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 Mechatronics Engineering Techniques

2025-2026

University Name : Hilla University

Faculty / Institute : Faculty of Engineering Technology

Department : Mechatronics Engineering Techniques

Academic Program : B.Sc. degree in Mechatronics Engineering Techniques

Final Graduation certificate : Bachelor's degree in Mechatronics Engineering Techniques

Academic system : Bologna

Date of preparation : March, 25, 2026

Date of file completion : March, 25, 2026

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 MechatronicS Engineering Techniques (MTET)/ Engineering Technical College/ 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 Mechatronics system, as well as in their careers in companies of Mechatronic instrumentation dealing with different services, demonstrating general knowledge of Mechatronic devices categories and principal of operation and maintenance. Small class sizes within the MT 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 MTET academic staff pursues a multifaceted charge at Hilla University. The Program seeks to provide all students with fundamental knowledge of Mechatronic instrumentation technology. as well as a deeper understanding of a selected focus area within the Mechatronic 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 Mechatronic devices, or to pursue advanced degrees in the Mechatronic Instrumentation Techniques Engineering. The MIET program also provides the necessary fundamental knowledge of the Mechatronic Instruments and Techniques to support researchers developing and creating a new equipment. Further, Rehabilitation of distinguished and innovative competencies scientifically, skillfully and behaviorally in the field of Mechatronic 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

MTET program is designed to provide students with the skills to improve themselves by preparing them for a career in **Mechatronic** instrumentation. Students will learn how to administer and support the **Mechatronic** instrumentation technology and design. The curriculum consists of an integrated set of courses in mathematics, computer programming, mechanics engineering, fundamentals of electricity and electronic circuits. Students will have the opportunity to know the principles of computer applications and they will be prepared for careers in companies of Mechatronic 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 Mechatronic equipment. Level 1 exposes students to the fundamentals of MTET, 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. MTET graduates are therefore trained to appreciate how research informs teaching, according to the University and School Mission statements.

At Levels 2, 3 and 4 MTET students understand the subject area and the professional fields of engineering mathematics, electronic circuits, electrical machines, digital electronics, mechanical engineering, English language, signal processing, communication systems, transducers and sensors, control systems, electromagnetic field, elective subjects, 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 MTET graduates with scientific and practical skills that enable them to diagnose malfunctions resulting in Mechatronic devices.

2. To have graduate students who have the ability to familiarize themselves with the various parts of Mechatronic 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 Mechatronic device engineering.

4. To provide graduates with sufficient skills to make the necessary updates regarding Mechatronic devices.

5. The MTTE department seeks to achieve quality standards according to the available capabilities.

4. Student Learning Outcomes

Students who complete the MTET program will have a strong foundation in Mechatronic engineering, with various employment options and occupations in mind. Graduates are knowledgeable and skilled in creating, designing, testing, and maintaining Mechatronic devices and equipment. Additionally, they can pinpoint the crucial role that Mechatronic 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 Mechatronic device troubleshooting results using oral and written communication skills.

Outcome 3

Technical and cognitive skills

Graduates can design circuits for Mechatronic 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 Mechatronic equipment. They communicate with non-experts showing awareness of diverse informational levels and different perspectives with various 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.

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Bachelor's degree in MECHATRONICS (First cycle)	بكالوريوس في تقنيات هندسة الميكاترونكس (الدورة الأولى)
Four years (Eight semesters) - 200 ECTS credits - 1 ECTS = 25 hr	أربع سنوات (ثمانية فصول دراسية) ـ 240 وحدة اوربية ـ كل وحدة اوربية = 25 ساعة
Program Curriculum (2025-2026)	المنهاج الدراسي للعام 2025-2026 (5 ايام * 6 ساعات = 30 ساعة دراسة)

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL 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)							
UGI	C 11	1	MECT 100	Humans Rights and Democracy	حقوق الانسان والديمقراطية	Arabic	1	0	0	0	0	1	2	32	18	50	2.00	B	
		2	MECT 101	Mathematics	الرياضيات	English	4	0	0	0	2	0	3	93	107	200	8.00	S	
		3	MECT 102	Engineering Mechanics	الميكانيك الهندسي	English	4	0	0	0	1	0	3	78	122	200	8.00	C	
		4	MECT 103	Engineering Drawing with Auto CAD	الرسم الهندسي باستخدام أوتوكاد	English	3	0	2	1	0	0	3	93	57	150	6.00	C	
		5	MECT 104	Electrical Fundamentals	أساسيات الكهرباء	English	2	0	2	1	0	1	3	93	57	150	6.00	E	
		6	MECT 105	Measurmernt	اجهزة قياس	English	2	0	2	1	0	0	3	78	72	150	6.00	E	
						Total	16	0	6	3	3	2	17	467	433	900	36		

Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL 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)							
C22	1	MECT 106	Digital Logic Design I	تصميم المنطق الرقمي I	English	2	0	1	0	0	1	3	63	87	150	6.00	C	
	2	MECT 107	Applied mathematics	رياضيات تطبيقية	English	2	0	0	0	0	1	3	48	52	100	4.00	S	
	3	MECT 108	Electronic I	الكترونيك 1	English	2	0	1	0	0	1	3	63	62	125	5.00	C	
	4	MECT 109	Workshop	ورش ومعامل	English	0	0	6	0	0	0	3	93	7	100	4.00	B	
	5	MECT 110	Smart material technology	تقنيات المواد الذكية	English	2	0	1	0	0	1	3	63	37	100	4.00	E	
	6	MECT 111	Engineering Materials	المواد الهندسية	English	2	0	1	0	0	0	3	48	52	100	4.00	E	
	7	MECT 112	Computer Systems and Programming I	نظم الحاسوب والبرمجة I	English	0	0	1	0	0	1	3	33	42	75	3.00	S	
	8	MECT 113	Arabic Language I	اللغة العربية I	Arabic	1	0	0	0	0	1	3	33	17	50	2.00	B	
	9	MECT 114	English Language I	اللغة الانكليزية I	English	1	0	0	0	0	1	3	33	17	50	2.00	B	
					Total	12	0	11	0	0	7	27	477	373	850	34		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL 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)							
	C 33	1	MECT 200	English Language II	اللغة الانكليزية II	English	1	0	0	0	0	1	2	32	18	50	2.00	B	MECT 114
		2	MECT 201	Baath Crimes	جرائم البعث	Arabic	1	0	0	0	0	1	2	32	18	50	2.00	B	
		3	MECT 202	Advanced Mathematics	رياضيات متقدمة	English	3	0	0	0	0	1	3	63	87	150	6.00	C	
		4	MECT 203	Fluid Mechanics	ميكانيك الموانع	English	2	0	2	0	0	1	3	78	47	125	5.00	C	
		5	MECT 204	Electronic measurment equipment	اجهزة القياسات الالكترونية	English	2	0	2	0	0	0	3	63	87	150	6.00	E	
		6	MECT 205	Electric Circuits	الدوائر الكهربائية	English	2	0	2	0	0	1	3	78	72	150	6.00	E	
		7	MECT 206	Computer Systems and Programming II	نظم الحاسوب والبرمجة II	English	1	0	1	0	0	1	3	48	27	75	3.00	S	MECT 112
		8	MECT 207	Digital Logic Design II	تصميم المنطق الرقمي II	English	2	0	2	0	0	1	3	78	72	150	6.00	C	MECT 106
						Total	14	0	9	0	0	7	22	472	428	900	36		

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Bachelor's degree in MECHATRONICS (First cycle)	بكالوريوس في تقنيات هندسة الميكاترونكس (الدورة الأولى)
Four years (Eight semesters) - 200 ECTS credits - 1 ECTS = 25 hr	أربع سنوات (ثمانية فصول دراسية) - 240 وحدة اوربية - كل وحدة اوربية = 25 ساعة
Program Curriculum (2025-2026)	المنهاج الدراسي للعام 2025-2026 (5 ايام * 6 ساعات = 30 ساعة دراسة)

UGII	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL 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)							
	C 44	1	MECT 208	Electronics II	الكترونيك II	English	2	0	1	0	0	1	3	63	62	125	5.00	C	MECT 108
		2	MECT 209	Computer programming	برمجة الحاسوب	English	2	0	2	0	0	0	3	63	12	75	3.00	B	
		3	MECT 210	Electronic Circuit Design	تصميم دوائر الكترونية	English	2	0	2	0	0	0	3	63	62	125	5.00	E	
		4	MECT 211	Thermodynamics	الديناميك الحراري	English	2	0	2	0	0	0	3	63	62	125	5.00	C	
		5	MECT 212	Manufacturing technology	عمليات التصنيع	English	2	0	1	0	0	0	3	48	77	125	5.00	E	
		6	MECT 213	Strength of Materials	مقاومة المواد	English	2	0	2	0	0	0	3	63	62	125	5.00	C	
		7	MECT 214	Arabic Language II	اللغة العربية II	Arabic	1	0	0	0	0	1	3	33	17	50	2.00	B	MECT 113
		8	MECT 215	Pneumatic and Hydraulic Systems	الأنظمة الهوائية والهيدروليكية	English	2	0	2	0	0	1	3	78	47	125	5.00	C	
						Total	15	0	12	0	0	3	24	474	401	875	35		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL 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	C 55	1	MECT 300	Theory of Machine	نظرية المكانن	English	2	0	2	0	0	0	3	63	87	150	6.00	C	
		2	MECT 301	Control Theory	نظرية السيطرة	English	2	0	2	0	0	0	3	63	37	100	4.00	C	
		3	MECT 302	Programmable Logic Controler PLC	تحكم منطقي مبرمج PLC	English	2	0	2	0	0	0	3	63	87	150	6.00	C	
		4	MECT 303	Engineering AI/ Programming	برمجة ذكاء صناعي / AI	English	2	0	2	1	0	0	3	78	22	100	4.00	E	
		5	MECT 304	PC- Interface and Data Acquisition	اكتساب البيانات	English	2	0	2	1	0	0	3	78	22	100	4.00	S	
		6	MECT 305	Communications	الاتصالات	English	3	0	2	0	0	0	3	78	72	150	6.00	S	
		7	MECT 306	Power electronic fundamentals	اساسيات الكترونيك القدرة	English	2	0	2	1	0	0	3	78	22	100	4.00	E	
						Total	15	0	14	3	0	0	21	501	349	850	34		

UGIII	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL 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)							
	C 66	1	MECT 308	Network Communications	شبكات الاتصالات	English	3	0	2	0	0	1	3	93	57	150	6.00	S	
		2	MECT 309	Vibrations	اهتزازات	English	2	0	1	0	0	1	3	63	37	100	4.00	E	
		3	MECT 310	Digital Image Processing	معالجة الصور	English	2	0	1	0	0	1	3	63	37	100	4.00	E	
		4	MECT 311	Automatic Control Engineering	هندسة التحكم الآلي	English	2	0	1	0	0	1	3	63	87	150	6.00	C	
		5	MECT 312	Microcontroller	المسيطر الدقيق	English	2	0	1	0	0	1	3	63	87	150	6.00	C	
		6	MECT 313	Power Electronics	الكترونيات القدرة	English	2	0	1	0	0	1	3	63	37	100	4.00	C	
		7	MECT 314	Heat Transfer	انتقال الحرارة	English	2	0	1	0	0	1	3	63	37	100	4.00	C	
						Total	15	0	8	0	0	7	21	471	379	850	34		

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Program Curriculum (2025-2026)	المنهاج الدراسي للعام 2025-2026 (5 ايام * 6 ساعات = 30 ساعة دراسة)	

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL 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)							
UGIV	C 77	1	MECT 400	Professional Ethics	اخلاقيات المهنة	Arabic	1	0	0	0	0	1	2	32	18	50	2.00	B	
		2	MECT 401	Artificial Intelligence networks	الذكاء الاصطناعي والشبكات	English	2	0	2	0	0	1	3	78	72	150	6.00	C	
		3	MECT 402	Robot fundamentals	اساسيات روبوت	English	2	0	1	0	0	1	3	63	87	150	6.00	C	
		4	MECT 403	Project I	المشروع I	English	0	0	3	0	0	1	3	63	37	100	4.00	S	
		5	MECT 404	Modeling and Simulation	النمذجة والمحاكاة	English	2	0	2	0	0	1	3	78	22	100	4.00	E	
		6	MECT 405	Measurmernt technology	تقنيات اجهزة قياس	English	2	0	2	0	0	1	3	78	22	100	4.00	E	
		7	MECT 406	Machine Design	تصميم المكائن	English	2	0	1	0	0	1	3	63	37	100	4.00	C	
		8	MECT 407	Digital Signal Processing	معالجة الإشارة الرقمية	English	2	0	1	0	0	1	3	63	37	100	4.00	C	
						Total	13	0	12	0	0	8	23	518	332	850	34		

Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL 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)							
	1	MECT 408	Mechatronics	ميكاترونكس	English	2	0	2	0	0	1	3	78	72	150	6.00	C	
C 88	2	MECT 409	Mobile Robotics	روبوت متنقل	English	2	0	2	0	0	1	3	78	72	150	6.00	C	
	3	MECT 410	Project II	المشروع II	English	0	0	1	0	0	1	3	33	67	100	4.00	S	MECT 403
	4	MECT 411	CAD/CAM	التصميم والتصنيع باستخدام الحاسوب	English	2	0	1	1	0	1	3	78	22	100	4.00	C	
	5	MECT 412	Engineering Management	الإدارة الهندسية	Arabic	2	0	0	0	0	0	3	33	67	100	4.00	S	
	6	MECT 413	Fluid Power Control Systems	انظمة التحكم في طاقة السوائل	English	2	0	1	0	0	0	3	48	102	150	6.00	E	
	7	MECT 414	Computer vision networks	شبكات رؤية الحاسوب	English	2	0	1	0	0	0	3	48	102	150	6.00	E	
					Total	12	0	8	1	0	4	21	318	432	900	36		
					Total	112	0	80	7	3	38	176	3698	3127	6975	279.0		Must be 240 ECTS

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

Structured SWL (hr/w) type			Module type				SWL:	Student Workload
	CL	Class Lecture		B	Basic learning activities	اساسي		
	Lab	Laboratory		C	Core learning activity	رئيسي	SSWL:	Structured SWL
	Pr	Practical Training		S	Suport or related learning activity	ساند		
	Tut	Tutorial		E	Elective learning activity	اختياري	USSWL:	Unstructured SWL
	Lect	Online lecture						
	Semn	Seminar	Note: Columns O, Q and R are progrmaed, protected and should not be edited					