Al-Furat Al-Awsat Technical University
جامعة الفرات الأوسط التقنية

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

بكالوريوس - هندسة تقنيات الطيران

Table of Contents

1. Overview

This catalogue is about the courses (modules) given by the program of Aeronautical Technical Engineering to gain the Bachelor of Technical degree. The program delivers (48) Modules with (6000) total student workload hours and 240 total ECTS. The module delivery is based on the Bologna Process.

نظره عامه

يتناول هذا الدليل المواد الدراسية التي يقدمها برنامج هندسة تقنيات الطيران للحصول على درجة بكالوريوس تقنيات. يقدم البرنامج (48) مادة دراسية، على سبيل المثال، مع (٦٠٠٠) إجمالي ساعات حمل الطالب و ٢٤٠ إجمالي وحدات أوروبية. يعتمد تقديم المواد الدراسية على عملية بولونيا.

2. Undergraduate Courses 2023-2024

Module 1

Code	Course/Module Title	ECTS	Semester
ATU13011	English for Acadimic U.	2	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
1	0	18	32
Description			
he aim of this course is to equip students with English terminology and expressions used in scientific and technical fields and to enable them to use this language efficiently in the workplace.			

Module 2

Code	Course/Module Title	ECTS	Semester
ATU13012	Computer Principals	4	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
1	2	48	52
Description			
The goal of this course is to teach students the core practical and theoretical skills required for designing, coding, and understanding computer programs. Basic programming concepts and methods will be introduced to enable students working with abstract notions to solve computational problems. The course does not aim for teaching a particular programming language. The language will be only used for demonstrating the related computer science concepts and methods.			

Module 3

Code	Course/Module Title	ECTS	Semester
ATU13013	single variable calculas	5	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	1	63	62
Description			
he main objective of the course is to make the students form a mathematical background by instructing required information about relation, limit, continuity, derivative ,integral and to gain the ability of rational approach to the problems at a daily life for students .			

Module 4

Code	Course/Module Title	ECTS	Semester
ATU13014	Workshop	5	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
0	4	63	62
Description			
This section includes a description of the module, 100-150 words			

Module 5

Code	Course/Module Title	ECTS	Semester
ATU13015	physics	6	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	1	78	72
Description			
To act responsibly - Introduced To think independently - Introduced To develop continuously - Introduced To communicate effectively - Introduced			

Module 6

Code	Course/Module Title	ECTS	Semester
ATU13016	CAD Drawing	8	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
	8	115	85
Description			
he course will lay the foundation for civil engineers' use of technical drawings by providing instruction in drawing understanding and using computerized drawing programs.			

Module 7

Code	Course/Module Title	ECTS	Semester
ATU13021	Human Right and Democracy	2	2
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
1	0	18	32
Description			
The lecture deals with the basic principles underlying human rights: normative universalism, human dignity, the inalienability of certain rights, the relationship between freedom and equality, claims of social inclusion, the secular nature of modern law, the sometimes tense interplay between human rights and democracy			

Module 8

Code	Course/Module Title	ECTS	Semester
ATU13022	Multi-variables calculas	5	2
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	1	63	62
Description			
he aim of this course is to construct a basis of information which student will use in future by giving detailed information about integral, applications of integral and series, and to have students being learned analytical thought. The aim of this course is functions of several variables are to provide the basic concepts and methods.			

Module 9

Code	Course/Module Title	ECTS	Semester
ATU13023	Engineering Materials	3	2
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	0	33	42
Description			
This module presents the key underlying science and mathematical tools to predict material performance in-service to enable engineers to have an objective set of tools to make rational decisions on materials selection. The module covers materials ranging from light alloys (i.e., aluminium alloys and titanium alloys) to steels (carbon, stainless, and advanced high strength steels). The course centres on the physical metallurgy of such engineering alloys to demonstrate the effect of alloying and its implications for the processing, microstructure and performance of structural pipeline steels, large scale forgings and aerospace components in both airframe and aero-engine applications. Some parallels will also be drawn with the automotive industry, when discussing both steels and light alloys.			

Module 10

Code	Course/Module Title	ECTS	Semester
ATU13024	Fundamentals of Thermodynamics	6	2
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	2	78	72
Description			
Concepts and definitions; the thermodynamic system, properties, phase equilibrium of pure substances, equations of state for gases, tables of thermodynamic properties, work and heat. First law of thermodynamics; thermodynamic cycles, change of state, internal energy, enthalpy, specific heat; open systems, steady-state and transient processes. Second law of thermodynamics; reversible and irreversible processes, the Carnot cycle, the thermodynamic temperature scale, entropy, the entropy production concept. Thermodynamic power cycles, refrigeration cycles, the Otto cycle and the Diesel cycle, the gas-turbine process. Introduction to exergy analysis.			

Module 11

Code	Course/Module Title	ECTS	Semester
ATU13025	Engineering Mechanics-Static	8	2
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
5	3	123	77
Description			
echanics is the study of forces that act on bodies and the resultant motion that those bodies experience. With roots in physics and mathematics, Engineering Mechanics (including mechanics of solids and mechanics of fluids) is the basis of all mechanical sciences including but not limited to Civil Engineering, Materials Science and Metallurgical Engineering, Mechanical Engineering, Aeronautical and Aerospace Engineering, Petroleum Engineering, Geological Engineering, Mining Engineering, Chemical Engineering and Environmental Engineering.			

Module 12

Code	Course/Module Title	ECTS	Semester
ATU13026	Fundemantals of Elictricity	6	2
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	2	78	72
Description			
he overview of development and current trends in electrical engineering and computer science. Fundamentals of electricity, capacitance. Electric current and electrical phenomena. Fundamentals of magnetism, inductance and mutual inductance. Concepts, elements and topology of electric circuits. Kirchhoff's laws. Elementary DC circuits. Circuits with capacitors. Complex DC circuits (bridge circuit, star-delta transformation, circuits with multiple sources). Superposition, Thevenin's, Norton's and Millman's theorem. Current and voltage waveforms. Complex calculus in analysis of AC circuits. RLC circuits			

Module 13

Code	Course/Module Title	ECTS	Semester
ATU13031	Fluid Mechanics -static	5	3
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	63	62
Description			
This section includes a description of the module, 100-150 words			

Module 14

Code	Course/Module Title	ECTS	Semester
ATU13032	Fundemantls of Electronics	5	3
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	63	62
Description			
This section includes a description of the module, 100-150 words			

Module 15

Code	Course/Module Title	ECTS	Semester
ATU13033	Theory of flight	8	3
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
5	2	108	92
Description			
This section includes a description of the module, 100-150 words			

Module 16

Code	Course/Module Title	ECTS	Semester
ATU13034	Thermodynamic - ideal Gas	4	3
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	63	37
Description			
This section includes a description of the module, 100-150 words			

Module 17

Code	Course/Module Title	ECTS	Semester
ATU13035	Manufacturing Processes	4	3
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	1	48	52
Description			
This section includes a description of the module, 100-150 words			

Module 18

Code	Course/Module Title	ECTS	Semester
ATU13036	Fundamentals of Engineering Mechanics-Dynamics	4	3
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	1	48	52
Description			
This section includes a description of the module, 100-150 words			

Module 19

Code	Course/Module Title	ECTS	Semester
ATU13041	Fluid Mechanics-Dynamics	3	4
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	1	48	27
Description			
This section includes a description of the module, 100-150 words			

Module 20

Code	Course/Module Title	ECTS	Semester
ATU13042	CAE Principals	5	4
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
1	3	63	62
Description			
This section includes a description of the module, 100-150 words			

Module 21

Code	Course/Module Title	ECTS	Semester

ATU13043	Engineering Mechanics-Applied of Dynamics	4	4
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	1	48	52
Description			
This section includes a description of the module, 100-150 words			

Module 22

Code	Course/Module Title	ECTS	Semester
ATU13044	Strength of Materials	8	4
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
4	3	108	92
Description			
This section includes a description of the module, 100-150 words			

Module 23

Code	Course/Module Title	ECTS	Semester
ATU13045	Programming python	6	4
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
1	4	78	72
Description			
This section includes a description of the module, 100-150 words			

Module 24

Code	Course/Module Title	ECTS	Semester
ATU13046	Thermodynamic - Steam	4	4
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	63	37
Description			
This section includes a description of the module, 100-150 words			

Module25

Code	Course/Module Title	ECTS	Semester

ATU13051	Aerodynamic -Fundemantals	4	5
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	1	48	52
Description			
This section includes a description of the module, 100-150 words			

Module 26

Code	Course/Module Title	ECTS	Semester
ATU13052	Digital Techniquues & Electronic instrument system	7	5
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
4	3	108	67
Description			
This section includes a description of the module, 100-150 words			

Module 27

Code	Course/Module Title	ECTS	Semester
ATU13053	Eng. & Numerical Analyses	8	5
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
6	1	108	92
Description			
This section includes a description of the module, 100-150 words			

Module 28

Code	Course/Module Title	ECTS	Semester
ATU13054	Gas Dynamics	4	5
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	63	37
Description			
This section includes a description of the module, 100-150 words			

Module 29

Code	Course/Module Title	ECTS	Semester
ATU13055	Aircraft Engines	4	5
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)

2	2	63	37
Description			
This section includes a description of the module, 100-150 words			

Module 30

Code	Course/Module Title	ECTS	Semester
ATU13056	Industerial Engineering	3	5
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	0	33	42
Description			
This section includes a description of the module, 100-150 words			

Module 31

Code	Course/Module Title	ECTS	Semester
ATU13061	Aerodynamic -Applied	4	6
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	1	48	52
Description			
This section includes a description of the module, 100-150 words			

Module 32

Code	Course/Module Title	ECTS	Semester
ATU13062	Mechanical Eng. Design	8	6
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
5	2	108	92
Description			
This section includes a description of the module, 100-150 words			

Module 33

Code	Course/Module Title	ECTS	Semester
ATU13063	Heat Transfer	6	6
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)

4	2	93	57
Description			
This section includes a description of the module, 100-150 words			

Module 34

Code	Course/Module Title	ECTS	Semester
ATU13064	Gas Turbine Engines	4	6
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	63	37
Description			
This section includes a description of the module, 100-150 words			

Module 35

Code	Course/Module Title	ECTS	Semester
ATU13065	Gas Dynamics-Applyied	4	6
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	63	37
Description			
This section includes a description of the module, 100-150 words			

Module 36

Code	Course/Module Title	ECTS	Semester
ATU13066	Theory of Machines	4	6
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	1	48	52
Description			
This section includes a description of the module, 100-150 words			

Module 37

Code	Course/Module Title	ECTS	Semester
ATU13071	Aircraft Structure- fundemantals	3	7
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)

2	1	48	27
Description			
This section includes a description of the module, 100-150 words			

Module 38

Code	Course/Module Title	ECTS	Semester
ATU13072	Aircraft Vibration	8	7
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
5	2	108	92
Description			
This section includes a description of the module, 100-150 words			

Module 39

Code	Course/Module Title	ECTS	Semester
ATU13073	mechnical Aircraft system & Maintanance	4	7
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	1	48	52
Description			
This section includes a description of the module, 100-150 words			

Module 40

Code	Course/Module Title	ECTS	Semester
ATU13074	Aeronautical legislation & Human Factors	2	7
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	0	33	17
Description			
This section includes a description of the module, 100-150 words			

Module 41

Code	Course/Module Title	ECTS	Semester
ATU13075	Automatic Control	8	7
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
5	2	108	92
Description			

This section includes a description of the module, 100-150 words

Module 42

Code	Course/Module Title	ECTS	Semester
ATU13076	CAM (computer Aided manufacturing)	5	7
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
0	4	63	62
Description			
This section includes a description of the module, 100-150 words			

Module 43

Code	Course/Module Title	ECTS	Semester
ATU13081	Aircraft Design	8	8
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
5	2	108	92
Description			
This section includes a description of the module, 100-150 words			

Module 44

Code	Course/Module Title	ECTS	Semester
ATU13082	Propolsion Systems	7	8
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
5	2	93	82
Description			
This section includes a description of the module, 100-150 words			

Module 45

Code	Course/Module Title	ECTS	Semester
ATU13083	Aircraft Stability	6	8
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	2	78	72

Description
This section includes a description of the module, 100-150 words

Module 46

Code	Course/Module Title	ECTS	Semester
ATU13084	Aircraft Structure- Applied	3	8
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	1	48	27
Description			
This section includes a description of the module, 100-150 words			

Module 47

Code	Course/Module Title	ECTS	Semester
ATU13085	Elec./Aircraft system & Maintanance	4	8
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	1	48	52
Description			
This section includes a description of the module, 100-150 words			

Module 48

Code	Course/Module Title	ECTS	Semester
ATU13086	Final Project	2	8
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
0	2	33	17
Description			
This section includes a description of the module, 100-150 words			

Contact

Program Manager:
Ali Shakir Baqir Al Jaberi | Ph.D. in Mechanical Engineering | Prof.
Email: coj.alish@atu.edu.iq
Mobile no.: +9647727501102

Program Coordinator: Mohammed Al-Faham

John Smith | Ph.D. in Mechanical Engineering | Assistant Prof.
Email: coj.moh@atu.edu.iq
Mobile no.: +9647817802016
