



**Ministry of Higher Education and
Scientific Research**

**Scientific Supervision and Evaluation
Authority**

**Quality Assurance and Academic
Accreditation Department**

**Academic Program Descriptions
University of Hilla
Faculty of Engineering Technologies
Department of Medical Instrumentation
Engineering Techniques**

2025-2026

University Name : Hilla University

Faculty / Institute : Faculty of Engineering Technology

Department : Medical Instrumentation Engineering Techniques

Academic Program : B.Sc. degree in Medical Instrumentation Engineering Techniques

Final Graduation certificate : Bachelor's degree in Medical Instrumentation Engineering Techniques

Academic system : Pologna

Date of preparation : March, 25, 2026

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The file was reviewed by the Quality Assurance and University Performance Division.

Name of the Head of the Quality Assurance and University Performance Division: Mr. Ali Hussein Ghalta

Date 29/3/2026



Signature



Approved by the Dean

Prof. Dr. Haroun Abdul Kadhim Shahad

1. Mission & Vision Statement

Vision Statement

The academic staff of the Medical Instrumentation Engineering Techniques (MIET)/ Faculty of Engineering Technology/ Hilla University believes that providing high-quality technical education that makes the targeted return from the education process more efficient and distinguished by developing technical capabilities, critical thinking skills, social and personal skills, and work values in an ever-changing environment in the medical healthcare system, as well as in their careers in companies of medical instrumentation dealing with different services, demonstrating general knowledge of medical devices categories and principal of operation and maintenance. Small class sizes within the MIE program foster a close working relationship between academic staff and students in an informal and nurturing atmosphere that be a technical leader and innovator in providing high-quality educational programs and services, in a highly competitive global high-tech environment.

Mission Statement

The MIET academic staff pursues a multifaceted charge at Hilla University. The Program seeks to provide all students with fundamental knowledge of medical instrumentation technology. as well as a deeper understanding of a selected focus area within the Medical Instruments and Techniques. The curriculum and advising have been designed to prepare graduates for their professional future, whether they choose to work as an efficient engineering staff that can cover engineering maintenance and problem solving for vital medical devices, or to pursue advanced degrees in the Medical Instrumentation Techniques Engineering. The MIET program also provides the necessary fundamental knowledge of the Medical Instruments and Techniques to support researchers developing and creating a new biomedical equipment or tool that follows the future needs of medicine and healthcare. Further, Rehabilitation of distinguished and innovative competencies scientifically, skillfully and behaviorally in the field of medical equipment technology and keeping pace with the corresponding departments in international universities by providing community services, offering the latest study programs to create an advanced academic environment.

2. Program Specification

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

MIET program is designed to provide students with the skills to improve themselves by preparing them for a career in medical instrumentation. Students will learn how to administer and support the medical instrumentation technology and design. The curriculum consists of an integrated set of courses in mathematics, medical physics and chemistry, fundamentals of electric and electronic circuits, medical instrumentations. Students will have the opportunity to know the principles of computer applications and they will be prepared for careers in companies of medical instrumentation

dealing with the services, demonstrating general knowledge of medical devices categories and principal of operation. Moreover, the students will learn the various components of medical equipment.

Level 1 exposes students to the fundamentals of MIET, suitable for progression in engineering fundamentals. Programmed-specific core topics are covered at Level 2 preparing for research-led subject specialist modules at Levels 3 and 4. MIET graduates are therefore trained to appreciate how research informs teaching, according to the University and School Mission statements.

At Levels 2, 3 and 4 MIET students understand the subject area and the professional fields of engineering mathematics, anatomy and physiology, electronic circuits, medical instrumentations, electrical machines, digital electronics, English language, biomedical signal processing, medical communication systems, biomedical transducers and sensors, control systems, electromagnetic field, elective subjects, medical laser systems, power electronics, and professional ethics which can be obtained during the course of study.

The research ethos is developed and fostered from the start via practical's, which are either embedded in lecture modules or taught in dedicated practical modules, research seminars and tutorials. There is a compulsory field course in Level 1, which students must pass in order to progress into Level 2, and optional field courses in Levels 2, 3 and 4. At Level 4 all students carry out an independent research project.

3. Program Goal

1. To provide the MIET graduates with scientific and practical skills that enable them to diagnose malfunctions resulting in medical devices.
2. To have graduate students who have the ability to familiarize themselves with the various parts of medical devices and keep abreast of the development that occurs in their technologies.
3. To give the graduate the ability to have detailed knowledge of all modern technologies in the field of medical device engineering.
4. To provide graduates with sufficient skills to make the necessary updates regarding medical devices.
5. The MITE department seeks to achieve quality standards according to the available capabilities.

4. Student Learning Outcomes

Students who complete the MIET program will have a strong foundation in medical instrumentation, with various employment options and occupations in mind. Graduates are knowledgeable and skilled in creating, designing, testing, and maintaining medical devices and equipment. Additionally, they can pinpoint the crucial role that medical technology developments have played in developing the modern healthcare system. They can use information, the internet, and communication technologies to gather accurate and pertinent information for reports, presentations, etc., that satisfy academic criteria. They possess the ability to interact in a second language. Additionally, they possess the capacity to communicate both verbally and in writing with various audiences. Moreover, the capacity for open-minded, interactive communication with non-experts.

Outcome 1

Understanding of allied knowledge

Graduates will be able to show a thorough understanding of the market's requirements for knowledge, skills, and expertise. They are also aware of how the market and technological advancement are moving.

Outcome 2

Oral and Written Communication

Graduates will be able to formally communicate the medical device troubleshooting results using oral and written communication skills.

Outcome 3

Technical and cognitive skills

Graduates can design circuits for medical equipment based on specific criteria and develop applications to view or control the outcomes.

Outcome 4

Critical thinking and analytical skills

Graduates will be able to identify emerging problems and try to solve them with approaches based on logical and critical thinking using modeling, designing, and forecasting.

Outcome 5

Appropriate research tools and techniques

Graduates will be capable of carrying out various scientific applications using fundamental research procedures. The graduate can adapt and acquire new skills to produce the desired results.

Outcome 6

Communications and IT skills

Graduates can share information with the technical team to find the optimal solution. Additionally, they can use the internet, communication, and information technologies. Graduates can read and comprehend user manuals and directions for various medical equipment. They communicate with non-experts showing awareness of diverse informational levels and different perspectives with various medical terms in English.

Outcome 7

Group/team leadership

Graduates will be self-motivated, cooperate effectively with other professionals in different disciplines, backgrounds, and interests to solve problems, work lucidly in confusing situations under pressure, and demonstrate knowledge of and commitment to following safety procedures for themselves and others.

Outcome 8

Own professional development

Graduates can make decisions, plan, problem-solving, and stay updated professionally.



Republic of Iraq - Ministry of Higher Education and Scientific Research
 University of Hilla - College of Engineering Techniques-Dept. of Medical Instrumentation Engineering Techniques
Bachelor's degree in Medical Instrumentation Engineering Techniques
 Four years (Eight semesters) - 240 ECTS credits - 1 ECTS = 25 hr
Program Curriculum (2025 - 2026)

جمهورية العراق - وزارة التعليم العالي والبحث العلمي
 جامعة الحلة - كلية التقنيات الهندسية - قسم هندسة تقنيات الأجهزة الطبية
 بكالوريوس في هندسة تقنيات الأجهزة الطبية
 أربع سنوات (ثمانية فصول دراسية) - 240 وحدة اوروبية - كل وحدة اوروبية = ٢٥ ساعة
 المنهاج الدراسي للعام ٢٠٢٥-٢٠٢٦



Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSW ₁ hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
One	1	MIET1101	Fundamentals of Electrical Engineering (DC)	مبادئ الهندسة الكهربائية (DC)	English	2		2		1		4	79	71	150	6.00	C		
	2	MTU1004	Computer Principles	اساسيات الحاسوب	English	1		2				4	49	26	75	3.00	B		
	3	MIET1103	Differential Mathematics	Dept. of Medical Instrumentation	English	3				2		3	78	47	125	5.00	S		
	4	EETC102	Engineering Drawing	الرسم الهندسي	English			4				3	63	62	125	5.00	S		
	5	MTU1006	Democracy and Human Rights	الديمقراطية و حقوق الانسان	Arabic	2						3	33	17	50	2.00	B		
	6	MTU1002	English Language I	اللغة الانكليزية I	English	1	1					3	33	17	50	2.00	B		
	7	MIET1107	Medical Chemistry	الكيمياء الطبية	English	3		2		1		4	94	81	175	7.00	S		
						Total	12	1	10	0	4	0	24	429	321	750	30.00		
UGI	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSW ₁ hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
	Two	1	MIET1201	Fundamentals of Electrical Engineering (AC)	مبادئ الهندسة الكهربائية (AC)	English	2		2		1		4	79	71	150	6.00	C	MIET1101
		2	MIET1202	Medical Physics	الفيزياء الطبية	English	2		2				4	64	61	125	5.00	S	
		3	MIET1203	Mechanics	الميكانيك	English	2				1		3	48	52	100	4.00	S	
		4	MIET1204	Integral Mathematics	الرياضيات التكاملية	English	3				2		3	78	47	125	5.00	S	MIET1103
		5	EETC101	Engineering Workshops	الورش الهندسية	English			4				3	63	62	125	5.00	S	
6	MIET1206	Computer Programming and Applications I	برمجة الحاسوب وتطبيقاته I	English	1		2				4	49	26	75	3.00	S			
7	MTU1001	Arabic Language I	اللغة العربية I	Arabic	2						3	33	17	50	2.00	B			
						Total	12	0	10	0	4	0	24	414	336	750	30.00		
UGII	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSW ₁ hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
	Three	1	MIET2101	Laboratory Medical Instrumentation I	الأجهزة الطبية المخبرية I	English	2		2	1		1	4	94	81	175	7.00	C	
		2	MIET2102	Electronics Circuits I	دوائر الكترونية I	English	2		2		1		4	79	46	125	5.00	C	MIET1201
		3	MIET2103	Electrical Machines	مكائن كهربائية	English	2	1	2				4	79	46	125	5.00	C	
		4	MIET2104	Engineering Mathematics	الرياضيات الهندسية	English	3				1		3	63	37	100	4.00	S	
		5	MIET2105	Anatomy & Physiology	علم التشريح وعلم وظائف الأعضاء	English	2		2				4	64	36	100	4.00	S	
6		MTU1007	The crimes of the Ba'ath Regime in Iraq	جرائم نظام البعث في العراق	Arabic	2						3	33	17	50	2.00	B		
7	MTU1005	Computer Applications	تطبيقات الحاسوب	English	1		2				4	49	26	75	3.00	B			
						Total	14	1	10	1	2	1	26	461	289	750	30.00		
UGII	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSW ₁ hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
	Four	1	MIET2201	Laboratory Medical Instrumentation II	الأجهزة الطبية المخبرية II	English	2		2	1		1	4	94	56	150	6.00	C	
		2	MIET2202	Electronics Circuits II	دوائر الكترونية II	English	2		2		1		4	79	46	125	5.00	C	MIET2102
		3	MIET2203	Digital Electronics	الإلكترونيات الرقمية	English	2	1	2				4	79	46	125	5.00	C	
		4	MIET2204	Clinical Chemistry Instrumentation	أجهزة الكيمياء السريرية	English	2		2				4	64	61	125	5.00	C	
		5	MIET2205	Biomedical Transducers and Sensors	المحولات و المستشعرات الطبية الحيوية	English	2		2				4	64	61	125	5.00	C	
6		MTU1003	English Language II	اللغة الانكليزية II	English	1	1					3	33	17	50	2.00	B		
7	MTU1009	Arabic Language II	اللغة العربية II	Arabic	2						3	33	17	50	2.00	B			
						Total	13	2	10	1	1	1	26	446	304	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSW I hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code	
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)								
UGIII	Five	1	MIET3101	Medical Diagnostic Instrumentation I	اجهزة التشخيص الطبية I	English	2		2	1			4	79	96	175	7.00	C	27	
		2	MIET3102	Microprocessor	المعالج الدقيق	English	2	2	2				4	94	56	150	6.00	C		
		3	MIET3103	Electromagnetic Fields	المجالات الكهرومغناطيسية	English	2		2		1		4	79	46	125	5.00	C		
		4	MIET3104	Signals and Systems	الاشارات و الانظمة	English	2		2				4	64	61	125	5.00	C		
		5	MIET3105	Computer Programming and Applications II	برمجة الحاسوب وتطبيقاته II	English	2		2			1	4	64	36	100	4.00	S		
		6	MIET3106	Project Management	ادارة مشاريع	English	2					1	3	48	27	75	3.00	S		
												23	428	322	750	30.00				
	UGIII	Six	1	MIET3201	Medical Diagnostic Instrumentation II	اجهزة التشخيص الطبية II	English	2		2	1		4	79	96	175	7.00	C	26	
			2	MIET3202	Medical Electronic Systems	نظم الكهرونية طبية	English	2	1	2			4	79	71	150	6.00	C		MIET2202
			3	MIET3203	Medical Communication Systems	نظم الاتصالات الطبية	English	2		2			4	64	61	125	5.00	C		
			4	MIET3204	Power Electronics	الكهرونيات القدرة	English	2	1	2			4	79	46	125	5.00	C		MIET2202
			5	MIET3205	Project I	مشروع I	English	1					1	3	33	42	75	3.00		S
6			MIET3206	Advanced Computer Programming	برمجة الحاسوب المتقدمة	English	2	1	2			4	79	21	100	4.00	S			
												23	413	337	750	30.00				
UGIV	Seven	1	MIET4101	Medical Therapeutic Instrumentation I	الاجهزة العلاجية الطبية I	English	2		2	1		4	79	96	175	7.00	C	26		
		2	MIET4102	Medical Laser Systems	انظمة الليزر الطبية	English	2	1	2			4	79	46	125	5.00	C			
		3	MIET4103	Control Systems	نظم السيطرة	English	2	1	2			4	79	46	125	5.00	C			
		5	MIET4104	Biomedical Signal Processing	معالجة الاشارة الطبية الحيوية	English	2		2			4	64	36	100	4.00	C		MIET3104	
		4	MIET4105	Project II	مشروع II	English	3		2	1		3	48	77	125	5.00	C			
		6	MIET41XX	Elective I	(اختياري) I	English	2		2			4	64	36	100	4.00	E			
												23	413	337	750	30.00				
	UGIV	Eight	1	MIET4201	Medical Therapeutic Instrumentation II	الاجهزة العلاجية الطبية II	English	2		2	1		4	79	96	175	7.00	C	27	
			2	MIET4202	Engineering of Radiation Instrumentation	هندسة اجهزة الاشعاع	English	2		2	1		4	79	71	150	6.00	C		
			3	MIET4203	Artificial Limbs and Robotics	الاطراف الاصطناعية والروبوتات	English	2	2	2			4	94	56	150	6.00	C		
			4	MIET42XX	Elective II	(اختياري)II	English	2		2			4	64	36	100	4.00	E		
			5	MIET42XX	Elective III	(اختياري)III	English	2		2			4	64	36	100	4.00	E		
6			MTU1008	Professional Ethics	اخلاقيات المهنة	Arabic	2	1				3	48	27	75	3.00	B			
											23	428	322	750	30.00					
Total						96	14	82	8	12	4	192	3432	2568	6000	240.0		Must be 240 ECTS		
UGIV	Seven	1	MIET4106	Microcontrollers	المسيطرات الدقيقة	English	2		2			4	64	36	100	4.00	E	Elective I		
		2	MIET4107	Artificial Neural Engineering	الهندسة العصبية الاصطناعية	English	2		2			4	64	36	100	4.00	E	Elective I		
		3	MIET4205	Programmable Logic Devices	الاجهزة المنطقية القابلة للبرمجة	English	2		2			4	64	36	100	4.00	E	Elective II		
		4	MIET4206	Biomedical Sensors Networks	شبكات المستشعرات الطبية الحيوية	English	2		2			4	64	36	100	4.00	E	Elective II		
		5	MIET4207	Biomedical Image Processing	معالجة الصور الطبية الحيوية	English	2		2			4	64	36	100	4.00	E	Elective III		
		6	MIET4208	Statistics for Biomedical Engineering	احصائيات الهندسة الطبية الحيوية	English	2		2			4	64	36	100	4.00	E	Elective III		

Note: The student should complete 4 weeks of Summer Internships to fulfill the requirements of the Bachelor's degree

Structured SWL (hr/w) type	CL	Class Lecture	Module type	B	Basic learning activities	SWL:	Student Workload
	Lab	Laboratory		C	Core learning activity	SSWL:	Structured SWL
Pr	Practical Training	Tut	S	Support or related learning activity	USSWL:	Unstructured SWL	
Lect	Online lecture		E	Elective learning activity			
Sem	Seminar						



Note: Columns O, Q and R are programmed, protected and should not be edited

خلية: P10

تعلق: ahmed bashar:

تغيير عدد ساعات الغير مجدولة

خلية: P42

تعلق: ahmed bashar:

تغيير عدد الساعات الغير مجدولة

خلية: P43

تعلق: ahmed bashar:

تغيير عدد ساعات الغير مجدولة