UNMANNED AERIAL VEHICLE TECHNOLOGY AND OPERATOR

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
İHA101	Aviation Technology and Terminology	(3,0,0)	3	4	Compulsory

History. Basic Physical Amounts. Basic concepts. Standard Atmosphere. Geometric Properties of the Wing. Aerodynamic Properties of the Wing. Fuselage. Tail Surfaces (Stability and Control). Landing Gear. Piston Engines. Gas Turbine Engines. Hydraulic Systems. Flight Control Systems. Pneumatic Systems. Pressurization and Oxygen Systems. Protection and Emergency Systems. Aircraft Electrical Systems. Flight Instruments and Display Systems. Aircraft Performance.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
İHA102	Propulsion System Selection	(2,2,0)	3	4	Compulsory

Engines Powered by Chemical or Nuclear Energy. Heat Engine. External Combustion Engine. Internal-combustion engine. Nano Engine. Multi Fuel Engine. Ion Engine. Electric Motors. Reciprocating Engines Spark Ignition. By Compression Ignition or Reciprocating Action (Including Rotational Ones). Rotary Piston Linear Horizontal Opposite Multibank Radial Engine. Two Stroke Engine. Four Stroke Engine. Hybrid-Electric UAV Modeling and Design. Hybrid-Electric Configurations. Serial Hybrid Configuration. Parallel Hybrid Configuration. Hybrid-Electric UAV Modeling and Design.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
İHA104	Aerodynamics and Avionics System	(3,0,0)	3	4	Compulsory

Physical Properties of Fluids. Aerostatic Atmosphere (Standard Atmosphere). Basic laws of thermodynamics. Bernoulli equation and its applications. Wing and Airfoil Geometry. Basic flight performance. Avionics Systems. Radio control systems. Image systems. Ground control station components. GPS principles. Transponder Detect and Avoid Control systems. Payloads and sensor systems.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
İHA105	Materials	(2,1,0)	3	4	Compulsory

Crystal Geometry and Crystal Structures. Structure of Materials and Crystal Defects. Internal Structure Formation in Materials. Phase Diagrams and Transformations. Mechanical Behaviors of Materials and Physical Properties of Materials. Material Selection According to Mechanical Properties. Metallic Materials. Manufacturing and Engineering Applications. Polymeric Materials. Manufacturing and Engineering Applications. Ceramic Materials. Production and Engineering Applications. Composite Materials. Manufacturing and Engineering Applications. Corrosion Behaviors of Materials.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
İHA106	UAV Systems Production and Tests	(3,2,0)	4	5	Compulsory

Test processes for Functional Safety, Electrical Safety, Electromagnetic compatibility (EMC), General Performance Characteristics, Benchmark for Marketing Claims, Battery Safety and Performance, Software Verification, Hazardous chemicals, packaging, and Supplier Verification. Non-destructive control methods. Classification of discontinuities. Liquid penetrating technique.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
ELE100	Electronic Sensors	(3,0,0)	3	3	Elective

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course

Temperature Sensors. Humidity Sensors. Speed Sensors. Vibration Sensors. Acceleration Sensors. Location Sensors. Proximity Sensors. Pressure Sensors. Flow Sensors. Level Sensors. Pulse (Force) Sensors and their converters to electrical expression. Experimental studies.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
ELE108	Basic Electronics	(2,0,0)	2	3	Compulsory

Introduction, Basic Concepts, Control of Electricity, Resistors, Semiconductors, Diodes and Types, Capacitors, Transistors, Piezoelectric, Integrated Circuits, Digital Electronics, Logic Gates, Numerical Systems.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
ISG101	Occupational Health and Safety in Aviation	(2,0,0)	2	3	Compulsory

Definition, scope and content of Occupational Health and Safety (OHS). Its historical development and formation. International and national institutions related to OHS. Legal legislation on which it is based. Organization within the institution.Hygienic, psychological, ergonomic and technical dimensions. Occupational diseases and accidents. Emergency plans. Precautions to be taken in different environments, techniques and conditions. Measures to be taken in different environments, techniques and conditions. Ethics in Working Life. Adult Education, Health and Safety Education at Workplace. Its place and importance in civil aviation.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
MET102	Meteorology	(2,1,0)	3	4	Compulsory

Definition, scope and content of Occupational Health and Safety (OHS). Its historical development and formation. International and national institutions related to OHS. Legal legislation on which it is based. Organization within the institution.Hygienic, psychological, ergonomic and technical dimensions. Occupational diseases and accidents. Emergency plans. Precautions to be taken in different environments, techniques and conditions. Measures to be taken in different environments, techniques and conditions. Ethics in Working Life. Adult Education, Health and Safety Education at Workplace. Its place and importance in civil aviation.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
İHA201	Aircraft Certification and Pilotage	(2,2,0)	3	4	Compulsory

National and international regulations governing aircraft certification activities. TOO Design Organization Approval. UOO Production Organization Approval (POA). Issuance of type certificate, restricted type certificate, additional type certificate and future amendments to these certificates. Issuance of certificates of airworthiness, restricted airworthiness certificates, special flight permits and commissioning (departure) certificates. Issue of repair design approvals. Demonstration of compliance with environmental protection requirements. Issue of noise certificates. Identification of products, parts and devices. Certification of parts and devices. Authorization of design and production organizations. Publication of airworthiness directives. Import and export of products, parts and devices. Configuration Management. UAV Accreditation Procedures Operational Limitations for Reporting an Accident or In-flight Emergency: Altitude, Speed, Minimum Visibility, and Cloud Void. Compliance with National and International Regulations: Flight Log, Inspections and Required Documents, Flying UAVs from a Moving Vehicle, Flying at Night, Flying Visual Line of Sight, Airspace Authorizations and Waivers, Navigation and Operation. Aircraft, Flight Dynamics and Flight Principles, ATC Procedures and Aviation Fresiology. Controllable Systems, Maintenance and Repair. Air Law and Responsibilities, Navigation and Operations R/T radio communication.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
İHA205	Autonomous Aircraft Technique	(3,2,0)	4	5	Compulsory

Definition and Analysis of Autonomous Systems. Autonomic Nervous System and Hypothalamus. Intelligent and Autonomous Systems. Energy Harvesting for Autonomous Systems. Autonomous (Driverless) Vehicles and Subsystems Constituting the Autonomous Vehicle. Precise Positioning System and Global Orbital Planning System. Environmental Perception and Meaning System. Decision Making System. Local Orbital Planning System. Decision Enforcement and Support System. In-flight thrust measurement, Structronics, Automatic camera control and feature recognition. High precision automatic landing. New Low cost high precision manufacturing processes. High precision height sensing. Horizon detection and automatic tracking of vehicles.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
İHA207	Wireless Communication and Control Systems	(2,2,0)	3	4	Compulsory

Overview of wireless communication systems. Today's wireless communication systems. Path loss, shading and statistical multipath channel models. Capacity of wireless communication channels. Error rate performance of digital modulation techniques in wireless communication channels. Diversity techniques and performance analysis. Channel equalization techniques for wireless communication systems. Channel coding in wireless communication channels. Multi-antenna techniques and MIMO communication. Multi-carrier modulation and OFDM systems. Wideband communication. Multi-user communication systems and random media access protocols. Fundamentals and analysis of cellular wireless communication systems. UAV control systems and analysis. To be able to design and select the control system.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
ELE207	Microcontrollers	(2,1,0)	3	4	Elective

History and development processes of microcontrollers. Comparison of microcontrollers, microprocessors and their architectures. Hardware structure and features of microcontrollers. Microcontroller types and basic application areas. Introduction to microcontroller programming and use of programmer interface. Creating algorithms with microcontroller and realization of various internal applications. Use of digital inputs and outputs of microcontrollers. Various applications via analog and digital signal conversion processes and microcontrollers. Sensors that are frequently used with microcontrollers and applications of these sensors. Ambient temperature and humidity measurement with microcontrollers. Motion detection with microcontrollers. Motor control with microcontrollers. Wireless data transfer applications and internet of things concept with microcontrollers. Real-time visualization of data with microcontrollers and LCD.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
ELE209	Fault Analysis	(2,1,0)	3	3	Elective

Error, Fault, Continuity and Reliability Concepts. Fault detection methods. Fault isolation. Fault detection flow and block diagrams. Electronic circuit element failure detection methods. Maintenance, repair and fault detection methods in electrical machines and systems. Maintenance, repair and fault detection methods in Mechanical Devices. Electronic Testing Equipment and Usage. Ability to Check the Health of Circuit Elements. Mechanical Testing Equipment and Usage. Being able to Check the Robustness of Mechanical Circuit Elements. Advanced diagnostic devices. Failure and maintenance charts.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
ENG115	English I	(6,0,0)	6	8	Compulsory

This course aims at A1 and A2 levels in English, as outlined by the Common European Framework of Reference (CEFR). The course content includes reading, writing, listening and speaking components of general English.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
ENG116	English II	(6,0,0)	6	8	Compulsory

Reading and understanding simple information and texts; and filling out forms and writing short texts on personal information, communicating in familiar situations; Managing most situations related to living and traveling to express or express ideas of personal interests such as experiences, events, hopes and passions, and to express ideas, reasons and plans.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
ENG123	English I	(2,2,0)	3	4	Compulsory

This course aims at A1 and A2 levels in English, as outlined by the Common European Framework of Reference (CEFR). The course content includes reading, writing, listening and speaking components of general English.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
ENG124	İngilizce II	(2,2,0)	3	4	Compulsory

This course aims at B1 level in English, as outlined by the Common European Framework of Reference (CEFR). The course content includes reading, writing, listening and speaking components of general English at B1 level.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
ENG215	Listening and Pronunciation	(2,0,0)	2	4	Compulsory

Aviation English is an intensive English language course designed for professional flight students who need to develop their English language proficiency in accordance with the International Civil Aviation Organization (ICAO). This is a fluency-based course, which is designed to engage and inform students by exposing them to a wealth of stimulating and varied listening material. The emphasis on aviation related real word tasks assists the development of students' (spoken) accuracy in grammar, vocabulary, functions and pronunciation.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
ENG216	Oral Communication Skills	(2,0,0)	2	4	Compulsory

Organization, identifying and producing different types of presentations, descriptive, narrative, persuasive and informative presentations and covering visual aids as well as research methods are some of the topics that will be covered.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
ENG217	Aviation English I	(3,0,0)	3	5	Compulsory

Aviation English is an intensive English language course designed for professional aviator students who need to develop their English language proficiency in accordance with the International Civil Aviation Organization (ICAO). This is a fluency-based course, which is designed to engage and inform students by exposing them to a wealth of stimulating and varied listening material. The emphasis on aviation related real word tasks assists the development of students' (spoken) accuracy in grammar, vocabulary, functions and pronunciation.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
ENG218	Havacılık İngilizcesi II	(3,0,0)	3	5	Compulsory

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course

Aviation English II is an intensive English language course designed for professional aviator students who need to develop their English language proficiency in accordance with the International Civil Aviation Organization (ICAO). This is a fluency-based course at an advanced level, which is designed to engage and inform students by exposing them to a wealth of stimulating and varied listening material. The emphasis on aviation related real word tasks assists the development of students' (spoken) accuracy in grammar, vocabulary, functions and pronunciation.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
BIL101	Education Technologies	(3,0,0)	3	3	Compulsory

Basic concepts of information technologies, software and hardware, operating systems in general, word processing programs, spreadsheet programs, data presentation, internet use in education, the effects of information technologies on social structure and its place in education, information systems security and related ethical concepts.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
FIZ101	Physics	(3,0,0)	4	6	Compulsory

Measurement, vectors, kinematics, force, mass. Newton's laws, applications of Newton's laws. Work and kinetic energy. Conservation of linear momentum. Impulse, collisions, rotation, moments of inertia. Torque, angular momentum, conservation of angular momentum, static equilibrium.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
MAT103	Mathematics	(3,0,0)	3	4	Compulsory

Functions, limits and continuity. Derivatives. Mean value theorem. Sketching graphs. Definite integrals, infinite integrals (antiderivatives). Logarithmic, exponential, trigonometric and inverse trigonometric functions and their derivatives. L'Hospital's rule. Techniques of integration. Applications of the definite integral, improper integrals.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
AIT101	Atatürk's Principles and the History of Turkish Revolution I	(2,0,0)	2	2	Compulsory

The reasons that prepared the collapse of the Ottoman Empire and the Turkish Revolution. Disintegration of the Ottoman Empire, Tripoli War, Balkan Wars, First World War. Armistice of Mudros. The situation of the country in the face of the occupations and the reaction of Mustafa Kemal Pasha, the departure of Mustafa Kemal Pasha to Samsun. The opening of the Turkish Grand National Assembly of the National Struggle. Treaty of sevr. The Lausanne Peace Treaty. Atatürk's Principles: Republicanism, Nationalism. Populism, Statism. Secularism, Revolutionism.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
AIT102	Atatürk's Principles and the History of Turkish Revolution II	(2,0,0)	2	2	Compulsory

Abolition of the Sultanate; Proclamation of the Republic; Taking the Election Decision in the First Parliament; Establishment of the People's Party; Ankara Becoming the Capital, Proclamation of the Republic and Reactions; Abolition of the Caliphate (The Emergence of the Problem of the Caliphate and the Events Preparing the Abolition of the Caliphate), Progressive Republican Party and Sheikh Said Rebellion; Law of Takrir-i Sukun; Closing the Progressive Republican Party; İzmir Assassination

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course

Attempt), Free Republican Party and Menemen Incident; An Overview of Atatürk-İnönü Separation, Revolutions and Their Goals; Revolutions in Law; 1924 Organization-ı Esasiye Law; Adoption of the Turkish Civil Code; Adoption of Other Basic Laws; Revolutions in Women's Rights, Education and Culture; The Law of Unification of Education; Adoption of the New Turkish Alphabet; New Understanding of History and Language; From Darülfünun to Istanbul University; Fine Arts, Developments in Economics; Late Ottoman Economy; Turkish Economy Congress and Its Results; Economic Activities in the First Years of the Republic; Transition to the Practice of Statism, Revolutions Made in Social Life (Modernization in Clothing: The Law on Wearing Hats; Closure of Lodges, Zawiyas and Tombs, Adoption of International Time, Calendar, Numbers, Measurements and Week Holidays; Adoption of the Law on Surnames; Developments), Turkey's Foreign Policy in Atatürk Era; Years 1919-1923; Years 1923-1930, Going to the Second World War and Turkish Foreign Policy 1931-1939, Principles of Atatürk; General Overview of Atatürk's Principles; Republicanism, Nationalism, Populism, Statism, Secularism, Revolutionism, İsmet İnönü Period (1938-1950); Domestic Policy During the Second World War; Establishment of the Democratic Party, Democratic Party Period (1950-1960); May 27 Military Intervention and National Unity Committee

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
TUR101	Turkish I: Written Expression	(2,0,0)	2	2	Compulsory

Reading passages related to the chapter; grammar studies; vocabulary and translation activities; listening activities; debates on current issues related to the department (Repetition of tenses, Internet history, Health and medicine, passive frameworks, Social issues, Environmental issues, Repetition of modals, Law and punishment, repetition of adjective phrases, Language and Literature, Repetition of noun phrases.

Course Code	Course Name	(T,A,L)	Credit	ECTS	Compulsory/Elective Course
TUR102	Turkish II: Oral Expression	(2,0,0)	2	2	Compulsory

Spelling, punctuation and composition (punctuation marks, other signs), Spelling, spelling rules (capital letters, spelling of numbers, spelling of abbreviations, spelling of quoted words), Composition (purpose of composition, method of writing composition), plan in composition, introduction, development, result, Expression features, clarity in expression, simplicity in expression, clarity and sincerity in expression, Expression disorders (using synonyms in sentences), Misuse of idioms, Expression styles (explanation, story, concise expression, description, satire, portrait, proof, speech, Verbal expression types (daily and impromptu speech, prepared speech, panel discussion, debate, panel), Written expression types (letter, telegram, greeting, invitation, literary letter), business letters, official letter, petition, report, report, decision, advertisement, conversation, criticism, memoir, travel writing, interview, survey, autobiography, biography, novel, story, fairy tale, fable, theatre, tragedy,drama ,scenario) .