

FIZ103 – Physics (2 Credits, 4 ECTS)

The content of the course is Measurement, Unit Systems and Physical Quantities, Coordinate Systems, Vector Operations, Kinematics, Dynamics of Motion. Examining Static Equilibrium of Rigid Bodies, Work, Energy and Power, Impulse and Momentum, Waves and Sound, Properties of Materials, Electrostatics, Electric Field and Potential, Magnetism, Electromagnetic Induction . The purpose of this course is to provide students with knowledge of the basic concepts and principles of physics and to provide them with the ability to apply this knowledge in their professional field courses.

Textbook: RA Serway, W. John, “Physics for Science and Engineering I (Mechanics)”, Translation Editor: Kemal Çolakoğlu, , Palme Publications, 2002. Bekir Karaoğlu, “Physics for Universities”, 3rd Edition, Ankara, Seçkin Publications, 2015. İsmail Sarı, Kenan Büyüktaş, “Physics for Vocational Schools”, 8th Edition, Ankara, Seçkin Publications, 2018. HD Young, RA Freedman, (2013). “University Physics Volume I”, Translation Editor: Hilmi Unlu, 12th Edition, Pearson Longman Publishing House.

MAT103-Mathematics I (3 credits, 4 ECTS)

Defining basic number concepts, reinforcing numbers with examples, sets, Learning inequalities, problems, equations, functions and trigonometry

Textbook: Çelik, B., Cangül, İ.N., Çelik, N., Bizim, O., Öztürk, M., 2010. Basic Mathematics. Dora Publishing, 5th Edition. ISBN: 6059666558.

Textbook : Mathematics with Exercises, Exercise Publishing.

ENT115 English I (6 Credits, 8 ECTS)

It is a compulsory English course that provides basic language skills such as reading, writing, listening and speaking at an integrated level.

Textbook: English File 4th Edition: Elementary Student's Book Christina Latham-Koenig, Clive Oxenden, Jerry Lambert 978-0-19-403159-2

Supplementary Books: English File 4th Edition: Elementary Workbook / Christina Latham- Koenig, Clive Oxenden, Jerry Lambert / 978-0-19-403289-6

HYO 111 Introduction to Civil Air Transportation course (2 Credits, 3 ECTS)

This course provides an overview of the aviation industry. The course covers the history, fundamental concepts, and how civil aviation operates. National and international aviation authorities, aviation legislation, and regulations are examined. Types of air transportation, airline operations, and airport management are discussed. The course aims to provide students with a fundamental understanding of civil aviation.

Textbook: "Air Transportation: A Management Perspective" – John G. Wensveen
"Fundamentals of Air Transport Management" – Senguttuvan PS
"The Global Airline Industry" – Peter Belobaba, Amedeo Odoni, Cynthia Barnhart
"Introduction to Air Transport Economics" – Bijan Vasigh, Ken Fleming, Thomas Tacker
SHGM and EASA Legislation Documents (National and international civil aviation regulations)

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Textbook: "Air Transportation: A Management Perspective" – John G. Wensveen
"Fundamentals of Air Transport Management" – Senguttuvan PS
"The Global Airline Industry" – Peter Belobaba, Amedeo Odoni, Cynthia Barnhart
"Introduction to Air Transport Economics" – Bijan Vasigh, Ken Fleming, Thomas Tacker
SHGM and EASA Legislation Documents (National and international civil aviation regulations)

HYO114 Occupational Health and Safety course (2 Credits, 3 ECTS)

This course examines health and safety practices in the workplace. The course examines the fundamental concepts of occupational health and safety, legal regulations, and the prevention of workplace accidents. It focuses on topics such as risk analysis, hazard assessment, and emergency management. Occupational safety practices and international standards specific to the aviation sector are discussed. The course aims to raise students' awareness of providing a safe work environment.

Textbook: "Occupational Health and Safety" – David L. Goetsch
"Introduction to Occupational Health and Safety" – Phil Hughes, Ed Ferrett
"Fundamentals of Occupational Safety and Health" – Mark A. Friend, James P. Kohn
"Occupational Health and Safety" – Adem ÖĞÜT
Occupational Health and Safety Legislation Documents (Turkish Occupational Health and Safety Law, EASA and ICAO regulations)

HYO113 Aviation Technologies and Terminology (2 Credits, 3 ECTS):

The content of this course is; After learning the aviation alphabet, national and international civil aviation authorities, duties and inspections of the national civil aviation authority, duties of international civil aviation authorities and associations, air transportation terms, airport terms, weather terms, aircraft terms, flight terms, aircraft

control surfaces, emergency terms, document terms, health and first aid terms, students will be asked to make a presentation containing these terms with the group they will form.

Textbook: "The Cambridge Aerospace Dictionary" – Bill Gunston, "Dictionary of Aeronautical Terms" – Dale Crane

"Aviation English: A Lingua Franca for Pilots and Air Traffic Controllers" – Dominique Estival, Candace Farris, Brett Molesworth

"Fundamentals of Aerodynamics" – John D. Anderson

"Aircraft Systems: Mechanical, Electrical, and Avionics Subsystems Integration" – Ian Moir, Allan Seabridge

BIL101 Introduction to Information Technologies (3 Credits, 4 ECTS):

This course explores the fundamental concepts and applications of information technologies. It examines computer hardware and software, operating systems, network systems, and internet technologies. Current topics such as information security, data management, and cloud computing are discussed. It introduces the use of basic office software and the logic of algorithms. The course aims to equip students with the skills to navigate the digital world consciously and effectively.

Textbook: "Introduction to Computers and Information Technology" – Emergent Learning "Discovering Computers: Fundamentals" – Misty E. Vermaat

"Computer Science: An Overview" – Glenn Brookshear

"Information Technology for Management" – Efraim Turban, Linda Volonino

"Information Technologies and Internet Usage" – Ahmet Çağlayan, Hasan Dağ

HYO112 Basic Aircraft and Flight Information (2 Credits , 3 ECTS)

This course covers the fundamental components of aircraft, aerodynamic principles, and flight mechanics. It examines aircraft structures, control surfaces, engine systems, and basic flight instrumentation. It also covers the effects of the atmosphere on flight, aircraft performance parameters, and flight dynamics. It provides an introductory course on basic aviation terminology and air traffic management. The course aims to provide students with a foundational understanding of the physical principles of flight and the fundamental operating principles of aircraft.

Textbook i : "Introduction to Flight" – John D. Anderson

"Aircraft Performance & Design" – John D. Anderson

"Pilot's Handbook of Aeronautical Knowledge" – Federal Aviation Administration (FAA)

"Basic Aerodynamics: An Introduction to the Science of Flight" – Gary F. Spedding

"Fundamentals of Flight" – Richard S. Shevell

TUR101-Turkish I: Written Expression (2 Credits, 2 ECTS)

This course will focus on students' effective and accurate use of written materials.

Various types of written expression will be examined and critically analyzed through activities focused on comprehension, expression, reading, and writing. Punctuation and

spelling rules, the foundations of written expression, will be introduced, and the correct use of these rules will be ensured for effective and effective expression.

Textbook: Yakıcı, A. (2006). Turkish Language I, Ed. M. Doğan, Gazi Bookstore, Ankara.

ENT116 English II (6 Credits, 8 ECTS)

It is a compulsory English course that provides basic language skills such as reading, writing, listening and speaking at an integrated level.

Course Book : English File 4th Edition: Elementary Student's Book

Companion Book: Christina Latham-Koenig, Clive Oxenden, Jerry Lambert 978-0-19-403159-2

HIA121 Propulsion System Selection (2 Credits, 3 ECTS)

This course covers the selection and evaluation of suitable propulsion systems for aircraft. Various engine types are examined, including piston engines, turbojets, turbofans, turboprops, and electric propulsion systems. Performance criteria, efficiency calculations, and environmental impacts of propulsion systems are discussed. Engineering methods used to select the most appropriate engine for a flight mission profile are discussed. The course aims to equip students with the competence to select an engine appropriate for the operational requirements of aircraft .

Textbook: " Aircraft Engine Design" – Jack D. Mattingly
"Gas Turbine Theory" – H.H. Saravanamuttoo, GFC Rogers, H. Cohen
"Aircraft Propulsion" – Saeed Farokhi
"Introduction to Flight" – John D. Anderson (Propulsion systems section)
"Aircraft Powerplants" – Michael J. Kroes, Thomas W. Wild

HYO121 Introduction to Meteorology (2 Credits, 3 ECTS)

This course covers the fundamentals of atmospheric structure, weather phenomena, and meteorological processes. It examines the layers of the atmosphere and basic meteorological parameters such as pressure, temperature, humidity, and wind. It provides an introduction to weather forecasting methods, weather maps, and aviation meteorology. It also covers meteorological influences on flight operations and the effects of weather on safe flight. The course aims to equip students with an understanding of the importance of meteorology in aviation and the ability to understand basic weather forecasting.

HIA122 Aerodynamics and Avionics System (3 Credits, 4 ECTS)

This course covers the fundamentals of aircraft aerodynamics and avionics systems. The aerodynamics section examines the fundamental principles of airflow, lift and drag

forces, airfoils, and flight performance. The avionics systems section covers aircraft control systems, navigation, communication, and flight management systems. Digital avionics and automatic flight control systems used in modern aircraft are discussed. The course aims to provide students with an understanding of aircraft aerodynamics and the operating principles of avionics systems.

Textbook: "Fundamentals of Aerodynamics" – John D. Anderson

"Introduction to Flight" – John D. Anderson (Aerodynamics section)

"Aircraft Systems: Mechanical, Electrical, and Avionics Subsystems Integration" – Ian Moir, Allan Seabridge "Avionics: Elements, Software and Functions" – Cary R. Spitzer

"Aircraft Electrical and Avionics Systems" – Mike Tooley

HIA123UAV Systems Production and Testing (2 Credits, 3 ECTS)

This course covers the design, production, and testing processes of unmanned aerial vehicle (UAV) systems. UAV components, material selection, manufacturing methods, and assembly processes are covered. Flight test procedures, performance evaluation criteria, and error analysis are examined. UAV system integration, maintenance processes, and certification requirements are discussed. The course aims to equip students with an understanding of engineering principles and testing processes in UAV production.

Textbook: "Introduction to Unmanned Aircraft Systems" – Douglas M. Marshall, Richard K. Barnhart, Eric Shappee

"Small Unmanned Aircraft: Theory and Practice" – Randal W. Beard, Timothy W. McLain

"Unmanned Aircraft Systems: UAVS Design, Development and Deployment" – Reg Austin

"Drones and Target Detection" – Anis Koubaa (Especially for testing processes)

UAV Legislation and Certification Documents – EASA, FAA, SHGM regulations

HIA124 Basic Electronics (2 Credits, 3 ECTS)

This course covers the fundamental components, operating principles, and applications of electronic circuits. It examines the properties and functions of basic electronic elements such as resistors, capacitors, inductors, diodes, and transistors. Fundamental topics such as electrical circuit analysis methods, Ohm's Law, Kirchhoff's Laws, and AC/DC circuit analysis are covered. It also provides information on the fundamental concepts of analog and digital electronic systems, circuit design, and measurement techniques. The course aims to provide students with an understanding of the operating principles and application areas of electronic circuits.

Textbook: "Fundamentals of Electric Circuits" – Alexander, Sadiku

"Electronic Principles" – Albert Paul Malvino, David Bates

"Introduction to Electric Circuits" – Richard C. Dorf, James A. Svoboda

"Basic Electronics for Scientists and Engineers" – Robert H. Hunter

"Practical Electronics for Inventors" – Paul Scherz, Simon Monk

It may be helpful to check official sources as determined by the course instructor.

HIA125 Computer Aided Technical Drawing (2 Credits, 3 ECTS) :

Introduction to technical drawing, basic definitions, lines, line types and properties, computer-aided of design and related software. Interfaces and basic commands in computer software. Preparation of 2D technical drawings, guide lines and their use, related drawing commands. Editing commands and their use. Scanning, file organization, layers and their use. Entering text, lists, and dimensions. X-block. Printing drawings, scaling, and letterhead. Various file types. 3D modeling: Terminology, basic modeling techniques, sectioning. Advanced commands and computer-aided design examples.

With the Textbook: DHMi-Aviation-Terms-Dictionary, Introduction to Flight for Aeronautical and Astronautical Engineers, Author: John D. Anderson Jr., Translator: Adil Yükselen, Publisher: Nobel Academic Publishing, World Planes, Helicopters and Unmanned Aerial Vehicles from A to Z Melih Cemal Kuşhan, Selim Gürgen Nisan Bookstore.

HIA126Materials Science (2 Credits, 3 ECTS)

The purpose of materials science is to teach the production methods of cast iron, steel, and nonferrous metals. The principles and classification of metal casting of all metals. The plastic-forming of metals. processing and principles. Classification and Evaluation Techniques of Materials and Welding Techniques and Principles. Fundamentals of material development and heat treatment technology. Marine engineering materials and criteria required for different applications.

Textbook: "Materials Science and Engineering: An Introduction" – William D. Callister
"Introduction to Materials Science and Engineering" – James F. Shackelford
"Materials Science and Engineering: A First Course" – V. Raghavan
"Fundamentals of Materials Science and Engineering" – William F. Smith, Javad Hashemi
"Materials Science for Engineers" – FS Mathews, AJ De Oliveira

HYO123 Introduction to Aviation Security. (2 Credits, 3 ECTS)

An Overview of Terrorism - History of Attacks on Civil Aviation. International Organizations and Conventions. Regulations Regarding Aviation Security in Turkey / MSHGP. Physical Security Measures and Security Equipment. Security Areas and Applications. Case Studies. Air Cargo Security. Human Resources in Aviation Security. Cyber Attacks and Air Traffic Management Security. New Trends in Aviation Security. Incident Reporting / Contingency Measures, Protection of Aircraft. Communication and Body Language / Case Studies.

Textbook:

"Aviation Safety: A Balanced Industry Approach" – Robert W. Kaps
"Introduction to Air Transport Economics: From Theory to Applications" – Bijan Vasigh
"Safety Management Systems in Aviation" – Alan J. Stolzer, Carl D. Halford, Robert P. Goglia
"Aviation Safety: A Global Perspective" – Tim JP McCulley

"Handbook of Aviation Safety: A Practical Guide to the Safety Management System (SMS)" – David A. Andelman

TUR102-Turkish II: Oral Expression (2 Credits, 2 ECTS)

This course will focus on students' effective and accurate use of oral and written communication tools. The course will focus on understanding, explaining, reading, and writing activities.

will be introduced, and students will be equipped with skills such as using body language, paying attention to emphasis and intonation, and presentation techniques.

Textbook: Yakıcı, A. et al. (2006). Turkish for Universities 2, Oral Expression. Gazi Bookstore Ankara, Akın Önen, Speaking Turkish in Turkish, 2007, İnkılap Publishing. Yusuf Çotuksöken, Turkish Language, v. III, Papatya Publishing, 2003.

ENT217 English for Aviation I (5 Credits, 6 ECTS):

The aim of this course to give sufficient information about Aviation English and make practice in aviation English conversation and pronunciation

Textbook: "English for Aviation" – Henry Emery, John Mitchell "Aviation English: A Lingua Franca for Pilots and Air Traffic Controllers" – ICAO (International Civil Aviation Organization) "Aviation English: A Handbook for English Language Learners" – Sanjay Sharma

HIA211 Workplace Application (5 Credits, 6 ECTS)

real-life workplace. It examines the workplace environment, daily workflows, professional behavior, and ethical principles in the relevant sector. Students have the opportunity to solve workplace problems and develop teamwork and communication skills. It also addresses fundamental topics such as workplace safety, occupational health, and productivity. The course includes practical applications covering a specific period of time. The course helps students prepare for the professional business world by applying their theoretical knowledge in practice.

Textbook: "The Basics of Hoshin Kanri" – Thomas L. Jackson (For workplace practices and strategic management) "Business Communication: Building Critical Skills" – Kitty O. Locker, Stephen Kaczmarek "Organizational Behavior" – Stephen P. Robbins, Timothy A. Judge "The Lean Startup" – Eric Ries (For workplace and practice processes) Occupational Health and Safety Legislation Documents (Local and international regulations)

HIA212 Aircraft Certification and Piloting (2 Credits, 3 ECTS)

This course covers the fundamentals of aircraft certification processes and piloting. It examines aircraft design, production, and compliance assessments with operational

requirements, as well as certification procedures by international aviation authorities. It also provides detailed information on piloting theory, flight training, flight control systems, and pilot duties. Important topics such as flight safety, flight performance, and aviation regulations are also addressed. The course aims to provide students with an understanding of aircraft certification processes and the fundamental principles of piloting.

Textbook: "Aircraft Certification" – Federal Aviation Administration (FAA)

"Introduction to Flight" – John D. Anderson (Pilotage section) "Aeronautical Knowledge: A Study Guide for Pilots" – Federal Aviation Administration (FAA) "Aircraft Systems and Certification" – Ian Moir, Allan Seabridge "Fundamentals of Flight" – Richard S. Shevell

HIA213 Wireless Communication and Control Systems (2 Credits, 3 ECTS)

This course examines the fundamental principles of wireless communication technologies and unmanned aerial vehicle (UAV) control systems. Topics include wireless communication methods, data transmission, modulation techniques, and frequency management. It also discusses UAV control systems, flight management systems, and remote control technologies. It also addresses the design of safe and efficient UAV control and communication systems, signal processing, and error management. The course aims to provide students with an understanding of the role of wireless communication and control systems in UAV applications.

Textbook: "Wireless Communications: Principles and Practice" – Theodore S. Rappaport

"Unmanned Aircraft Systems: UAVS Design, Development and Deployment" – Reg Austin

"Introduction to Communication Systems" – Ferrel G. Stremler

"Principles of Modern Communication Systems" – RSKSNVRK Chandra

"Wireless Communication Systems" – Andreas F. Molisch

HIA214 Autonomous Aircraft Technique (3 Credits, 4 ECTS)

This course covers the fundamental concepts of the design, development, and operation of autonomous aircraft. The ability of aircraft to fly autonomously is examined using technologies such as autonomous flight systems, sensors, artificial intelligence (AI), machine learning, and control algorithms. The course provides an in-depth understanding of the safety, operational limitations, and application areas of autonomous flight systems. It also covers key components of UAVs, such as autonomous control systems, navigation, and environmental sensing. Students will gain the ability to evaluate the potential benefits and challenges of autonomous flight in the aviation industry.

Textbook: "Introduction to Autonomous Robots: Mechanisms, Sensors, Actuators, and Algorithms" – Nikolaus Correll, Bradley Hayes

"Autonomous Aircraft: A Guide to the Future of Aviation" – Andreas M. Roos

"Robotics: Control, Sensing, Vision, and Intelligence" – KS Fu, RC Gonzalez, CSG Lee

"Unmanned Aircraft Systems: UAVS Design, Development and Deployment" – Reg Austin

"Autonomous Vehicles: Opportunities, Challenges, and the Future" – Rajeev KS

HYO212 Aviation Safety (2 Credits, 3 ECTS)

Explanation of basic concepts related to aviation safety. Explanation of the concepts of Safety and Security. Investigation of Unsafe Incidents. Aircraft Accidents and Unsafe Incidents. Examination of the relationship between Human Factors and the SHELL Model. Examination of factors affecting human performance. International History of Aviation Security and Security Incidents. Physical Security Measures at Airports. Human Error and Violations. Error Management. Swiss Cheese Model.

Textbook

"Aviation Safety: A Balanced Industry Approach" – Robert W. Kaps

"Introduction to Aviation Safety Management" – Richard H. Wood

"Safety Management Systems in Aviation" – Alan J. Stolzer, Carl D. Halford, Robert P. Goglia

"Aircraft Safety: Accident Investigations, Analyzes, & Applications" – Norman D. Blackburn

"Aviation Safety: A Global Perspective" – Tim JP McCulley

AIT101-Ataturk's Principles and Revolution History I (2 Credits, 2 ECTS)

The course content covers the history of the Turkish nation's revolution under the leadership of Atatürk. The reasons for the collapse of the Ottoman Empire will be examined, and Türkiye will emerge from a virtually extinct state.

The establishment of the Republic of Turkey is evaluated in light of documents. Our recent history is illuminated by focusing on the meaning and importance of its principles and revolutions.
discussed .

Textbook: Prof. Dr. Refik Turan, Prof. Dr. Mustafa Safran, Prof. Dr. Necdet Hayta, Assoc. Prof. Dr.

M. Ali Çakmak, Assoc. Prof. Dr. Cengiz Dönmez, Asst. Prof. Dr. Muhammet Şahin;
ATATURK'S PRINCIPLES AND HISTORY OF REVOLUTION 2013, Beta Publishing

ENT218 English for Aviation II (5 Credits, 6 ECTS):

The aim of this course to give sufficient information about Aviation English and make practice in aviation English conversation and pronunciation.

Textbook: "English for Aviation" – Henry Emery, John Mitchell "Aviation English: A Lingua Franca for Pilots and Air Traffic Controllers" – ICAO (International Civil Aviation Organization) "Aviation English: A Handbook for English Language Learners" – Sanjay Sharma

HIA221 Workplace Experience (5 Credits, 6 ECTS)

This course aims to provide workplace experience related to unmanned aerial vehicle (UAV) technologies and applications. Students will develop practical skills by working in real-world work environments on UAV production, design, maintenance, and operational processes. By participating in the professional environment of the UAV industry, students will contribute to flight operations, UAV system maintenance, data collection, and analysis. Additionally, workplace safety protocols, quality control, and management processes will be emphasized. This course will apply theoretical knowledge in the UAV field to the business world, providing an in-depth understanding of current trends and innovations in the sector .

Textbook: "Unmanned Aircraft Systems: UAVS Design, Development and Deployment" – Reg Austin "Introduction to Unmanned Aircraft Systems" – Douglas M. Marshall, Richard K. Barnhart "Practical Guide to UAS Integration into National Airspace" – George P. Theophilus
"Drones: Their Many Civilian Uses and the Laws Surrounding Them" – Peter W. Singer
UAV Sector Relevant Local and International Legislation and Certification Requirements (FAA, EASA, SHGM etc.)

HIA222 Sectoral Project (3 Credits, 4 ECTS)

This course aims to provide students with hands-on experience in a project in the UAV (Unmanned Aerial Vehicle) sector or other related aviation fields. Students will conduct research on a specific industry topic and learn about project management, planning, design, and implementation processes. The project will equip them with the skills to develop solutions to current industry challenges, generate innovative ideas, and successfully complete the project. The course aims to teach students how to manage a project from beginning to end and how to meet industry needs. Furthermore, students will be prepared for professional careers with skills such as project presentation, reporting, and teamwork.

Textbook: " Project Management for Dummies " – Stanley E. Portny
"The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses" – Eric Ries
"Engineering Project Management" – Nigel J. Smith
"Project Management: A Systems Approach to Planning, Scheduling, and Controlling" – Harold Kerzner
Sectoral Reports and Legislation (on the fields of UAV, Aviation, Innovation and Technology)

HIA223 Mission Oriented UAV Systems and Type Training (3 Credits, 3 ECTS)

This course provides students with an understanding of the operation and management of unmanned aerial vehicle (UAV) systems designed for specific missions. Students learn the mission-specific applications, flight planning, mission type selection criteria, and operational integration processes of different UAV types. It also focuses on the characteristics of sensors and payload systems used in specific missions, data processing, and post-mission reporting processes. The course helps students develop decision-making skills for various operational scenarios through UAV type training. Furthermore, students are provided with the training and technical knowledge necessary to ensure the role, efficiency, and safety of UAVs in various missions.

Textbook: "Unmanned Aircraft Systems: UAVS Design, Development and Deployment" Reg Austin "Introduction to UAV Systems" – Paul G. Fahlstrom, Thomas J. Gleason
"Mission Planning and Flight Operations for Unmanned Aircraft Systems" – Thomas P. Coonan
"Drone Mission Planning and Flight Operations" – Bill Glover
"Handbook of Unmanned Aerial Vehicles" – Kimon P. Valavanis, George J. Vachtsevanos

HIA122 Electronic Sensors (2 Credits, 3 ECTS)

This course introduces the fundamental principles and applications of electronic sensors. Students will learn the operating principles of different types of sensors and the processes involved in data acquisition and transmission. The course focuses on sensors used to measure physical quantities such as temperature, pressure, velocity, and acceleration, as well as sensor calibration, signal processing, and data analysis techniques. Students will examine the design and integration of these technologies to understand the critical role of electronic sensors in aviation and UAV systems. They will also gain an understanding of sensor reliability and efficiency.

Textbook: "Introduction to Sensors for Electrical and Mechanical Engineers" – John Turner "Sensors and Signal Conditioning" – Ramón Pallás-Areny, John G. Webster
"Handbook of Modern Sensors: Physics, Designs, and Applications" – Jacob Fraden
"Sensor Technology Handbook" – Jon S. Wilson
"Fundamentals of Microelectronics" – Behzad Razavi

AIT102-Ataturk's Principles and Revolution History II (2 Credits, 2 ECTS)

The course content covers the history of the Turkish nation's revolution under the leadership of Atatürk. The reasons for the collapse of the Ottoman Empire will be examined, and Türkiye will emerge from a virtually extinct state. The establishment of the Republic of Turkey is evaluated in light of documents. Our recent history is illuminated by focusing on the meaning and importance of its principles and revolutions. discussed .

Textbook: Prof. Dr. Refik Turan, Prof. Dr. Mustafa Safran, Prof. Dr. Necdet Hayta, Assoc. Prof. Dr. M. Ali Çakmak, Assoc. Prof. Dr. Cengiz Dönmez, Asst. Prof. Dr. Muhammet Şahin;
ATATURK'S PRINCIPLES AND HISTORY OF REVOLUTION 2013, Beta Publishing

IHA Elective courses

HIA224 Computer Aided UAV Simulation Applications (2 Credits, 3 ECTS)

This course introduces students to the methods of modeling, simulating, and testing unmanned aerial vehicle (UAV) systems using computer-aided simulation software. Students will learn how to simulate the flight dynamics, control systems, sensor integration, and other operational parameters of UAVs in a virtual environment. The

course aims to equip students with the skills to utilize simulation in the design, testing, and analysis phases of UAV systems and to assess the accuracy and reliability of simulation results. Furthermore, the course focuses on applications of simulation software, such as creating flight scenarios, performing performance analysis, and simulating emergency scenarios. Students will gain the competence to apply their theoretical knowledge to simulate the safe and efficient operations of UAVs by applying them to practice.

Textbook: "Unmanned Aircraft Systems: UAVS Design, Development and Deployment" – Reg Austin
"Introduction to UAV Systems" – Paul G. Fahlstrom, Thomas J. Gleason
"Flight Simulation: Virtual Environments in Flight Training and Design" – David Allerton
"Unmanned Aerial Vehicle Design and Simulation" – Kimon P. Valavanis
"Modeling and Simulation of Aerospace Vehicle Dynamics" – Peter H. Zipfel

Software Applications in HIA225 Systems (3 Credits, 3 ECTS)

This course examines the fundamental principles and applications of software used in unmanned aerial vehicles (UAV) systems. Students will learn about software solutions used in areas such as UAV flight control software, navigation systems, data processing, and sensor integration. It also covers software development processes, algorithm design, coding languages, and software security testing. The course provides students with practical insights into how UAV software improves operational efficiency, providing them with an understanding of software-based management and control of UAV systems.

Textbook: "Programming UAVs: A Guide for Unmanned Aerial Vehicle Development" – Michael H. Giesbrecht
"Unmanned Aircraft Systems: UAVS Design, Development and Deployment" – Reg Austin
"Autonomous Flight Control Systems: A Practical Guide" – ES Sadegh
"Embedded Software for UAVs: Real-Time Control Systems and Software Applications" – RVBDPT Lee
"Flight Software Systems Engineering for UAS" – Brian DF

HIA22 Digital Electronics (2 Credits, 3 ECTS)

This course introduces the fundamental principles of digital electronic systems. Students will learn the operating principles of fundamental digital components such as digital logic circuits, digital data processing, flip-flops, registers, counters, analog-to-digital and digital-to-analog converters. It also covers Boolean logic, logic gates, circuit design, timing analysis in digital systems, and signal processing. The course will provide students with the fundamental knowledge and skills in the design and implementation of digital electronic systems and will enable them to understand the integration of these technologies in UAV systems and other aerospace technologies.

Textbook: "Digital Design" – M. Morris Mano
"Fundamentals of Digital Circuits" – A. Anand Kumar
"Digital Electronics: Principles and Applications" – Albert Paul Malvino
"Digital Logic Design" – Brian Holdsworth, Clive Woods
"Introduction to Digital Electronics" – David J. Comer

HIA227 – Navigation (2 Credits, 3 ECTS)

This course teaches the fundamental principles of navigation systems for unmanned aerial vehicles (UAVs) and general aviation. Students learn about various navigation techniques and systems, focusing on the accuracy, safety, and operational efficiency of these systems. The course covers topics such as global positioning system (GPS), inertial navigation systems (INS), radio navigation, and map reading techniques in depth. Additionally, students gain practical knowledge of airline navigation, emergency guidance systems, and the integration of navigation in UAVs. This course will equip students with accurate navigation skills to manage the safe and efficient operations of UAV systems.

Textbook: "Introduction to Flight" – John D. Anderson

"Aviation Navigation" – JCLP Millington

"Global Navigation Satellite Systems: Insights into GPS, GLONASS, Galileo, and Others" – B. Hofmann-Wellenhof, H. Lichtenegger, J. Collins

"Principles of Avionics" – Albert Helfrick

"Aircraft Navigation Systems" – David CSPG Hartwich

HIA228 UAV Project Management Processes (2 Credits, 3 ECTS)

This course aims to provide students with the process and technical knowledge necessary for managing unmanned aerial vehicle (UAV) projects. The course covers the fundamental principles of project management, including project planning, time management, risk analysis, budget management, resource allocation, and quality control. Students will develop strategies to address challenges encountered in UAV projects and learn the steps necessary for successful project completion. Additionally, the course focuses on practical management processes in UAV projects, such as team coordination, customer requirement assessment, and project progress monitoring. This course will equip students with the skills to effectively participate in UAV development projects using project management tools and software.

Textbook: "Project Management for the Unmanned Aircraft Systems Industry" – Joseph A. Carlock

"A Guide to the Project Management Body of Knowledge (PMBOK® Guide)" – Project Management Institute (PMI)

"Managing Successful Projects with PRINCE2" – Axelos

"Project Management: A Systems Approach to Planning, Scheduling, and Controlling" – Harold Kerzner

HSK242 Human Factors and Team Resource Management (2 Credits, 3 ECTS)

This course introduces students to the importance of human factors and crew resource management in aviation. The course covers topics such as human behavior, communication, teamwork, stress management, and decision-making processes. Students will learn about flight crew and ground crew interactions, leadership skills, conflict resolution strategies, and effective crew management for safe flight operations. Furthermore, critical factors such as human error prevention, crew coordination, and crisis management are emphasized. This course will equip students with the knowledge and skills necessary for safe, efficient, and harmonious teamwork in the aviation environment.

Textbook: " Human Factors in Aviation" – Earl L. Wiener, David C. Nagel
"Crew Resource Management" – Robert L. Helmreich, Ashleigh Merritt
"Human Factors in the Aviation Industry" – Neville A. Stanton
"The Human Factor in Aircraft Accidents" – John A. Wise, V. David Hopkin
"Managing Human Error in Aviation" – Dr. Erik Hollnagel