Republic of Iraq
Ministry of Higher Education & Scientific Research
Supervision and Scientific Evaluation Directorate
Quality Assurance and Academic Accreditation
International Accreditation *Dept.*

Academic Program Specification Form for the Academic Year

Department of Mechatronics

2024-2025

2024–2025

Introduction:

The educational program is considered a coordinated and organized package of academic courses that includes procedures and experiences organized in the form of academic vocabulary, the main purpose of which is to build and refine the skills of graduates, making them qualified to meet the requirements of the labor market. It is reviewed and evaluated annually through internal or external audit procedures and programs such as the external examiner program.

The description of the academic program provides a summary of the main features of the program and its courses, indicating the skills that students are working to acquire based on the objectives of the academic program. The importance of this description is evident because it represents the cornerstone of obtaining program accreditation, and the teaching staff participates in writing it under the supervision of the scientific committees in the scientific departments.

This guide, in its second edition, includes a description of the academic program after updating the vocabulary and paragraphs of the previous guide considering the latest developments in the educational system in Iraq, which included a description of the academic program in its traditional form (annual, quarterly), in addition to adopting the description of the academic program circulated according to the book of the Department of Studies 3/2906. On 5/3/2023 about programs that adopt the Bologna Process as a basis for their work.

In this area, we can only emphasize the importance of writing descriptions of academic programs and courses to ensure the smooth conduct of the educational process.

Concepts and terminology:

Academic program description: The academic program description provides a summary of its vision, mission, and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course description: It provides a necessary summary of the most important characteristics of the course and the learning outcomes that the student is expected to achieve, demonstrating whether he has made the most of the available learning opportunities. It is derived from the program description.

Program vision: An ambitious picture for the future of the academic program to be an advanced, inspiring, motivating, realistic and applicable program. **Program message:** It briefly explains the objectives and activities necessary to achieve them and identifies the program's development paths and directions.

Program Goals: They are statements that describe what the academic program intends to achieve within a specific period and are measurable and observable. **Curriculum**

structure: All courses/study subjects included in the academic program according to the approved learning system (semester, annual, Bologna track), whether it is a requirement (ministry, university, college, or scientific department), along with the number of study units.

Learning Outcomes: A compatible set of knowledge, skills, and values that the student has acquired after successfully completing the academic program. The learning outcomes for each course must be determined in a way that achieves the program objectives.

Teaching and learning strategies: They are the strategies used by a faculty member to develop student teaching and learning, and they are plans that are followed to reach learning goals. That is, it describes all curricular and extracurricular activities to achieve the learning outcomes of the program.

Academic Program Specification Form

University: Al-Kitab University

College/Institute: College of Engineering Technology

Scientific Department: Department of Mechatronics

Academic or professional program: Bachelor of Mechatronics

Name of the final certificate: Bachelor's degree in Mechatronics

Academic system: Yearly System

Description preparation date: 20/1/2025

Date of filling the file: 20/1/2025

signature:

Name of head department م.م مصطفى محمود يحيى

the date : 3/2/2025

signature:

Name of scientific assistant:

the date :

The file has been checked from
Quality Assurance and University Performance

Name of the manager of the University Quality Assurance and Performance:

the date 3-2-2025

the signature

Dean's Name:

signature: Asst. Prof. Dr. Mohammed Jasim Mohammed

3/2/2025

:

1. Program vision

The program vision is to achieve excellent quality and leadership in; all academic and professional aspects of mechatronics, community service and research activities in the field of Mechatronics

2. Program message

The program message is that the department's graduates should contributes to meet the country's needs in the field **of** mechatronics engineering technology (academic and research) and all public and other private sectors.

3. Program objectives

The program objective is to prepare engineering cadres in specialty of Mechatronics technology engineering, who are responsible for studying the country's need for development and progress. To provide the labor market and industry sectors with professional engineers that can pursuing postgraduate studies to adapt to modern technical development.

4. Programmatic accreditation

AICBA

5. Other external influences

Laboratories, library

6.Program structure

Program structure	Number of	Unit of study	percentage	Notes*

	courses			
Organization requirements	1	4	%9	Basic
College requirements	6	21	%11	Basic
Department requirements	23	111	%60	Basic
summer training	2			
Other				

* All of these values are identical to the Department of Mechatronics Polytechnic Engineering / College of Engineering Technology / Central Technical University – Baghdad, because we are the university affiliated with them.

Semester	Module Name in English	Module Code	SSWL (hr/w)					ECTS
			CL	Lab	Pr	Tut	Semn	
c1	Humans Rights and Democracy	UOKTB1MC101	1	0	0	0	1	2.00
	Mathematics	UOKTB1MC104	4	0	0	2	0	8.00
	Engineering Mechanics	UOKTB1MC102	4	0	0	1	0	8.00
	Engineering Drawing with Auto CAD	UOKTB1MC103	3	2	1	0	0	6.00
	Electrical Fundamentals	UOKTB1MC105	2	2	2	0	1	6.00
	mesurmernt	UOKTB1MC106	2	2	2	0	1	6.00
Semester	**Module Name in English**	**Module Code**	**SSWL (hr/w)**					**ECTS**
			CL	**Lab**	**Pr**	**Tut**	**Semn**	
C2	Digital Logic Design I	UOKTB1MC107	2	1	0	0	1	6.00
	applied mathematics	UOKTB1MC108	2	0	0	0	1	4.00
	Electronic I	UOKTB1MC109	2	1	0	0	1	5.00
	Workshop	UOKTB1MC110	0	6	0	0	0	4.00
	Smart material technology	UOKTB1MC111	2	1	0	0	1	4.00
	Engineering Materials	UOKTB1MC112	2	1	0	0	1	4.00
	Computer Systems and Programming	UOKTB1MC113	0	1	0	0	1	3.00
	Arabic Language	UOKTB1MC114	1	0	0	0	1	2.00
	English Language I	UOKTB1MC115	1	0	0	0	1	2.00
Semester	**Module Name in English**	**Module Code**	**SSWL (hr/w)**					**ECTS**
			CL	**Lab**	**Pr**	**Tut**	**Semn**	
C 3	English Language II	UOKTB1MC201	1	0	0	0	1	2.00
	Baath	UOKTB1MC202	1	0	0	0	1	2.00
	Advanced Mathematics	UOKTB1MC203	2	0	0	0	0	6.00
	Fluid Mechanics	UOKTB1MC204	2	2	0	0	1	5.00
	electronic mesurment equipment	UOKTB1MC205	2	2	2	0	0	6.00
	Electric Circuit	UOKTB1MC206	2	2	2	0	0	6.00
	Matlab Programming	UOKTB1MC207	2	2	0	0	1	3.00
	Digital Logic Design II	UOKTB1MC208	2	2	0	0	1	6.00

Semester	Module Name in English	Module Code	SSWL (hr/w)					ECTS
			CL	Lab	Pr	Tut	Semn	
C 4	Electronics II	UOKTB1MC209	2	2	1	0	0	5.00
	Electronic Circuit Design	UOKTB1MC210	2	2	1	0	0	5.00
	menifacturing technology	UOKTB1MC211	2	1	0	0	0	5.00
	Arabic Language II	UOKTB1MC212	2	1	0	0	0	2.00
	Thermodynamics	UOKTB1MC213	2	2	0	0	0	6.00
	Strength of Materials	UOKTB1MC214	2	2	1	0	0	6.00
	Pneumatic and Hydraulic Systems	UOKTB1MC215	2	2	0	0	0	6.00
Semester	Module Name in English	Module Code	SSWL (hr/w)					ECTS
			CL	Lab	Pr	Tut	Semn	
C 5	Theory of Machine	UOKTB1MC301	2	2	0	0	0	6.00
	Control Theory	UOKTB1MC302	2	2	1	0	0	6.00
	Programable Logic Controler PLC	UOKTB1MC303	2	2	0	0	0	6.00
	Engineering AI/ Programming (lisp/prolog)	UOKTB1MC304	2	2	0	0	0	4.00
	PC- Interface and Data Acquisition	UOKTB1MC305	2	2	1	0	0	4.00
	Communications I	UOKTB1MC306	2	2	0	0	0	6.00
	English Language III	UOKTB1MC307	2	0	0	0	0	2.00
Semester	Module Name in English	Module Code	SSWL (hr/w)					ECTS
			CL	Lab	Pr	Tut	Semn	
C 6	Communications II	UOKTB1MC308	2	2	0	0	1	6.00
	Signals and systems	UOKTB1MC309	2	1	0	0	1	4.00
	Digital Image Processing	UOKTB1MC310	2	1	0	0	1	4.00
	Automatic Control Engineering	UOKTB1MC311	2	1	0	0	1	6.00
	Microcontroller	UOKTB1MC312	2	1	0	0	1	6.00
	Power Electronics	UOKTB1MC313	2	1	0	0	1	4.00
	Heat Transfer	UOKTB1MC314	2	1	0	0	1	4.00
Semester	Module Name in English	Module Code	SSWL (hr/w)					ECTS
			CL	Lab	Pr	Tut	Semn	
C 7	Professional Ethics	UOKTB1MC401	1	0	0	0	1	2.00
	Artificial Intelligence	UOKTB1MC402	2	2	0	0	1	6.00
	Mechatronics I	UOKTB1MC403	2	1	0	0	1	6.00
	Project I	UOKTB1MC404	0	1	0	0	1	4.00
	Modeling and Simulation	UOKTB1MC405	2	2	0	0	1	4.00
	Vibrations	UOKTB1MC406	2	2	0	0	1	4.00
	Machine Design	UOKTB1MC407	2	1	0	0	1	6.00
	English language IIII	UOKTB1MC408	2	0	0	0	1	2.00
Semester	Module Name in English	Module Code	SSWL (hr/w)					ECTS
			CL	Lab	Pr	Tut	Semn	
	Mechatronics II	UOKTB1MC409	2	2	0	0	1	4.00
C 8	Robotics	UOKTB1MC410	2	2	0	0	1	4.00
	Project II	UOKTB1MC411	0	1	0	0	1	4.00
	CAD/CAM	UOKTB1MC412	2	1	1	0	1	4.00
	Engineering Management	UOKTB1MC413	2	0	0	0	1	4.00
	Digital Signal Processing	UOKTB1MC414	2	2	0	0	1	6.00
	Computer vision	UOKTB1MC415	2	1	0	0	1	4.00
	Fluid Power Control Systems	UOKTB1MC416	2	1	0	0	1	4.00

7. Learning Outcomes, Teaching, Learning and Assessment Methods

A. Learning outcome

a) Knowledge and Understanding outcome: People graduated from the program have the following skills;

a-1- A high level of understanding and knowledge in building, analyzing and developing Mechatronics Engineering ideas.

a-2- They are able to analyze engineering and scientific problems by applying suitable laws in science, mathematics and engineering and to abide by the instructions for any effectiveness in the organizational and administrative framework in the implementation of a project or facing an engineering problem, solving and evaluating it and submitting a proposal or a plan or reformulating it, translating or interpreting it.

a-3- The student should be able to speak and write in an effective scientific and engineering style in Arabic and English.

a-4- Motivating our students to actively participate in the renaissance and progress of society through holding seminars, conferences, continuing education, and providing academic consultations in the fields of Mechatronics Engineering Technique.

a-5- The student should be able to do, scientific and applied research, in Mechatronics techniques fields for the purpose of solving industrial problems.

b) Subject-specific skills.

b-1 - The ability to use the techniques and tools of Mechatronics

b-2 - Analyzing technical problems and providing a suitable solution.

b-3 - Scientific investigation and evaluation.

c) Thinking skill

c1 - Using brainstorming to bring out the creative ideas of some gifted students.

c2 - Developing scientific research skills using the internet to broaden the horizon of knowledge.

c3 - Encouraging the development of engineering thinking for students in memorization and guessing and motivating it towards critical thinking before remembering at certain stages.

c4 - Presenting the engineering problem or design and asking to think about all possible solutions and developments.

d) other skills

d1- Connection, communication, and information technology skill.

d2 – Co-operation and teamwork skill.

d3 – English and Arabic Language skill (include reading, writing, and listening) which can help in the art of listing, persuasion and dialogue.

d4 – Acquiring leadership quality, memory power, fast intuitive and ability to predict and extrapolate.

B. Teaching and Learning Methods

There are many teaching and learning methods used in the Department of Mechatronics Engineering Technique. The learning is done through practical applications, and theoretical lectures using traditional board teaching, PPT presentation, discussion groups, and seminars, and student is always asked to investigate topics and problems through the internet. The method of Bologna System will apply starting this academic year.

C. Assessment methods

1. Seminars.

2 .Academic debate, oral dialogue, semester and final theoretical and practical written examinations.

3.Writing and submitting reports and taking notes on the technical expertise gained in the field visits.

The department has relied on clear and high-quality assessment methods and tools in order to maintain the good quality and high scientific reputation of the graduation. The quality of the

graduate is very important since it constitutes the final product of the educational process. The most important methods of assessment used in the department are:

a) Objective tests: The goal of the test is to measure the ability of students to recognize and assimilate engineering facts. This can be done using the followings:

a-1- True and False Questions.

a-2- Multiple choice questions.

a-3- Interview questions (blank questions).

a-4- Completion questions.

b) Engineering tests: the goal of the test is to measure the ability of student to understand scientific subjects and engineering principles, recall, relate and interpret as well as the ability to analyse data and use it to diagnose engineering problems. This can be done using the followings:

b-1- Connectivity Test / Open Questions.

b-2- Questions that have a definite answer.

c) Other tests:

c-1- Seminars.

c-2- Academic debate, oral dialogue, semester and final theoretical and practical written examinations.

c-3- Writing reports

c-4- Field visits.

8. The teaching staff							
Teaching staff							
Academic rank	Specialty		Special requirements/skills (if applicable)				
	General	Exact			employee	Lecturer	
Prof. Abdulsalam Taha Hussein	Electrical and electronic engineering	mechatronics			√		
dr. Shawkat Abdulrahman Ahmed	Electrical and electronic engineering	mechatronics			√		
dr .Sinan Mazen Hazem	mechanical engineering	mechanical engineering			√		
Dr.najdat hameed	Manufacturing engineering	Industrial engineering			√		
Tec. Ass. Mustafa Mahmoud Yahy	Computer	Computer software			√		
Yusuf yacob Yusuf Tec. Ass.	Computer	Computer			√		
Tec. Ass.abas hussin hamud	mechatronics	Mechatronics			√		

9. Professional development

Orienting new faculty members

Training and development of professors: By providing training programs and workshops for faculty members to develop their educational skills and update their academic knowledge in the field of refrigeration and air conditioning. Which enhances the quality of teaching and learning in the specialty.

Professional development for faculty members

Professional development for faculty members is considered important to enhance their competence and improve their performance in the field of teaching. Faculty can develop their skills by attending workshops and training courses, and participating in educational seminars and conferences. They can also exchange knowledge and experiences with colleagues in the field, and use technology to improve the teaching process. This helps them innovate and improve the quality of education they provide to students.

10. Acceptance criterion

Students in the Department of Mechatronics Polytechnic Engineering are accepted from graduates of preparatory studies in its scientific stream, with a grade of 60%, and the graduation requirements are:

- Performing 136 course hours over the years of study
- Passing the prescribed exams with a grade of 50% or more
- Performing summer training before the final stage.
- Submitting graduation research in one of the specialty topics.

11. The most important sources of information about the program
Iraqi government universities and international universities related to the specialty.
12. Program development plan
Analyze the current situation: by evaluating the current curriculum and analyzing its strengths and weaknesses. Search for opportunities for improvement and identify areas that need development. Setting goals: Setting the main goals for developing the academic curriculum is considered one of the most important steps in developing any program, as the goals can include increasing educational quality, improving the student experience, and enhancing academic development and personal development. Continuous evaluation and review: By conducting periodic evaluation and review of the curriculum and teaching methods and communicating with students and professors to collect observations and comments. Use this feedback to improve and enhance your academic curriculum.

13. Curriculum Skills Map

Thinking Skills				Subject-specific skills		Knowledge							
And understanding	Core / Option	Course Title	Course Code	Year/ Level		And understanding				Core / Option	Course Title	Course Code	Year/ Level
C4	C3	C2	C1	B2	B1	A4	A3	A2	A1				
		√	√		√	√	√	√	√	B	**Humans Rights and Democracy**	**UOKTB1MC101**	**C1** First Year
	√	√	√	√	√	√	√	√	√	S	**Mathematics**	**UOKTB1MC104**	
√	√	√	√	√	√	√	√	√	√	C	**Engineering Mechanics**	**UOKTB1MC102**	
	√	√	√	√	√	√	√	√	√	C	**Engineering Drawing with Auto CAD**	**UOKTB1MC103**	
		√	√	√	√	√	√	√	√	C	**Electrical Fundamentals**	**UOKTB1MC105**	
		√	√	√	√	√	√	√	√	E	**mesurmernt**	**UOKTB1MC106**	
		√	√		√	√	√	√	√	C	**Digital Logic Design I**	**UOKTB1MC107**	**C2**
	√	√	√	√	√	√	√	√	√	S	**applied mathematics**	**UOKTB1MC108**	

√	√	√	√	√	√	√	√	√	√	C	**Electronic I**	**UOKTB1MC109**		
	√	√	√	√	√	√	√	√	√	B	**Workshop**	**UOKTB1MC110**		
		√	√	√	√	√	√	√	√	E	**Smart material technology**	**UOKTB1MC111**		
√	√	√	√	√	√	√	√	√	√	E	**Engineering Materials**	**UOKTB1MC112**		
	√	√	√	√	√		√	√	√	B	**Computer Systems and Programming**	**UOKTB1MC113**	**C3**	
										B	**Arabic Language**	**UOKTB1MC114**		
	√	√	√	√	√	√	√	√	√	B	**English Language I**	**UOKTB1MC115**		
	√	√	√	√	√	√	√	√	√	B	**English Language II**	**UOKTB1MC201**		
√	√	√	√	√	√	√	√	√	√	B	**Baath**	**UOKTB1MC202**		
		√	√	√	√	√	√	√	√	C	**Advanced Mathematics**	**UOKTB1MC203**		
		√	√	√	√	√	√	√	√	C	**Fluid Mechanics**	**UOKTB1MC204**		

	√	√	√	√	√	√	√	√	√	E	**electronic mesurment equipment**	**UOKTB1MC205**		
		√	√	√	√	√	√	√	√	E	**Electric Circuit**	**UOKTB1MC206**		
√	√	√	√	√	√	√	√	√	√	B	**Matlab Programming**	**UOKTB1MC207**		
√	√	√	√	√	√	√	√	√	√	C	**Digital Logic Design II**	**UOKTB1MC208**		
	√	√	√	√	√	√	√	√	√	C	**Electronics II**	**UOKTB1MC209**	C4	
		√	√	√	√	√	√	√	√	E	**Electronic Circuit Design**	**UOKTB1MC210**		
			√	√	√	√	√	√	√	E	**menifacturing technology**	**UOKTB1MC211**		
√	√	√	√	√	√			√	√	B	**Arabic Language II**	**UOKTB1MC212**		
	√	√	√	√	√	√	√	√	√	C	**Thermodynamics**	**UOKTB1MC213**		
	√	√	√	√	√		√	√	√	C	**Strength of Materials**	**UOKTB1MC214**		
		√	√	√	√	√	√	√	√	C	**Pneumatic and Hydraulic Systems**	**UOKTB1MC215**		

√	√	√	√	√	√	√	√	√	√	C	**Theory of Machine**	**UOKTB1MC301**	C5	
√	√	√	√	√	√			√	√	C	**Control Theory**	**UOKTB1MC302**		
	√	√	√	√	√	√	√	√	√	C	**Programable Logic Controler PLC**	**UOKTB1MC303**		
√	√	√	√	√	√			√	√	E	**Engineering AI/ Programming (lisp/prolog)**	**UOKTB1MC304**		
	√	√	√	√	√	√	√	√	√	E	**PC- Interface and Data Acquisition**	**UOKTB1MC305**		
√	√	√	√	√	√			√	√	S	**Communications I**	**UOKTB1MC306**		
√	√	√	√	√	√			√	√	S	**English Language III**	**UOKTB1MC307**		
	√	√	√	√	√	√	√	√	√	S	**Communications II**	**UOKTB1MC308**	C6	
	√	√	√	√	√	√			√	E	**Signals and systems**	**UOKTB1MC309**		
		√	√	√	√	√	√	√	√	E	**Digital Image Processing**	**UOKTB1MC310**		
	√	√	√	√	√	√			√	C	**Automatic Control Engineering**	**UOKTB1MC311**		

		√	√	√	√	√	√	√	√	C	**Microcontroller**	**UOKTB1MC312**		
	√	√	√	√	√	√			√	C	**Power Electronics**	**UOKTB1MC313**		
	√	√	√	√	√	√			√	C	**Heat Transfer**	**UOKTB1MC314**		
	√	√	√	√	√	√	√	√	√	B	**Professional Ethics**	**UOKTB1MC401**	C7	
	√	√	√	√	√	√			√	C	**Artificial Intelligence**	**UOKTB1MC402**		
		√	√	√	√	√	√	√	√	C	**Mechatronics I**	**UOKTB1MC403**		
	√	√	√	√	√	√			√	S	**Project I**	**UOKTB1MC404**		
		√	√	√	√	√	√	√	√	E	**Modeling and Simulation**	**UOKTB1MC405**		
	√	√	√	√	√	√			√	E	**Vibrations**	**UOKTB1MC406**		
	√	√	√	√	√	√			√	C	**Machine Design**	**UOKTB1MC407**		
	√	√	√	√	√	√	√	√	√	S	**English language IIII**	**UOKTB1MC408**		
√	√	√	√	√	√	√			√	S	**Mechatronics II**	**UOKTB1MC409**	C8	
√		√	√	√	√	√	√	√	√	C	**Robotics**	**UOKTB1MC410**		
√	√	√	√	√	√	√			√	S	**Project II**	**UOKTB1MC411**		
√	√	√	√	√	√	√			√	C	**CAD/CAM**	**UOKTB1MC412**		
√	√	√	√	√	√	√	√	√	√	B	**Engineering Management**	**UOKTB1MC413**		

√	√	√	√	√	√	√			√	C	**Digital Signal Processing**	**UOKTB1MC414**	
√		√	√	√	√	√	√	√	√	E	**Computer vision**	**UOKTB1MC415**	
√	√	√	√	√	√	√			√	E	**Fluid Power Control Systems**	**UOKTB1MC416**	