Al-Bayan University
College of Technical Engineering

جامعة البيان
الكلية التقنية الهندسية

First Cycle – Bachelor's Degree (B.Sc.) – Power Mechanics- Refrigeration and Air-condition Branch

بكالوريوس – ميكانيك القوى- فرع الطاقة المتجددة (الدورة الأولى)

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1. Mission & Vision Statement

Vision Statement

The Department of Power Mechanic Technical Engineering is one of the nine scientific departments of the Technical College of Engineering at Al-Bayan University College of Technical Engineering in Baghdad. The department had been established in 2023. The department awards a bachelor's degree in the field of mechanical engineering technology in two branches, namely (Renewable Energy Branch, Refrigeration and Air Conditioning Branch)

Mission Statement

The department aims to prepare technical engineers specialized in the field of the two mentioned branches and have scientific and practical skills in diagnosing and repairing faults that occur during the work of the two mentioned branches. As well as the creation of competent engineers with the ability to keep pace with the rapid development in the competence of the two mentioned branches and acquire the necessary skills to develop and modernize the two mentioned branches devices. In addition to providing the graduates with the skill to install and operate various modern the two mentioned branches systems.

As well as this department is creating a distinguished theoretical and practical study environment for students by delivering valuable scientific lectures in the specialty, conducting laboratory experiments and creative scientific research, and interacting with the local and global environment in the field of working on equipment in the department's laboratories.

2. Program Specification

Program code:	PM-RAC	**ECTS**	240
Duration:	4 levels, 8 Semesters	**Method of Attendance:**	Full Time

Mechanical engineering is a wide-ranging subject and is different special branches. The emphasis of the program is the materials and their behavior as well as their physical properties to which everything is related, be it the materials formed a separate system or it is a part of the system. The degree is popular - –or 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 mechanical, renewable energy, heating, ventilating and air conditioning at the end of the second year.

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

At Levels 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 the different directions of the specializations in the mechanical engineering, through modern modules, to ensure the breadth of knowledge expected of a graduate with an engineering degree. This allows students to develop their own wide-ranging interests in mechanical and thermal energy engineering. Decisions on what to study are made with input from personal tutors.

The research ethos is developed and fostered from the start via practical, 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 2 and 3, which students must pass in order to progress into Level 3 and 4. At Level 4 all students carry out an independent research project, which may be a data analysis project, or practical project.

3. Program Objectives

The department aims to provide high-quality technical education, by keeping pace with the rapid technological developments in the world, and respond to the necessities of change in the curriculum to lay the foundations of human development so that graduates acquire skills and expertise to meet the needs of the market by adopting quality assurance and assurance. Therefore, the department aspires to graduate applied engineers familiar with the applications and modern devices in the field of the three mentioned branches and be able to:

1. Installation and operation of all types of devices deals with the specialties in this department.
2. Contributing and supervising the maintenance of different appliances deal with the specialties in this department.
3. Design and implementation of sketches for the installation and operation of modern units.
4. Research, develop and find replacement parts for the unemployed units.

4. Student Learning Outcomes

Mechanical engineering is the study of objects and systems in motion. As such, the field of mechanical engineering touches virtually every aspect of modern life, including the human body, a highly complex machine. Graduates obtain information on the historical, technical and social aspects of mechanical and thermal engineering and utilize basic knowledge toward realizing broader concepts. The Department offers a Bachelor of Engineering in Mechanics and thermal energy with a concentration in General mechanics; renewable energy / thermal energy. Additionally, the Department offers courses

to a large number of students from other departments and supports pre-professional programs. The mechanical engineering curriculum and experiences are designed to prepare students, in part, for entry into professional engineering programs, graduate studies, technical careers and education

Outcome 1

Identification of Complex thermodynamic processes

Graduates will be able to illustrate the thermodynamic processes in different thermal systems and they will able to make the heat and mass balance for the complex systems.

Outcome 2

Oral and Written Communication

Graduates will be able to formally communicate the results of their research investigations using both oral and written communication skills.

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 Analysis

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

Outcome 6

Critical Thinking

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

5. Academic Staff كل التدريسين الموجودين بالجانب النظري والعملي

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6. Credits, Grading and GPA

Credits

Al- Bayan University Al-Bayan University/College of Technical Engineering 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 hrs 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	**راسب - قيد المعالجة**	(45-49)	More work required but credit awarded
	F – Fail	**راسب**	(0-44)	Considerable amount of work required
Note:				
Number 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 Cumulative Grade Point Average (CGPA)

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

   CGPA of a 4-year B.Sc. degree:

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

7. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PM 100	Mechanical Engineering /Static	78	122	8.00	C	
PM 101	Mathematics Principles	93	57	6.00	B	
PM 102	Electrical technology	63	87	6.00	B	
PM 103	Workshops	93	57	6.00	C	
NTU 100	Democracy and Human Rights	33	17	2.00	S	
NTU 101	English Language	33	17	2.00	S	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PM 104	Thermodynamics principle	93	107	8.00	C	
NTU 102	Computer	63	12	3.00	S	
NTU 103	Arabic Language	33	17	2.00	S	
PM 105	Mechanical Engineering /Dynamic	78	122	8.00	C	
PM 106	Engineering Drawing	63	112	7.00	B	
PM 107	Occupational Safety	33	17	2.00	S	

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PM 200	Refrigeration & Air Conditioning Principles	123	77	8.00	C	
PM 200	Mathematics	93	57	6.00	B	
PM 201	Fluid Mechanics	123	77	8.00	C	
PM 202	Mechanical Drawing	63	37	4.00	C	
NTU 200	Crimes of the Baath Party in Iraq	33	17	2.00	S	
NTU 201	English Language	33	17	2.00	S	

Semester 4 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PM 203	Strength of Materials	63	87	6.00	C	
PM 204	Engineering Materials	63	87	6.00	C	
PM 205	Thermodynamics	123	52	7.00	C	
PM 206	Electrical Machines	63	87	6.00	B	
NTU 202	Computer	63	12	3.00	S	
NTU 203	Arabic Language	33	17	2.00	S	

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PM 300	Mechanical Design	63	87	6.00	C	
PM 301	Engineering Analysis	48	102	6.00	B	
PM 302	Heat Transfer	123	77	8.00	C	
RE 300	Biofuels	63	87	6.00	C	
RE 301	Renewable Energy	63	37	4.00	C	

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
RE 302	Photovoltaic Energy	63	87	6.00	C	
RE 303	Gas dynamics	63	87	6.00	C	
PM 303	Engineering Computer Applications	48	52	4.00	B	
PM 304	Numerical Analysis	48	102	6.00	B	
RM 305	Theory of Machines and Vibrations	123	77	8.00	C	

Semester 7 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PM 400	Thermal Power Plants	123	77	8.00	C	
RE 400	Solar Energy	78	122	8.00	C	
PM 401	Engineering Measurement systems	63	87	6.00	B	
PM 402	Methodology of Scientific Research	32	68	4.00	S	
PM 403	Industrial Engineering Management	33	67	4.00	B	

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
RE 401	Thermal Systems Design	48	87	6.00	C	
RE 402	Combustion and Pollution Engineering	123	77	8.00	C	
PM 404	Automatic Control systems	63	87	6.00	B	
PM 405	Computer Aided Design	48	52	4.00	B	
PM 406	Project	62	88	6.00	C	

8. Contact

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