** ✓ **Practical** **Seminar**	
Module Code	ER106				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Biomedical Engineering Dept.		**College**	College of Engineering	
Module Leader	Prof. Haider J. Abid		e-mail	Haider-jabaur-abid@utq.edu.iq	
Module Leader's Acad. Title	Professor		Module Leader's Qualification	PhD.	
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name			**e-mail**		
Review Committee Approval			**Version Number**		

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	
Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
Module Aims أهداف المادة الدراسية	1. To know about different types of lines & use of different types of pencils in an Engineering Drawing 2. To know how to represents letters & numbers in drawing sheet 3. To know about different types of projection 4. To know projection of points, straight lines, solids etc. 5. To know development of different types of surfaces. 6. To know about isometric projection. 7. Basics of dimensioning, Lettering& representation of lines 8. Different lines used for representation of different Engineering Sections. 9. To know different angle of projection 10. To learning the drawing software like SolidWorks program.		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Get information about the important tools for engineering drawing. This will give student basic knowledge of technical drawings professions and means of communications to others. 2. Learning how to draw the shapes, angels and lines and others which is essential for engineer 3. Develop student's imagination and ability to represent the shape size and specifications of physical objects. 4. Understand the main idea of using dimension for engineering drawing 5. Familiarize with different drawing equipment, technical standards and procedures for construction of geometric figures. This will give students ability to draw three dimension objects on the paper and to draw the pectoral drawings. 6. Explain the principle of projection and sectioning 7. Understand the intersection, development of surface of body and fasteners 8. Learning the main idea from assembly and detail drawing 9. Understanding the types of traditional and non-traditional		

Indicative Contents المحتويات الإرشادية	Engineering drawing is a basic course for all undergraduate Engineering program. Though Engineering drawing is considered as the language of engineers, most of the universities offer this course as a practical course without any lecture component. This course is therefore introduced to provide the basic understanding of the fundamentals of Engineering Drawing, mainly visualization, graphics theory, standards and conventions of drawing, the tools of drawing and the use of Drawings in engineering applications. The topics covered are based on the syllabus for undergraduate studies in engineering. The lectures would be arranged in a sequence and starts from the basic concepts of geometrical constructions and engineering curves and progress to the principles of projection techniques. Towards the end of the course, it is expected that the students would be matured to visualize the engineering component from any drawing sheet. followed by projection techniques A number of chosen problems will be solved to illustrate the concepts clearly. As well as learning the SolidWorks program.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of experiments involving some sampling activities that are interesting to the students.

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

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Basic Engineering Operations/Engineering drawing tools and ways to use them
Week 2	Basic Engineering Operations/Engineering drawing lines and drills
Week 3	Basic Engineering Operations/Drawing arcs and tangents and drawing curves
Week 4	Drawing a regular polygon (pentagonal, hexagonal, and elliptical drawing methods)
Week 5	Writing and exercises the dimensions on the engineering drawing
Week 6	Drawing the isometric perspective
Week 7	Exercises on drawing the isometric perspective
Week 8	Principles, elements and theory of geometric projection
Week 9	Perspective drawing and projection deduction
Week 10	Examples of drawing a perspective with third projections
Week 11	Conclusion of the third projection
Week 12	Exercises on drawing perspective and deducing the third projections
Week 13	Learning the Basic & Introduction of SolidWorks
Week 14	Sketching with SolidWorks
Week 15	Learning the Part Modeling of SolidWorks

Week 15	Learning the Assembly Modeling of SolidWorks
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	
Week 13	
Week 14	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1 أساسيات ومبـــــادئ الرسم الهندسي / المهندس عامر حماد الفلاحي 2 الرسم الهندسي والتصميم / الجامعة التكنلوجية 3 الرسم الهندسي 4 ENGINEERING DRAWING NSQF	Yes
Recommended Texts	Schaums' outline Series.	No

APPENDIX:

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

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

	Ministry of Higher Education and Scientific Research - Iraq University of Thi-Qar College of Engineering Department of Biomedical Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	BIOLOGY			**Module Delivery**	
Module Type	BASIC			✓ **Theory** **Lecture** ✓ **Lab** **Tutorial** **Practical** **Seminar**	
Module Code	ER104				
ECTS Credits	4				
SWL (hr/sem)	100				
Module Level	UGI		**Semester of Delivery**	1	
Administering Department	Biomedical Engineering Dept.		**College**	College of Engineering	
Module Leader	Dr. Noor Omran Abdul-Kareem		**e-mail**	noor.omran@utq.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name			**e-mail**		
Review Committee Approval			**Version Number**		

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. The goal of Biology is to explain the physical and chemical factors that are responsible for the origin, development and progression of life. Biology course present tremendous challenges to both students& teachers for acquisition of the basic facts is essential to the study of Biology, but also important for students to develop the ability to solve practical, real life problems related to the knowledge they have acquired. 2. To develop the student's knowledge and understanding of the core principles of biology , and the underlying mathematical and practical skill sets, required for a successful transition to degree-level study in disciplines which require an academic background in science
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	11. Apply their knowledge and understanding of physical and biological laws, mathematics and numerical analysis in order to model Biomedical Engineering and similar systems . 12. Explain the role of Biomedical Engineers in society and the constraints within which their engineering judgment will be exercised . 13. Design, from requirement, market need or specification, a biomedical engineering device implant or system, up to the preliminary design stage, and present this design via a series of poster, written and oral presentations from both group and individual work 14. Use laboratory and workshop equipment to generate data, including both engineering and physiological measurements, with appropriate rigor
Indicative Contents المحتويات الإرشادية	Evolution and Classification It introduces the concepts of evolution, eukaryotes and prokaryotes, and classification. **Cells as the basic units of living organisms** Components of the cell as seen under the light microscope and their functions. Identification and function of the cell membrane, mitochondrion, nucleus, nuclear pores, ribosome, and DNA. Description of cell activities in the state of non-division (interphase) and

	division(mitosis). 1. Describe the structure of a chromosome, limited to: • DNA • Histone proteins • Sister chromatids • Centromere 2. Explain the importance of mitosis in the production of genetically identicaldaughter cells during: • Growth of multicellular organisms • Replacement of damaged or dead cells • Repair of tissues by cell replacement • Asexual reproduction 3. Outline the mitotic cell cycle, including: • Interphase (growth in G1 and G2 phases and DNA replication in S phase) • Mitosis Cytokinesis

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

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

Student Workload (SWL)
الحمل الدراسي للطالب

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

Module Evaluation
تقييم المادة الدراسية

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

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Biology, sub-disciplines of biology
Week 2	Ecology
Week 3	Theory of evolution
Week 4	Taxonomy
Week 5	Animal diversity
Week 6	Structures of biological molecules
Week 7	Cell structure and function
Week 8	Vertebrate animal anatomy
Week 9	physiology, and development
Week 10	Glycolysis and cellular respiration
Week 11	Mitosis and meiosis
Week 12	Mendelian and molecular genetics
Week 13	Microbial diversity
Week 14	Plant form and function, Photosynthesis
Week 15	**Preparatory Week**
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	The microscope in cell studies
Week 2	Introduction to cell biology

Week 3	Types of cells, animal cell
Week 4	The structure of the plasma membrane
Week 5	Plasma membrane proteins & its function,
Week 6	The function of the plasma membrane
Week 7	Membrane fluidity, membrane permeability, Gradient across the plasma membrane
Week 8	Transport across the plasma membrane, passive transport, simple diffusion, facilitated diffusion, carrier-mediated facilitated diffusion, osmosis
Week 9	Active process, primary active transport, secondary active transport, transport in vesicles
Week 10	The cytoplasm, cytoskeleton, cilia and flagella, ribosomes
Week 11	Endoplasmic reticulum, golgi apparatus, lysosomes, peroxisomes, proteasomes, mitochondria
Week 12	The nucleus, transcription, translation
Week 13	Cell division, control of cell division
Week 14	**Preparatory Week**
Week 15	**Final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Tortora G. J. Principles of Human Anatomy, tenth edition; 2005. Lisa A.Michael, L.Cavin ,Steven A. Wasserman .Biology.11th edition. 2016 Jane B. Reece, Steven A. Wasserman , Lisa A.Michael . Campbell. Biology 10th Edition.2014 Abraham L. Kiersenbaum, Laura L. Tres.Histology and cell biology . 4th . edition. 2016	Yes
Recommended Texts	Basic Histology, text & atlas, 10ed, L.C. Jungueira & J. Carneiro, 2003.	No

APPENDIX:

GRADING SCHEME مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors

	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note:

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

	Ministry of Higher Education and Scientific Research - Iraq University of Thi-Qar College of Engineering Department of Biomedical Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	ENGINEERING MECHANICS	**Module Delivery**	
Module Type	BASIC	✓ **Theory** ✓ **Lecture** ✓ **Lab** ✓ **Tutorial** ✓ **Practical** ✓ **Seminar**	
Module Code	BME101		
ECTS Credits	9		
SWL (hr/sem)	225		

Module Level	1	**Semester of Delivery**	1
Administering Department	BMW	**College**	Engineering
Module Leader	Prof. Dr. Haider J. Abid	**e-mail**	
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Ph.D.
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Review Committee Approval		**Version Number**	

Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	The main objectives of the course are to: 3. Develop problem solving skills by applying principles of engineering, science, and mathematics. 4. Understand the principles of static equilibrium by applying Newton's laws of motion to solve engineering problems. 5. Determine the components of 2Dforces and moments in rectangular coordinate systems. 6. Manipulate vector and geometric vectors to compute dot products, moments, and resultants as they relate to engineering problems. 7. Draw complete and correct free-body diagram(s) (including support reactions), then write and solve the appropriate equilibrium equations from the free-body diagram(s). 8. This course deals with topics include introduction to forces; 2D equilibrium of particles and rigid bodies; center of gravity and centroids; friction; and analysis of frames. 9. Analyze equilibrium systems that include frictional forces. 10. Locate the centroid of composite bodies. 11. Calculate the moment of inertia for a given body and axes 12. Develop problem solving skills by applying principles of engineering, science, and mathematics. 13. Understand the principles of dynamic by applying Newton's laws of motion to solve engineering problems. 14. applies the fundamental principles of kinematics and kinetics of rigid bodies to real world engineering problems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After completion of the course students are expected to: 15. Define Newton's laws of motion. 16. Recall trigonometric laws and apply to the addition and decomposition of vectors quantities. 17. Identify the moment of a force and calculate its value about a specified axis. Define the moment of a couple. 18. Describe the concept of dry friction and analyze the equilibrium of rigid bodies subjected to this force. 19. Construct "Free Body Diagrams" of real-world problems and apply Newton's Laws of motion and vector operations to evaluate equilibrium of particles and bodies. 20. Apply the principles of equilibrium of particles and bodies to analyze the forces in planar truss members. 21. Discuss the concepts of ``center of gravity'' and ``centroids'' and compute their location for bodies of arbitrary shape.

	22. Apply the concepts used for determining center of gravity and centroids to find the resultant of a generally distributed loading. 23. Determine the moment of inertia of areas/masses and use the parallel-axis theorem for an area to find the moment of inertia about a specified axis> 24. Analyze both linear and angular displacements, velocities and accelerations of rigid bodies by applying the principles of kinematics. 25. Apply appropriate methods such as Newton's second law, work and energy principles, and impulse and momentum methods to analyze the effect of forces on two-dimensional motion of rigid bodies. 26. Understand basic dynamics concepts – force, momentum, work and energy. 27. Understand and be able to apply Newton's laws of motion. 28. Learn to solve dynamics problems. Appraise given information and determine which concepts apply, and choose an appropriate solution strategy. 29. Gain an introduction to basic machine parts such as pulleys and mass-spring systems.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Basic concepts of mechanics; Scalars and vectors: Vector algebra and components; Position and unit vectors. [2 hrs] Two-dimensional force systems; Moment of a force about a point; Moment of a force about a line. [12 hrs] Equilibrium of a particle and the associated free-body diagrams; Equilibrium of a rigid body and the associated free body diagram. [15 hrs] Two and three force members equilibrium in three dimensions; Simple trusses: the method of joints, the method of sections, zero-force members; Internal forces developed in structural members. [14 hrs] Theory of dry friction; Systems with friction; Wedges; Belt friction; Rolling resistance. [10 hrs] Centre of gravity and centroid. [6 hrs] Moment of inertia of areas/masses; Parallel-axis theorem for an area; Radius gyration of an area; Moments of areas/masses; Product of inertia for an area/mass. [15 hrs] Basic concepts of Kinematics of particles; rectilinear motion. [8 hrs]

	Plane curvilinear motion. [10 hrs] Normal and tangential coordinates. [10 hrs] relative motion. [9 hrs] Kinetics of particles: Newton's second law. [9 hrs] Rectilinear motion. [8 hrs] Curvilinear motion. [8 hrs] Work and kinetic energy. [12 hrs]
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The module is assessed through a combination of written coursework assignments and a two-hour formal examination scheduled during the mid of semester. The coursework takes a variety of formats, including essays and short questions and is designed to allow the students to evaluate their progress in the module in relation to the specified learning outcomes. This is achieved through feedback on the students. coursework and discussion of the coursework in subsequent lecture/tutorial classes. The examination paper typically has a choice of five questions from a possible six, covering all the learning outcomes.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	168	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	9
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	57	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	225		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)		
	Homeworks	5	10% (10)		
	Projects / Lab.				
	Report				
Summative assessment	**Midterm Exam**	2 hr	20% (10)		
	Final Exam	2hr	60% (50)		All

Total assessment	100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Vectors & Matrices + Force systems: Two – dimensional force system
Week 2	Moment+ Couple
Week 3	Resultants+ Equilibrium
Week 4	Construction a free-body diagrams + Equilibrium conditions: Two – dimensions
Week 5	Structures: plane trusses, Structures: space trusses, Frames+
Week 6	Friction+ Belts+ Centroids
Week 7	Moment of Inertia+ Moment of Inertia (Parallel-axis theorem for an area)
Week 8	**Mid Exam**
Week 9	Introduction to dynamics + Kinematics of particles: rectilinear motion
Week 10	Kinematics of particles: rectilinear motion + Plane curvilinear motion
Week 11	Plane curvilinear motion
Week 12	normal and tangential coordinates
Week 13	relative motion+ Kinetics of particles: Newton's second law
Week 14	Rectilinear motion + Curvilinear motion
Week 15	Work and kinetic energy
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	

Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Meriam, J. L., Kraige, L. G. & Bolton, J. N. (2008). Engineering Mechanics: Dynamics (SI). (6th ed.), Wiley. J.L. Meriam, L.G. Kraige 2003, Engineering Mechanics (Dynamics) SI Version, 5th Ed., John Wiley and Sons Limited	Yes
Recommended Texts	Meriam, J. L., Kraige, L. G. & Bolton, J. N. (2017). Engineering Mechanics: Dynamics (SI). (8th ed.), Wiley. Meriam, J. L., Kraige, L. G. & & Bolton, J. N. (2017). Engineering Mechanics: Statics (SI). (7th ed.), Wiley	Online
Websites		

APPENDIX:

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

Note:

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

	Ministry of Higher Education and Scientific Research - Iraq University of Thi-Qar College of Engineering Department of Biomedical Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

	Ministry of Higher Education and Scientific Research - Iraq University of Thi-Qar College of Engineering Department of Biomedical Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	COMPUTER SCIENCE	**Module Delivery**	
Module Type	BASIC	✓ **Theory** ✓ **Lecture** ✓ **Lab**	
Module Code	UTQCO12		
ECTS Credits	4		
SWL (hr/sem)	100		

Module Level	UGII	**Semester of Delivery**	2
Administering Department	BME	**College**	ER
Module Leader	MS.c Safa Hussain Ali	**e-mail**	Safa.hussain.ali@utq.edu.iq
Module Leader's Acad. Title	Assistant Teacher	**Module Leader's Qualification**	MS.c
Module Lab	Rooa Qusay Kadhim	**e-mail**	rooa.qusay@utq.edu.iq
Peer Reviewer Name		**e-mail**	
Review Committee Approval		**Version Number**	1.0

Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

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

Module Aims أهداف المادة الدراسية	1. To develop problem solving skills and understanding of basic computer science that are needed for the engineering applications. 2. To understand different methods of integration beyond what is given in the high school. 3. This course introduces the computer techniques needed to deal with development of modern technologies for software and hardware . Furthermore, students learn their engineering applications in computer science . 4. This is the basic subject for all engineering students. 5. To understand how to solution and application in computer language.
Module Learning Outcomes	1. To make the student able to show real knowledge of computer science concepts during the school year and their applications in different areas of engineering.

مخرجات التعلم للمادة الدراسية	2. Learn and understand the basic definitions used in engineering of computer science such as Microsoft word ,excel and powerpoint and visual basic language. 3-Learn the basic principles of windows.
Indicative Contents المحتويات الإرشادية	We expect the student to be able to handle any of the following topics. Also any material covered in class, assigned as reading, or assigned as homework is testable. The following sections are the important concepts of computer science. 1. Basic of Computer Introduction a) Introduction. b) Type of computers. c) Classification of Computer. d) Components of Personal Computer. 2. Basic Parts of a Computer a) Input Devices. b) Output Devices. 3. Software and Hardware a) System. b) Application. 4. Windows a) The Desktop Components. b) Types of icons. c) Icon Operations. d) Computer keyboard shortcut keys. 5. Microsoft word a) Backstage view. b) Creating and opening documents. 6.Microsoft excel a) Creating and opening workbooks. b) Creating simple formulas. 7.Microsoft PowerPoint a) Creating documents. b) Opening a presentation. c) Toolbars. d) Inserting and adding objects. 8.Visual basic language. a) Introduction to visual basic programming b) Windows in visual basic program (The main window and the program window) c) Properties window for visual basic.

	d) Program writing stages.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

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

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	36	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction – Type of computer
Week 2	Basic parts of a computer

Week 3	Hardwar of computer
Week 4	Software of computer
Week 5	Windows
Week 6	Microsoft word
Week 7	Microsoft excel
Week 8	Microsoft PowerPoint
Week 9	Midterm
Week 10	Introduction to visual basic programming
Week 11	Windows in visual basic program (The main window and the program window)
Week 12	Properties window for visual basic
Week 13	Program writing stages
Week 14	Assignments
Week 15	Preparatory Week
Week 16	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1-Computer science	Yes
Recommended Texts	1-Kime, M. Morris Mano Charles. Logic and computer design fundamentals. 2014. 2- Steve Johnson: Microsoft windows 7, united Kingdome,2010 3-Vick, Paul, and Lucian Wischik. "The Microsoft Visual Basic Language Specification." Microsoft Corporation (2007).	No
Websites		

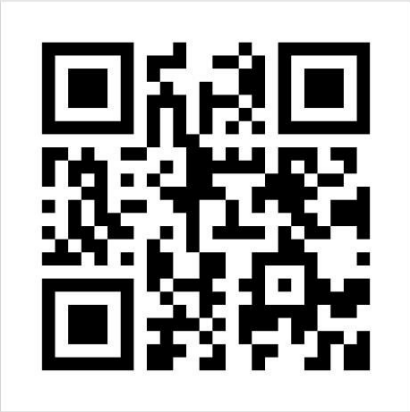
APPENDIX:

GRADING SCHEME مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors

	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note:

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



	Ministry of Higher Education and Scientific Research - Iraq University of Thi-Qar College of Engineering Department of Biomedical Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	ENGLISH LANGUAGE SKILLS			**Module Delivery**	
Module Type	CORE			✓ **Theory** ✓ **Lecture** ✓ **Lab** ✓ **Tutorial** ✓ **Practical** ✓ **Seminar**	
Module Code	UTQEN11				
ECTS Credits	2				
SWL (hr/sem)	50				
Module Level	UGI		**Semester of Delivery**	1	
Administering Department	BME		**College**	EN	
Module Leader	Dr. Ahmed Ghazi Hassan		**e-mail**	ahmed.ghazi@utq.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name	Dr. Ahmed Ghazi		**e-mail**	ahmed.ghazi@utq.edu.iq	
Review Committee Approval	15/06/2023		**Version Number**	1.0	

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	-
Co-requisites module	None	**Semester**	-
Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
Module Aims أهداف المادة الدراسية	15. To develop students' English language skills 16. To strengthen speaking and listening in English 17. Facilitate the learning of engineering specialization by mastering the English language to accept many educational resources related to engineering.		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	At the end of the class, the student will be able to: Enable the student to 1. Develops speaking and discussion skills in English 2. The ability to form complete sentences in different tenses and to suit the dialogue time 3. Writing formal and informal essay and letters 4. Mastering English grammar with the correct spelling of words.		
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. ENGLISH LANGUAGE SKILLS/ UTQEN11 This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification. Description of course includes the fundamentals and Introduction to English language: Fundamentals of the English language and its Aspects: A review. Parts of speech (nouns, pronouns, verbs, adverbs, prepositions). Review of English Grammars: The structure of English sentences. How to write a formal and Informal letter, linking words, writing a postcard, relative clauses. How to write an E-mail, CV, etc. Moreover, how to skim and/or scan of academic Articles. Then, how to Intensive read of academic Articles. How to write an academic Essay, articles, story and its principle.		

	Also, how to do an official interview. Moreover, techniques of brainstorm. Finally, Speaking Skills. The course is taught through (2) hrs per week.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	30	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation تقييم المادة الدراسية					
		Time/ Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	3	15% (15)	3, 6, 12	LO #1, 2, 3 and 4
	Assignments	2	10% (10)	4, 10	LO # 1, 2, 3 and 4
	Onsite Assignments	2	5% (5)	5, 13	LO # 1, 2, 3 and 4
	Report	1	10% (10)	14	LO # 1, 2, 3 and 4
Summative assessment	**Midterm Exam**	2 hr	10% (10)	8	LO # 1, 2, 3 and 4
	Final Exam	3hr	50% (50)	16	LO # 1, 2, 3 and 4
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
First Week	Introduction to English language: Fundamentals of the English language and its Aspects: A review. Academic skills level I.
Second Week	Parts of speech (nouns, pronouns, verbs, adverbs, prepositions). Academic skills level I.
Third Week	Review of English Grammars: The structure of English sentences. Academic skills level I.
Fourth Week	English Grammars: The structure of English sentences. Academic skills level I.
Fifth Week	How to write a formal and Informal letter, linking words, writing a postcard, relative clauses. Academic skills level I.
Sixth Weeks	How to write an E-mail, CV, etc. Academic skills level I.
Seventh Week	How to skim and/or scan of academic Articles. Academic skills level I.
Eighth Week	Mid-term Exam
Ninth Week	How to Intensive read of academic Articles. Academic skills level I.
Tenth Week	How to write an academic Essay, articles, story and its principle. Academic skills level I.
Eleventh Week	How to write an academic Essay, articles, story and its principle. Academic skills level I.
Twelfth Week	How to do an official interview.
Thirteenth Week	Techniques of brainstorm
Fourteenth Week	Speaking Skills
Fifteenth Week	Preparatory Week
Sixteen Week	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1. Academic Skills Reading Writing and Study Skills Richard Harrison.	Yes

Recommended Texts	English Grammar in Use by Raymond Murphy	Yes
Websites	https://pdfcoffee.com/new-headway-academic-skills-1--pdf-free.html. https://www.google.com/search?gs_ssp=eJzj4tVP1zc0TDbMKzQ2LSwzYPRSTs1Lz8kszlBIL0rMzU0sUsjMUygtTlUozyzJUEjMKy5PLSoGALxEEfM&q=english+grammar+in+use+with+answers&oq=English+Grammar+in+Use+&gs_lcrp=EgZjaHJvbWUqDwgEEC4YQxjUAhiABBiKBTIGCAAQRRg5MgcIARAAGIAEMgYIAhBFGEAyBwgDEAAYgAQyDwgEEC4YQxjUAhiABBiKBTIPCAUQLhhDGNQCGIAEGIoFMgYIBhBFGDwyBggHEEUYQdIBCTEyNTg1ajBqOagCALACAA&sourceid=chrome&ie=UTF-8.	

APPENDIX:

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

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

Module Information
معلومات المادة الدراسية

Module Title	INTRODUCTION TO BME II	**Module Delivery**	
Module Type	CORE	✓ **Theory** ✓ **Lecture** **Lab** **Tutorial** **Practical** **Seminar**	
Module Code	BME104		
ECTS Credits	7		
SWL (hr/sem)	175		

Module Level	1	**Semester of Delivery**	2
Administering Department	Biomedical Engineering Dept.	**College**	College of Engineering
Module Leader	Lecturer Zahraa Abdulhussein Mousa	**e-mail**	zahraa-a@utq.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Msc.
Module Tutor	Lecturer Zahraa Abdulhussein Mousa	**e-mail**	zahraa-a@utq.edu.iq
Peer Reviewer Name	Ali Bassem Mahdi	**e-mail**	Ali-bassem@utq.edu.iq
Review Committee Approval		**Version Number**	

Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Introduction to BME I	**Semester**	UGI 2
Co-requisites module	None	**Semester**	

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

Module Aims أهداف المادة الدراسية	18. To deepen students' understanding of advanced topics in Biomedical Engineering (BME). 19. To explore specialized areas within BME and their applications in healthcare and research. 20. To enhance students' technical skills and research capabilities in BME.

	21. To promote innovation and creativity in developing solutions for complex BME problems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this module, students should be able to: 1. Explain advanced concepts and techniques in specialized areas of BME, such as biomedical imaging, neural engineering, or biomaterials. 2. Evaluate the potential impact of emerging technologies in BME, such as bioinformatics, nanotechnology, or wearable devices. 3. Apply advanced technical skills to design and develop BME solutions, considering factors like performance, safety, and regulatory compliance. 4. Conduct research in BME, including literature review, experimental design, data analysis, and interpretation. 5. Demonstrate creativity and innovation in proposing novel ideas and solutions for complex BME challenges
Indicative Contents المحتويات الإرشادية	Indicative Contents for "Introduction to BME II": 1. Advanced Biomedical Imaging: - Principles of advanced medical imaging modalities (PET, SPECT, fMRI) - Molecular imaging and targeted imaging agents - Image reconstruction techniques and advanced image analysis methods 2. Neural Engineering: - Introduction to the field of neural engineering - Neural interfaces and brain-computer interfaces (BCIs) - Neuroprosthetics and neuromodulation techniques 3. Bioinformatics and Computational Biology: - Introduction to bioinformatics and genomics - Data analysis and interpretation in genomics and proteomics - Computational modeling and simulation in biological systems 4. Biomedical Nanotechnology: - Principles of nanotechnology in medicine and healthcare - Nanomaterials for drug delivery and therapeutics - Nanoscale sensors and imaging techniques 5. Wearable and Implantable Medical Devices: - Overview of wearable and implantable medical devices - Sensor technologies and wireless communication in medical devices

	- Remote monitoring and telemedicine applications 6. Biomedical Robotics: - Introduction to biomedical robotics - Robotic-assisted surgery and rehabilitation - Human-robot interaction and exoskeletons 7. Advanced Biomaterials: - Biomaterials for tissue engineering and regenerative medicine - Drug delivery systems and controlled release mechanisms - Surface modification and biofunctionalization techniques 8. Biomedical Signal Processing: - Advanced signal processing techniques in biomedical applications - Time-frequency analysis and wavelet transforms - Machine learning and pattern recognition in signal processing 9. Regulatory Affairs and Quality Systems in BME: - Regulatory requirements for medical devices and diagnostics - Quality management systems (QMS) in healthcare - Compliance with international standards and regulations 10. Entrepreneurship and Innovation in BME: - Introduction to entrepreneurship in the biomedical industry - Intellectual property protection and technology transfer - Innovation and product development processes in BME 11. Emerging Trends in Biomedical Engineering: - Cutting-edge advancements and future directions in BME - Precision medicine and personalized healthcare - Biofabrication and 3D printing in biomedicine 12. Case Studies and Practical Applications: - Analysis of real-world case studies in BME - Integration of knowledge and skills through practical projects - Ethical considerations and social impact of advanced BME technologies
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the classes, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	108	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2 times	10% (10)	3, 13	LO #1, 2, 10
	Oral	2 times	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects and presentations	1 time	10% (10)	9	LO # overall
Summative assessment	**Midterm Exam**	1 time/1hr	20% (10)	7	LO # 1-7
	Final Exam	1 time /hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	• Advanced Biomedical Imaging • Principles of advanced medical imaging modalities • Molecular imaging and targeted imaging agents

Week 2	• Neural Engineering • Introduction to neural engineering • Neural interfaces and brain-computer interfaces (BCIs)
Week 3	Bioinformatics and Computational Biology • Introduction to bioinformatics and genomics • Data analysis and interpretation in genomics and proteomics
Week 4	Biomedical Nanotechnology • Principles of nanotechnology in medicine and healthcare • Nanomaterials for drug delivery and therapeutics
Week 5	Wearable and Implantable Medical Devices • Overview of wearable and implantable medical devices • Sensor technologies and wireless communication in medical devices
Week 6	Biomedical Robotics • Introduction to biomedical robotics • Robotic-assisted surgery and rehabilitation
Week 7	Advanced Biomaterials • Biomaterials for tissue engineering and regenerative medicine • Drug delivery systems and controlled release mechanisms
Week 8	Biomedical Signal Processing • Advanced signal processing techniques in biomedical applications • Time-frequency analysis and wavelet transforms
Week 9	Regulatory Affairs and Quality Systems in BME • Regulatory requirements for medical devices and diagnostics • Quality management systems (QMS) in healthcare
Week 10	Entrepreneurship and Innovation in BME • Introduction to entrepreneurship in the biomedical industry • Intellectual property protection and technology transfer
Week 11	Emerging Trends in Biomedical Engineering • Cutting-edge advancements and future directions in BME • Precision medicine and personalized healthcare
Week 12	Case Studies and Practical Applications • Analysis of real-world case studies in BME • Integration of knowledge and skills through practical projects
Week 13	Advanced Biomedical Imaging (Continued) • Image reconstruction techniques and advanced image analysis methods

Week 14	Biomedical Nanotechnology (Continued) • Nanoscale sensors and imaging techniques
Week 15	Review and Recap • Review of key topics and concepts covered in the course • Discussion and synthesis of the broader implications of advanced BME technologies
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	
Week 13	
Week 14	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Required Texts and Reference Books for "Introduction to BME II":	No

	1. Textbook: "Biomedical Engineering: Bridging Medicine and Technology" by W. Mark Saltzman 2. Textbook: "Principles of Biomedical Instrumentation and Measurement" by Richard Aston 3. Textbook: "Biomaterials Science: An Introduction to Materials in Medicine" by Buddy D. Ratner, Allan S. Hoffman, Frederick J. Schoen, and Jack E. Lemons 4. Textbook: "Introduction to Bioinformatics: A Theoretical and Practical Approach" by Stephen A. Krawetz and David D. Womble 5. Textbook: "Nanomedicine: Principles and Perspectives" by Rudolf H. Reichert 6. Textbook: "Introduction to Robotics in Medicine and Healthcare" by Robert H. Taylor 7. Textbook: "Biomedical Signal Processing and Signal Modeling" by Rangaraj M. Rangayyan 8. Textbook: "Regulatory Affairs for Biomaterials and Medical Devices" by Stephen F. McCarthy and Gary J. Prudhomme 9. Textbook: "Innovation and Entrepreneurship in Biotechnology, An International Perspective" by Konstantinos G. Koudounas and Dimitrios P. Sakellariou Recommended Websites and Online Resources: 1. National Institute of Biomedical Imaging and Bioengineering (NIBIB) - https://www.nibib.nih.gov/ 2. Biomedical Engineering Society (BMES) - https://www.bmes.org/ 3. IEEE Engineering in Medicine and Biology Society (EMBS) - https://www.embs.org/ 4. Open Biomedical Engineering Journal - https://benthamopen.com/TOBEJ/home/ 5. ScienceDirect - Biomedical Engineering Journals - https://www.sciencedirect.com/browse/journals-and-books/engineering/biomedical-engineering 6. MIT OpenCourseWare - Biomedical Engineering Courses - https://ocw.mit.edu/courses/biological-engineering/ 7. Biomedical Engineering Online Journal - https://biomedical-engineering-online.biomedcentral.com/ 8. National Center for Biotechnology Information (NCBI) - https://www.ncbi.nlm.nih.gov/ 9. World Health Organization (WHO) - Biomedical Engineering - https://www.who.int/medical_devices/en/ 10. ResearchGate - Biomedical Engineering Publications - https://www.researchgate.net/topic/Biomedical-Engineering	

Recommended Texts		

APPENDIX:

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

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

Module Information
معلومات المادة الدراسية

Module Title	INTRODUCTION TO BME I	**Module Delivery**	
Module Type	CORE	✓ **Theory** ✓ **Lecture** **Lab** **Tutorial** **Practical** **Seminar**	
Module Code	BME102		
ECTS Credits	7		
SWL (hr/sem)	175		

Module Level	1	**Semester of Delivery**	1
Administering Department	Biomedical Engineering Dept.	**College**	College of Engineering
Module Leader	Lecturer Zahraa Abdulhussein Mousa	**e-mail**	zahraa-a@utq.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Msc.
Module Tutor	Lecturer Zahraa Abdulhussein Mousa	**e-mail**	zahraa-a@utq.edu.iq
Peer Reviewer Name	Ali Bassem Mahdi	**e-mail**	Ali-bassem@utq.edu.iq
Review Committee Approval		**Version Number**	

Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Introduction to BME I	**Semester**	UGI 2
Co-requisites module	None	**Semester**	

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

Module Aims أهداف المادة الدراسية	22. To deepen students' understanding of advanced topics in Biomedical Engineering (BME). 23. To explore specialized areas within BME and their applications in healthcare and research. 24. To enhance students' technical skills and research capabilities in BME. 25. To promote innovation and creativity in developing solutions for

	complex BME problems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this module, students should be able to: 6. Explain advanced concepts and techniques in specialized areas of BME, such as biomedical imaging, neural engineering, or biomaterials. 7. Evaluate the potential impact of emerging technologies in BME, such as bioinformatics, nanotechnology, or wearable devices. 8. Apply advanced technical skills to design and develop BME solutions, considering factors like performance, safety, and regulatory compliance. 9. Conduct research in BME, including literature review, experimental design, data analysis, and interpretation. 10. Demonstrate creativity and innovation in proposing novel ideas and solutions for complex BME challenges
Indicative Contents المحتويات الإرشادية	Indicative Contents for "Introduction to BME II": 1. Advanced Biomedical Imaging: - Principles of advanced medical imaging modalities (PET, SPECT, fMRI) - Molecular imaging and targeted imaging agents - Image reconstruction techniques and advanced image analysis methods 2. Neural Engineering: - Introduction to the field of neural engineering - Neural interfaces and brain-computer interfaces (BCIs) - Neuroprosthetics and neuromodulation techniques 3. Bioinformatics and Computational Biology: - Introduction to bioinformatics and genomics - Data analysis and interpretation in genomics and proteomics - Computational modeling and simulation in biological systems 4. Biomedical Nanotechnology: - Principles of nanotechnology in medicine and healthcare - Nanomaterials for drug delivery and therapeutics - Nanoscale sensors and imaging techniques 5. Wearable and Implantable Medical Devices: - Overview of wearable and implantable medical devices - Sensor technologies and wireless communication in medical devices - Remote monitoring and telemedicine applications

	6. Biomedical Robotics: - Introduction to biomedical robotics - Robotic-assisted surgery and rehabilitation - Human-robot interaction and exoskeletons 7. Advanced Biomaterials: - Biomaterials for tissue engineering and regenerative medicine - Drug delivery systems and controlled release mechanisms - Surface modification and biofunctionalization techniques 8. Biomedical Signal Processing: - Advanced signal processing techniques in biomedical applications - Time-frequency analysis and wavelet transforms - Machine learning and pattern recognition in signal processing 9. Regulatory Affairs and Quality Systems in BME: - Regulatory requirements for medical devices and diagnostics - Quality management systems (QMS) in healthcare - Compliance with international standards and regulations 10. Entrepreneurship and Innovation in BME: - Introduction to entrepreneurship in the biomedical industry - Intellectual property protection and technology transfer - Innovation and product development processes in BME 11. Emerging Trends in Biomedical Engineering: - Cutting-edge advancements and future directions in BME - Precision medicine and personalized healthcare - Biofabrication and 3D printing in biomedicine 12. Case Studies and Practical Applications: - Analysis of real-world case studies in BME - Integration of knowledge and skills through practical projects - Ethical considerations and social impact of advanced BME technologies
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the classes, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	108	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2 times	10% (10)	3, 13	LO #1, 2, 10
	Oral	2 times	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects and presentations	1 time	10% (10)	9	LO # overall
Summative assessment	**Midterm Exam**	1 time/1hr	20% (10)	7	LO # 1-7
	Final Exam	1 time /hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	• Advanced Biomedical Imaging • Principles of advanced medical imaging modalities • Molecular imaging and targeted imaging agents

Week 2	• Neural Engineering • Introduction to neural engineering • Neural interfaces and brain-computer interfaces (BCIs)
Week 3	Bioinformatics and Computational Biology • Introduction to bioinformatics and genomics • Data analysis and interpretation in genomics and proteomics
Week 4	Biomedical Nanotechnology • Principles of nanotechnology in medicine and healthcare • Nanomaterials for drug delivery and therapeutics
Week 5	Wearable and Implantable Medical Devices • Overview of wearable and implantable medical devices • Sensor technologies and wireless communication in medical devices
Week 6	Biomedical Robotics • Introduction to biomedical robotics • Robotic-assisted surgery and rehabilitation
Week 7	Advanced Biomaterials • Biomaterials for tissue engineering and regenerative medicine • Drug delivery systems and controlled release mechanisms
Week 8	Biomedical Signal Processing • Advanced signal processing techniques in biomedical applications • Time-frequency analysis and wavelet transforms
Week 9	Regulatory Affairs and Quality Systems in BME • Regulatory requirements for medical devices and diagnostics • Quality management systems (QMS) in healthcare
Week 10	Entrepreneurship and Innovation in BME • Introduction to entrepreneurship in the biomedical industry • Intellectual property protection and technology transfer
Week 11	Emerging Trends in Biomedical Engineering • Cutting-edge advancements and future directions in BME • Precision medicine and personalized healthcare
Week 12	Case Studies and Practical Applications • Analysis of real-world case studies in BME • Integration of knowledge and skills through practical projects
Week 13	Advanced Biomedical Imaging (Continued) • Image reconstruction techniques and advanced image analysis methods
Week 14	Biomedical Nanotechnology (Continued) • Nanoscale sensors and imaging techniques

Week 15	Review and Recap • Review of key topics and concepts covered in the course • Discussion and synthesis of the broader implications of advanced BME technologies
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	
Week 13	
Week 14	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Required Texts and Reference Books for "Introduction to BME II": 1. Textbook: "Biomedical Engineering: Bridging Medicine	No

	and Technology" by W. Mark Saltzman 2. Textbook: "Principles of Biomedical Instrumentation and Measurement" by Richard Aston 3. Textbook: "Biomaterials Science: An Introduction to Materials in Medicine" by Buddy D. Ratner, Allan S. Hoffman, Frederick J. Schoen, and Jack E. Lemons 4. Textbook: "Introduction to Bioinformatics: A Theoretical and Practical Approach" by Stephen A. Krawetz and David D. Womble 5. Textbook: "Nanomedicine: Principles and Perspectives" by Rudolf H. Reichert 6. Textbook: "Introduction to Robotics in Medicine and Healthcare" by Robert H. Taylor 7. Textbook: "Biomedical Signal Processing and Signal Modeling" by Rangaraj M. Rangayyan 8. Textbook: "Regulatory Affairs for Biomaterials and Medical Devices" by Stephen F. McCarthy and Gary J. Prudhomme 9. Textbook: "Innovation and Entrepreneurship in Biotechnology, An International Perspective" by Konstantinos G. Koudounas and Dimitrios P. Sakellariou Recommended Websites and Online Resources: 1. National Institute of Biomedical Imaging and Bioengineering (NIBIB) - https://www.nibib.nih.gov/ 2. Biomedical Engineering Society (BMES) - https://www.bmes.org/ 3. IEEE Engineering in Medicine and Biology Society (EMBS) - https://www.embs.org/ 4. Open Biomedical Engineering Journal - https://benthamopen.com/TOBEJ/home/ 5. ScienceDirect - Biomedical Engineering Journals - https://www.sciencedirect.com/browse/journals-and-books/engineering/biomedical-engineering 6. MIT OpenCourseWare - Biomedical Engineering Courses - https://ocw.mit.edu/courses/biological-engineering/ 7. Biomedical Engineering Online Journal - https://biomedical-engineering-online.biomedcentral.com/ 8. National Center for Biotechnology Information (NCBI) - https://www.ncbi.nlm.nih.gov/ 9. World Health Organization (WHO) - Biomedical Engineering - https://www.who.int/medical_devices/en/ 10. ResearchGate - Biomedical Engineering Publications - https://www.researchgate.net/topic/Biomedical-Engineering	
Recommended Texts		

APPENDIX:

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

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

áí•

Republic of Iraq
Ministry of Higher Education
and Scientific Research
University of Thi-Qar
College of Engineering
Administrative Affairs

جمهورية العراق
وزارة التعليم العالي والبحث العلمي
جامعة ذي قار / كلية الهندسة
شعبة الشؤون العلمية

العدد: ش ع/ ١٠/ ٩٧
التاريخ: ٢٨/ ١/ ٢٠٢٤

((أمر إداري))

م/ إقامة ورشة

إشارة الى مطالعة قسم هندسة الطب الحياتي ، واستنادا إلى الصلاحيات المخولة لنا تقرر ..

إقامة ورشة العمل الموسومة : (نظام بولونيا)

وذلك يوم الخميس الموافق ٢٠٢٤/١/٢٥ في مبنى قسم هندسة الطب الحياتي مع طلبة المرحلة الاولى .

المحاضرون :-

١. أ.د رافد معلك حنون
٢. م.د احمد عبد الحسين عوده
٣. المهندسة حوراء رياض سحيب

كلية الهندسة / جامعة ذي قار
الشؤون العلمية
الصادرة

أ. د. عدنان عبد الحسين عكله
عميد الكلية
٢٨/ ١/ ٢٠٢٤

نسخة منه الى

- مكتب السيد العميد للتفضل بالاطلاع ......مع التقدير
- قسم الطب الحياتي.. للتفضل بالعلم لطفا.
- اضبارة الندوات وورش العمل مع الأوليات.
- الصادرة