

Academic Program Description (English Version)

Ministry of Higher Education and Scientific Research – Scientific Supervision and Evaluation Apparatus – Department of Quality Assurance and Academic Accreditation

Academic Program Description Form for Colleges and Institutes – Academic Year 2025 – 2026

Item	Details
University	Shatt Al-Arab University
College / Institute	Engineering Technical College
Scientific Department	Power Mechanics Techniques Engineering
Date of filling the file	14/10/2026
Head of Department	Lect. Dr. Muthaffar Abdul-Zahra Abd-Ali
Scientific Assistant Dean	Asst. Prof. Essam Khalil Ibrahim
File checked by	Quality Assurance and University Performance Unit
Approved by the Dean	Asst. Prof. Dr. Mazin Abdul-Ilah Alwan

Academic Program Description

This academic program description provides a concise summary of the main features of the program and the learning outcomes that students are expected to achieve, demonstrating whether the program has made the best use of the available opportunities. It is accompanied by a description of each course within the program.

No.	Item	Details
1	Educational institution	Shatt Al-Arab University / Engineering Technical College
2	Scientific department / centre	Power Mechanics Techniques Engineering
3	Academic or professional program name	Power Mechanics Techniques Engineering
4	Final degree awarded	Bachelor of Power Mechanics Techniques Engineering
5	Study system (annual / courses / other)	Bologna system
6	Accreditation program	Program of the Ministry of Higher Education and Scientific Research
7	Other external influences	Field and scientific visits to factories and plants
8	Date of preparing the description	14/10/2026

9. Academic Program Objectives

1. Preparing applied engineers in the field of mechanical technical engineering work.

2. Graduating students who are able to understand the parts of various mechanical devices and keep pace with developments in their technologies.
3. Training and developing engineering and technical staff in the operation and maintenance of mechanical devices.
4. Preparing research and studies to improve and develop the operation of mechanical devices.
5. Giving students the scientific skill to diagnose faults that occur in mechanical devices.
6. Putting forward proposals and alternatives for mechanical devices.

10. Required Program Outcomes and Teaching, Learning and Assessment Methods

A. Knowledge objectives

- A1: The ability to apply knowledge of mathematics, science and engineering.
- A2: The ability to identify, formulate and solve engineering problems.
- A3: The ability to use the new engineering techniques, skills and tools required, and to learn leadership skills and the value of commitment, ethical conduct and respect for others.
- A4: The ability to understand the applied codes of the profession and professional specifications, and to understand the professional and ethical responsibilities of the field.

B. Program-specific skill objectives

- B1: The ability to supervise or carry out mechanical engineering work, and to work and integrate within multidisciplinary teams.
- B2: The ability to identify engineering problems in the work field and to think about solving those that arise during the execution of work.
- B3: The ability to design and conduct experiments, analyze and interpret results, write scientific reports and read engineering drawings.
- B4: The ability to keep up with developments in engineering materials and methods of execution, and to use modern techniques, skills and engineering tools in engineering practice.

C. Affective and value objectives

- C1: Responsiveness: following how far the student interacts with the material presented on the screen.
- C2: Attention: drawing students' attention through questions during the lecture.
- C3: Interest: following the student's interest, shown by greater interaction with the material presented.
- C4: Forming value-based behaviour: the student reaches the top of the affective scale, maintaining a steady level in class without laziness or restlessness.

D. General and qualifying skills

- D1: Developing the student's ability to deal with technical tools.
- D2: Developing the student's ability in dialogue and discussion.
- D3: The ability to carry out mechanical design using the latest design and 3D simulation software.

- D4: The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in mechanical systems.

Teaching and learning methods

1. Lectures.
2. Scientific laboratories.
3. Visual aids (Data Show).
4. Workshops.
5. Seminars.
6. Scientific exhibitions.

Assessment methods

1. Daily assessment.
2. Semester assessment.
3. Practical assessment.
4. Final assessment.
5. Presentation.
6. Daily attendance.
7. Weekly reports.

11. Program Structure

Level	Course code	Course name	Units	Theory hours	Practical hours
First	ATU 12011	English Language	2	1	–
First	ATU 12012	Computer Fundamentals	3	1	2
First	ATU 12013	Single-Variable Calculus	5	4	–
First	ATU 12014	Mechanical Workshops	4	–	4
First	ATU 12015	Engineering Physics	5	3	1
First	ATU 12016	AutoCAD Drawing	7	2	6
First	ATU 12017	Human Rights and Democracy	2	2	–
First	ATU 12018	Arabic Language	2	1	–
First	ATU 12021	Multivariable Calculus	6	5	–
First	ATU 12022	Materials Engineering	4	2	2
First	ATU 12023	Fundamentals of Thermodynamics	6	4	1
First	ATU 12024	Engineering Mechanics (Statics)	8	8	–
First	ATU 12025	Fundamentals of Electricity	6	4	1
Second	ATU 12031	Fluid Mechanics (Statics)	5	3	2
Second	ATU 12032	Advanced Vehicle Technology	5	3	1
Second	ATU 12033	Computer	3	5	–
Second	ATU 12034	Thermodynamics (Ideal Gas)	5	3	1
Second	ATU 12035	Manufacturing Processes	5	4	–

Level	Course code	Course name	Units	Theory hours	Practical hours
Second	ATU 12036	Fundamentals of Engineering Mechanics	5	5	–
Second	ATU 24	Crimes of the Baath Regime in Iraq	2	1	–
Second	ATU 12041	Fluid Mechanics (Dynamics)	5	4	1
Second	ATU 12042	Internal Combustion Engines	5	3	2
Second	ATU 12043	Applied Engineering Mechanics	5	4	–
Second	ATU 12044	Strength of Materials	5	4	2
Second	ATU 12045	Linear Algebra	5	4	–
Second	ATU 12046	Thermodynamics (Gas Cycles)	5	4	1
Second	ATU 12047	English Language II	2	1	–
Second	ATU22048	Arabic Language II	2	1	–
Third	ATU12051	Steam Power Plants	6	4	1
Third	ATU12052	Heat Transfer (Conduction)	6	4	1
Third	ATU12053	Numerical Analysis	5	3	–
Third	ATU12054	Gas Dynamics	5	4	–
Third	ATU12055	Vibrations	5	2	–
Third	ATU12056	Engineering Professional Ethics	3	2	–
Third	ATU12061	Control Systems	5	4	1
Third	ATU12062	Mechanical Design	6	4	–
Third	ATU12063	Heat Transfer (Convection)	6	4	1
Third	ATU12064	Numerical Analysis and Engineering Applications	5	4	–
Third	ATU12065	Hydraulic Systems and Turbomachines	4	2	1
Third	ATU12066	Theory of Machines	4	4	1
Fourth	ATU12071	Industrial Engineering Management	4	2	–
Fourth	ATU12072	Refrigeration Systems	6	4	1
Fourth	ATU12073	Energy Resources and Conservation	5	2	1
Fourth	ATU12074	Thermal Systems Design	6	4	–
Fourth	ATU12075	Advanced Control Systems	5	3	1
Fourth	ATU12076	AI-Enhanced Manufacturing	4	2	2
Fourth	ATU12081	Air Conditioning Systems	6	4	1
Fourth	ATU12082	Renewable Energy Power Stations	5	2	1
Fourth	ATU12083	Equipment Technology	4	2	1

Level	Course code	Course name	Units	Theory hours	Practical hours
Fourth	ATU12084	Computational Fluid Dynamics	4	2	3
Fourth	ATU12085	Computer Applications / Software	5	2	3
Fourth	ATU12086	Graduation Project	6	2	2

12. Personal Development Planning

1. Scientific trips.
2. Scientific visits.

13. Admission Criteria (regulations for enrolment in the college or institute)

1. Graduates of the sixth preparatory grade, scientific branch.
2. Graduates of industrial preparatory schools.
3. Graduates of technical institutes.

14. Main Sources of Information about the Program

1. The library.
2. The internet.
3. Websites.
4. The virtual library.

Curriculum Skills Map

Please tick the boxes corresponding to the individual program learning outcomes subject to assessment

Level	Course Code	Course Name	Core / Elective	Knowledge objectives				Skill objectives				Affective objectives				General skills			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
First	ATU 12011	English Language	Core		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
	ATU 12012	Computer Fundamentals	Core	✓			✓		✓	✓	✓	✓		✓	✓		✓		✓
	ATU 12013	Single-Variable Calculus	Core		✓	✓		✓	✓	✓			✓	✓	✓		✓	✓	✓
	ATU 12014	Mechanical Workshops	Core	✓	✓		✓	✓			✓	✓		✓		✓	✓		
	ATU 12015	Engineering Physics	Core	✓			✓		✓	✓	✓		✓	✓			✓		✓
	ATU 12016	AutoCAD Drawing	Core		✓	✓		✓	✓	✓			✓	✓	✓		✓	✓	✓
	ATU 12017	Human Rights and Democracy	Core	✓		✓	✓	✓	✓	✓		✓	✓	✓			✓	✓	✓
	ATU 12018	Arabic Language	Core		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
	ATU 12021	Multivariable Calculus	Core		✓	✓	✓	✓	✓		✓	✓	✓	✓		✓		✓	
	ATU 12022	Materials Engineering	Core	✓		✓			✓		✓			✓	✓	✓	✓		✓
	ATU 12023	Fundamentals of Thermodynamics	Core		✓	✓		✓	✓	✓			✓	✓	✓		✓	✓	✓
	ATU 12024	Engineering Mechanics (Statics)	Core	✓		✓	✓	✓	✓			✓	✓	✓	✓		✓	✓	
	ATU 12025	Fundamentals of Electricity	Core	✓			✓		✓	✓	✓			✓	✓		✓		✓
Second	ATU 12031	Fluid Mechanics (Statics)	Core		✓	✓	✓	✓	✓		✓	✓	✓			✓		✓	
	ATU 12032	Advanced Vehicle Technology	Core		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
	ATU 12033	Computer-Aided Engineering Principles	Core		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
	ATU 12034	Thermodynamics (Ideal Gas)	Core		✓	✓		✓	✓	✓			✓	✓	✓		✓	✓	✓
	ATU 12035	Manufacturing Processes	Core	✓		✓			✓		✓		✓		✓	✓	✓		✓
	ATU 12036	Fundamentals of Engineering Mechanics	Core	✓		✓			✓	✓		✓			✓		✓		✓
	ATU 12036	Fundamentals of Engineering Mechanics	Core	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓		✓		✓
	ATU 24	Crimes of the Baath Regime in Iraq	Core	✓	✓		✓	✓		✓	✓	✓	✓		✓	✓		✓	✓
	ATU 12041	Fluid Mechanics (Dynamics)	Core	✓		✓	✓	✓	✓		✓	✓		✓	✓	✓	✓		✓
	ATU 12042	Internal Combustion Engines	Core	✓		✓		✓	✓			✓	✓	✓		✓		✓	
	ATU 12043	Applied Engineering Mechanics	Core	✓	✓			✓	✓			✓		✓				✓	✓
	ATU 12044	Strength of Materials	Core	✓		✓		✓		✓		✓	✓	✓		✓		✓	✓
	ATU 12045	Linear Algebra	Core	✓		✓		✓		✓		✓	✓	✓		✓		✓	✓
	ATU 12046	Thermodynamics (Gas Cycles)	Core	✓	✓	✓	✓	✓		✓		✓	✓	✓		✓		✓	✓
	ATUU 213	English Language	Core	✓	✓		✓		✓		✓	✓		✓		✓		✓	✓
	ATUU 212	Arabic Language	Core	✓	✓		✓		✓		✓	✓		✓		✓		✓	✓
Third	ATU 12051	Steam Power Plants	Core	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	ATU 12052	Heat Transfer (Conduction)	Core	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	ATU 12053	Numerical Analysis	Core	✓	✓	✓	✓	✓		✓	✓		✓	✓		✓	✓	✓	
	ATU 12054	Gas Dynamics	Core	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	ATU 12055	Vibrations	Core	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	ATU 12056	Engineering Professional Ethics	Core	✓		✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	

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