



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

**قسم هندسة الطب الحيوي | كلية الهندسة | جامعة ذي قار**



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## 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:	<b>BSc-BIO</b>	ECTS	<b>300</b>
Duration:	<b>5 Levels, 10 Semesters</b>	Method of Attendance:	<b>Full Time</b>

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 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

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## 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:

$$\text{CGPA} = [ (1^{\text{st}} \text{ module score} \times \text{ECTS}) + (2^{\text{nd}} \text{ module score} \times \text{ECTS}) + \dots ] / 300$$

## 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

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