Undergraduate Degree Program Catalogue | 2023-2024 |
دليل البرنامج الدراسي

Al-Furat Al-Awsat Technical University

Bachelor of Science Honours (B.Sc. Honors) – Power Mechanic Technical Engineering
بكالوريوس هندسة تقنيات ميكانيك القوى –

Table of Contents | جدول المحتويات

1. Mission & Vision Statement

Vision Statement

The power mechanic Technical Engineering academic staff of the Natural and Behavioral Sciences Division at Al-Furat Al-Awsat Technical University believe that students come to understand the discipline of Power mechanics through a combination of course work, laboratory experiences, research, and fieldwork. The combination of instructional methods leads students to a balanced understanding of the scientific methods used by mechanical engineers to be site engineers.

Mission Statement

The power mechanic engineering technologies academic staff pursues a multifaceted charge at Al-Furat Al-Awsat Technical University. The Program seeks to provide all mechanical students with fundamental knowledge of construction, as well as a deeper understanding of a selected focus area within the mechanic sciences. The curriculum and advising have been

designed to prepare graduates for their professional future, whether they choose to work as field or site engineers, or to pursue advanced degrees in the life sciences. The mechanic program also provides the necessary fundamental knowledge of the design & analysis of structures to support their study, the Environmental Studies degree, and the Associate of Science degree in. In addition, building & construction courses provide key laboratory science experience for those students seeking to complete the general education requirements.

2. Program Specification

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

Mechanics is a wonderfully wide-ranging subject. The emphasis of the program is the whole construction to which everything is related. The degree is popular - for some, it's the breadth of the subject that appeals, for others it's a path to specialization. All students have the opportunity to transfer onto our specialist degrees in whole branches of mechanical engineering at the end of the first year.

Level 1 exposes students to the fundamentals of power mechanics, suitable for progression to all programs within the mechanic program group. Program-specific core topics are covered at Level 2 preparing for research-led subject specialist modules at Levels 3 and 4. Power mechanic graduate is therefore trained to appreciate how research informs teaching, according to the University and School Mission statements.

At Levels 2, 3, and 4 students are free to choose more than half of their module credits with the proviso a range of modules are selected that reflect the complexity of life forms. This allows students to develop their own wide-ranging interests in mechanical engineering. Decisions on what to study are made with input from personal tutors.

The research ethos is developed and fostered from the start via practicals, 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, which may be a credit library or data analysis project, or a credit field or laboratory-based project.

Academic tutorials are held at Levels 1 and 2 with the same tutor, who is also the personal tutor, providing continuity and progressive guidance. Level 1 and 2 tutorials include a number of workshops to teach skills, e.g. library use and presentation skills, followed by assessed exercises, e.g. essays and talks, as opportunities to practice these skills in a subject-specific context.

International years and Industrial placements are also offered and individual needs are discussed with the appropriate tutor and accommodated wherever possible.

3. Program Goals

1. To provide a comprehensive education in mechanical that stresses scientific reasoning and problem-solving across the spectrum of disciplines within power mechanical engineering
2. To prepare students for a wide variety of post-baccalaureate paths, including graduate school, professional training programs, or entry-level jobs in any area of power mechanic,
3. To provide extensive hands-on training in electronic technology, statistical analysis, laboratory skills, and field techniques
4. To provide thorough training in written and oral communication of scientific information
5. To enrich students with opportunities for alternative education in mechanical engineering through undergraduate research, internships, and study-abroad.

4. Student Learning Outcomes

The Department offers a Bachelor of Science in building & construction power mechanics and its applications with a concentration in General mechanics (power plant, air conditioning, and refrigeration systems, etc). Additionally, the Department offers courses to a large number of students from other departments and supports pre-professional programs. The power mechanics curriculum and experiences are designed to prepare students, in part, for entry into professional structural programs, graduate studies, technical careers, and education.

Outcome 1

Identification of Complex Relationships

Graduates will be able to apply the principles of fluid mechanics, thermodynamics, and heat transfer to analyze and design power systems.

Outcome 2

Oral and Written Communication

By the end of this course, students will be able to use simulation software to model and optimize the performance of fluid power systems.

Outcome 3

Laboratory and Field Studies

Graduates will be able to perform laboratory experiments and field studies, by using scientific equipment and computer technology while observing appropriate safety protocols.

Outcome 4

Scientific Knowledge

Graduates will be able to demonstrate a balanced concept of how scientific knowledge develops, including the historical development of foundational theories and laws and the nature of science.

Outcome 5

Data Analyses

Graduates will be able to demonstrate scientific quantitative skills, such as the ability to conduct simple data analyses.

Outcome 6

Critical Thinking

Graduates will be able to use critical-thinking and problem solving skills to develop a research project and/or paper.

5. Academic Staff

Academic staff of the department

	Name	Certificate	Scientific degree	Email	Mobile Number	
1	Adel A. Eidan	Ph.D.	Ass. Professor	Inj.adel@atu.edu.iq	+9647702687817	
2	Balasem Abdulameer Jabbar	Ph.D.	Lecturer	balasemalquraishi@atu.edu.iq	+9647800562088	
3	Ahmed Salim Naser Almurshedi	Ph.D.	Lecturer	Ahmed.Al-murshedi@atu.edu.iq	07813203286	
4	Mohammed Salim Abdulameer	MA	Assistant Lecturer	mohammed.salim.cnj@atu.edu.iq	07818928162	
5	Fatima Obaid Salman	M.Sc.	Assist Lecture	Fatima.obaid@atu.edu.iq	07810108510	
6	Montadhar A. M. ALMOUSSAWI	Ph.D	Prof	Inj.mun@atu.edu.iq	07819386335	
7	Muhannad Ahmed Hameed	M.Sc.	Assist Lecture	muhannad.hameed@atu.edu.iq	07736538342	
8	Mohammed Ali Diwan	Ma	Lecturer	coj.muh2@atu.edu.iq	07726250380	
9	Basil Noori Abed Merazah	Ph.D.	Lecture	Coj.bas@atu.edu.iq	07809496181	
10	Wisam Ahmed Abd Al-wahid	Ph.D.	Ass. Professor	wisamabdalwahid@gmail.com	07840541494	
11	Ahmed Hamoodi Ali	Ph.D.	Ass. Professor	ahmed.hamoodi.chm@atu.edu.iq	+9647831851682	
12	Yasir Fayez Youssif	M.Sc.	Ass. Lecture	coj.yaserfa@atu.edu.iq	009647801228900	
13	Dhafer Manea Hachim	Ph.D.	Professor	coj.dfr@atu.edu.iq	+9647809787897	
14	Muayad Baqer Mohammed	Ph.D.	Ass. Professor	mua@atu.edu.iq	+964781088060	
15	Muna Ali Talib	M.Sc.	Ass. Lecture	munaalitalib@gmail.com	07810986122	
16	Maher Sabah Abdulmahdi Alalwan	Master	Lecturer	maher.alalwan@atu.edu.iq	+9647819222109	
17	Dr. Salah M. Salih	PhD	Lecture	sal20@atu.edu.iq	07802845014	

6. Credits, Grading and GPA

Credits

ATU is following the Bologna Process with the European Credit Transfer System (ECTS) credit system.

The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 student 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	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				
NB 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 Grade Point Average (GPA)

1. The GPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program total ECTS.

   GPA of a 4-year B.Sc. degrees:

   GPA = [(1st module score x ECTS) + (2nd module score x ECTS) + ...] / 240

7. Curriculum/Modules

Semester 1 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ATU12011	English for Academic U.	18	32	2	S	NO
ATU12012	Computer Principals	48	27	3	B	NO
ATU12013	single variables calculus	63	62	5	B	NO
ATU12014	Workshop	63	37	4	C	NO
ATU12015	Engineering physics	78	47	5	B	NO
ATU12016	CAD Drawing	115	60	7	S	NO
ATU12017	Human Right and Democracy	18	32	2	B	No
ATU12018	Arabic languag	18	32	2	B	No
TOTAL		418	329	30.00		

Semester 2 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ATU12021	Baath party crimes	18	32	2	B	NO
ATU12022	Multi-variables calculas	63	62	5	B	NO
ATU12023	Engineering Materials	33	42	3	S	NO
ATU12024	Fundamentals of Thermodynamics	78	72	6	C	NO
ATU12025	Engineering Mechanics-Static	123	77	8	C	NO
ATU12026	Fundamentals of Electricity	78	72	6	B	NO
Total		393	357	30.00		

Semester 3 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ATU12031	Fluid Mechanics -Static	93	32	5	C	NO
ATU12032	Advanced automotive technology	63	37	4	S	NO
ATU12033	CAE Principals	78	22	4	S	NO
ATU12034	Thermodynamic - Ideal Gas	78	47	5	C	NO
ATU12035	Manufacturing Processes	48	52	4	S	NO
ATU12036	Fundamentals of Engineering Mechanics-Dynamics	48	52	4	C	NO
ATU24	The crimes of the Baath regime in Iraq	17	50	2.00		

Total		474	276	30.00	S	

Semester 4 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ATU12041	Fluid Mechanics-Dynamics	78	47	5	C	NO
ATU12042	Internal Combustion Engine	63	62	5	C	NO
ATU12043	Engineering Mechanics-Applied of Dynamics	48	42	4	C	NO
ATU12044	Strength of Materials	93	32	5	C	NO
ATU12045	Linear algebra	63	37	4	B	NO
ATU12046	Thermodynamic - gas cycle	78	47	5	C	NO
Total		471	279	30.00		

Semester 5 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ATU12051	Steam power plant	48	52	4	C	NO
ATU12052	Heat Transfer- conduction	108	67	7	C	NO
ATU12053	Eng. & Numerical Analyses	108	92	8	B	NO
ATU12054	Gas Dynamics	63	37	4.00	C	NO
ATU12055	Mechanical Vibrations	63	37	4	B	NO
ATU12056	Professional Ethics	33	42	3	B	NO

Total		423	327	30.00		

Semester 6 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ATU12061	Control Systems and Measurements	48	52	4	C	NO
ATU12062	Mechanical Eng. Design	108	92	8	S	NO
ATU12063	Heat Transfer- convection	93	57	6	C	NO
ATU12064	Statistics	63	37	4	B	NO
ATU12065	Hydraulic and Turbomachinery systems	63	37	4	C	NO
ATU12066	Theory of Machines	48	52	4	C	
Total		390	360	30.00		

Semester 7 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ATU12071	Computational Fluid Dynamics	48	27	3	C	NO
ATU12072	Refrigeration systems	108	92	8	C	NO
ATU12073	Energy Resources and Conservation	48	52	4	C	NO
ATU12074	systems design	48	52	4	C	NO
ATU12075	Automotive Control	108	42	6	C	NO

ATU12076	CAM (computer Aided manufacturing)	63	62	5	C	NO
Total		423	327	30.0		

Semester 8 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ATU12081	Air-Conditioning systems	108	92	8	C	NO
ATU12082	radiation and solar energy	93	82	7	C	NO
ATU12083	Equipment Technology	78	72	6	C	NO
ATU12084	Industrial Engineering	48	27	3	S	NO
ATU12085	Computational Modelling	48	52	4	S	NO
ATU12086	Final Project	33	17	2	C	NO
Total		408	342	30.0		

Total for all Semesters		3241	2759	240.0		

8. Contact

Program Manager:

Adel A. Eidan | Ph.D. in power mechanical Engineering | Assist. Prof.

Email: inj.adel@atu.edu.iq

Mobile no.: 07702687817