

**Al-Farahidi University**  
**جامعة الفراهيدي**



*First Cycle – Bachelor’s Degree (B.Tech.) – Aeronautical  
Technical Engineering*

بكالوريوس - هندسة تقنيات الطيران



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### 1. **Mission & Vision Statement**

#### *Vision Statement*

The vision of the Aeronautical Engineering Technical Department at the Engineering Technical College in Najaf to become the department:

- A pioneer in engineering technical education in the field of specialization (aviation).
- Internationally recognized by the Iraqi Civil Aviation Authority (ICAA) and the European Aviation Safety Agency (EASA).
- An educational entity whose research is strong.

#### *Mission Statement*

The Aeronautical Engineering Technical academic staff pursues a multifaceted charge at Al-Furat Al-Awsat Technical University. The Program seeks to provide

Serve our students by teaching them problem-solving, leadership and teamwork skills, and value The quality of commitment, ethical behavior, and respect for others, provide graduates of technical engineers with high quality in the field of aeronautical engineering, providing innovative technology for the benefit of society locally and globally, providing modern research in the field of aviation technology, cooperation with civil and military bodies to market the skills of the field of specialization, and advising on obtaining a Civil Aviation License and an Air Service Training License from European Aviation Safety Agency and licenses for ground support.

## 2. Program Specification

<b>Program code:</b>	BTch-ATU13	<b>ECTS</b>	240
<b>Duration:</b>	4 levels, 8 Semesters	<b>Method of Attendance:</b>	Full Time

Aeronautical Engineering Technical is a BTech semesters that focuses on the application of basic engineering concepts to aeronautical sciences. However, the Aeronautical Engineering Technical syllabus might vary from one university to another, the core subjects like Theory of flight, Aerodynamics, Aircraft Maintenance, Engineering Mechanics, etc., remain the same. The curriculum consists of group projects, practical, workshops, internships, industrial visits, and voyages. The students also need to form groups and prepare a final year project that offers solutions to different operations related to aeronautical sciences.

### 3. Program Objectives

The program objectives of the educational Engineering Technical program mean the achievements of the graduates in the short term, i.e. the skills acquired by the graduates of the department throughout their academic studies in the Engineering Technical College-Najaf (16) skills.

PO-1	Knowledge and understanding	PO-1-1	An ability to apply knowledge of mathematics, science, and engineering.
		PO-1-2	Understand the professional and ethical responsibilities of the field of specialization.
		PO-1-3	The ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students for improvement.
		PO-1-4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others.
PO-2	Subject-specific skills	PO-2-1	Ability to work and integrate into multidisciplinary teams
		PO-2-2	The ability to design and conduct experiments as well as analyze and interpret data.
		PO-2-3	The ability to use modern technologies, engineering skills and tools to practice engineering
		PO-2-4	The ability to identify and formulate engineering problems in the field of specialization
Po-3	Thinking skills	Po-3-1	The ability to communicate effectively with those involved in the field of specialization in the civil and military aspects.
		Po-3-2	Recognition of the need and ability to engage in lifelong learning.
		Po-3-3	Knowledge of contemporary issues in the field of specialization.
		Po-3-4	The broad learning necessary to understand the global impact of engineering solutions and economic, environmental and social problems.
Po-4	General and transferable skills (other skills related to employability and personal development)	Po-4-1	Ability to manage and work on aircraft ground and air support equipment.
		Po-4-2	The ability to design mechanically using the latest 3D design and simulation software, which is practical to meet the required needs within the field of specialization within a realistic framework in which environmental, economic and social constraints are imposed health and political...
		Po-4-3	The ability to work with the latest devices for diagnosing mechanical, electrical and electronic faults in aircraft systems
		Po-4-4	The ability to adapt to similar disciplines (communication engineering, refrigeration and air conditioning engineering, engineering Mechanical, renewable energies

## 4. **Student Learning Outcomes**

The easiest statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire during their study period through the educational program and depend on the standards of the Iraqi National Council for Program Accreditation of Technical Engineering Colleges. The outputs of the educational program of the Aeronautical Engineering Department are based on international standards and are adequate to the requirements of the specialized programs. This is a major task and requires a process of research and analysis by experts and specialists in those programs. Many international standards have been studied (Accreditation Board of Engineering and Technology ABET, Japan Accreditation Board of Engineering Education, United Kingdom Accreditation Board, Canada Accreditation Board of Engineering Education, International Engineering Alliance IEA) by specialists in the Ministry of Higher Education and Scientific Research from The Scientific Supervision and Evaluation Authority and the Iraqi National Council for Program Accreditation of Technical Engineering Colleges, after which ABET and IEA standards will be accredited in the specialization of a Bachelor of Technology program (Engineering Technology Degree program.)

The educational program outputs must achieve the objectives of the program through two continuous assessment and evaluation processes. After completing the requirements of the prepared program, the student will be able to:

### **Outcome 1**

*Selects and applies modern knowledge, techniques, skills and devices in activities engineering on a large scale.*

### **Outcome 2**

Selects and applies knowledge in mathematics, engineering, technology, and science to solve other engineering problems that require the application of principles or procedures applied methodologies.

### **Outcome 3**

Conducts the required tests, experiments and measurements, and analyzes and interprets their results.

### **Outcome 4**

It applies experimental results to improve engineering processes.

### **Outcome 5**

Designs systems, components, or processes for large-scale engineering problems which are consistent with the objectives of the educational program.

**Outcome 6**

Work effectively as a member or leader of a specialized engineering team.

**Outcome 7**

Identifies, analyzes and solves engineering problems on a large scale.

**Outcome 8**

-Identifies and uses appropriate technical literature as well as applies written editors Oral and graphic communication in both technical and non-technical environments Both.

**Outcome 9**

Participates in self-directed continuing professional development

**Outcome 10**

Works to understand and adhere to professional and ethical responsibilities.

**Outcome 11**

Works to understand the impact of solutions to engineering problems locally and globally and applies them in the field his specialty.

**Outcome 12**

Adheres to the concepts of quality and strives for continuous improvement.

## 5. Academic Staff

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## 6. Credits, Grading and GPA

### Credits

(Name) University 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:

$$\text{CGPA} = [ (1^{\text{st}} \text{ module score} \times \text{ECTS}) + (2^{\text{nd}} \text{ module score} \times \text{ECTS}) + \dots ] / 240$$

## 7. Curriculum/Modules

### Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ATU13011	English for Academic U.	18	32	2.00	S	non
ATU13012	Computer Principals	48	52	4.00	B	non
ATU13013	single variable calculus	63	62	5.00	B	non
ATU13014	Workshop	63	62	5.00	C	non
ATU13015	physics	78	72	6.00	B	non
ATU13016	CAD Drawing	115	85	8.00	S	non

### Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ATU13021	Human Right and Democracy	18	32	2.00	B	non
ATU13022	Multi-variables calculus	63	62	5.00	B	non
ATU13023	Engineering Materials	33	42	3.00	S	non
ATU13024	Fundamentals of Thermodynamics	78	72	6.00	S	non
ATU13025	Engineering Mechanics-Static	123	77	8.00	S	non
ATU13026	Fundamentals of Electricity	78	72	6.00	B	non

### Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ATU13031	Fluid Mechanics -static	63	62	5.00	S	non
ATU13032	Fundamentals of Electronics	63	62	5.00	S	non
ATU13033	Theory of flight	108	92	8.00	C	non
ATU13034	Thermodynamic - ideal Gas	63	37	4.00	S	non
ATU13035	Manufacturing Processes	48	52	4.00	S	non
ATU13036	Fundamentals of Engineering Mechanics-Dynamics	48	52	4.00	S	non

**Semester 4 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ATU13041	Fluid Mechanics-Dynamics	48	27	3.00	S	non
ATU13042	CAE Principals	63	62	5.00	S	non
ATU13043	Engineering Mechanics-Applied of Dynamics	48	52	4.00	S	non
ATU13044	Strength of Materials	108	92	8.00	S	non
ATU13045	Algebraic equations and Programming python	78	72	6.00	B	non
ATU13046	Thermodynamic - Steam	63	37	4.00	S	non

**Semester 5 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ATU13051	Aerodynamic -Fundamentals	48	52	4.00	C	non
ATU13052	Digital Techniques & Electronic instrument system	108	67	7.00	S	non
ATU13053	Eng. & Numerical Analyses	108	92	8.00	B	non
ATU13054	Gas Dynamics	63	37	4.00	C	non
ATU13055	Aircraft Engines	63	37	4.00	C	non
ATU13056	Industrial Engineering	33	42	3.00	S	non

**Semester 6 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ATU13061	Aerodynamic -Applied	48	52	4.00	C	non
ATU13062	Mechanical Eng. Design	108	92	8.00	S	non
ATU13063	Heat Transfer	93	57	6.00	S	non
ATU13064	Gas Turbine Engines	63	37	4.00	C	non
ATU13065	Gas Dynamics-Applied	63	37	4.00	C	non
ATU13066	Theory of Machines	48	52	4.00	S	non

**Semester 7 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ATU13071	Aircraft Structure- fundamentals	48	27	3.00	C	non
ATU13072	Aircraft Vibration	108	92	8.00	C	non
ATU13073	mechanical Aircraft system & Maintenance	48	52	4.00	C	non
ATU13074	Aeronautical legislation & Human Factors	33	17	2.00	C	non
ATU13075	Automatic Control	108	92	8.00	C	non
ATU13076	CAM ( computer Aided manufacturing)	63	62	5.00	S	non

**Semester 8 | 30 ECTS | 1 ECTS = 25 hrs**

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ATU13081	Aircraft Design	108	92	8.00	C	non
ATU13082	Propulsion Systems	93	82	7.00	C	non

ATU13083	Aircraft Stability	78	72	6.00	C	non
ATU13084	Aircraft Structure- Applied	48	27	3.00	C	non
ATU13085	Elec./Aircraft system & Maintenance	48	52	4.00	C	non
ATU13086	Final Project	33	17	2.00	C	non

## 8. **Contact**

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