COURSE CATALOGUE 2021/2022
”GEORGI BENKOVSKI” AIR FORCE ACADEMY BULGARIA

Name of the course	№ of hours	ECTS	Description of the course	Teacher
Aircraft aerodynamics	45	6	The course concerns with the following basic topics: - „The Atmosphere“ - „Basic Aerodynamic Definitions“; - „Basic Aerodynamics“; - „Lift Generation“ - „Lift Analysis“ - „Lift Augmentation“ - „Drag“ - „Stalling“.	Assoc.Prof. Vladimir Savov, PhD
Hydraulics and pneumatics of aircraft systems	45	5	Principles of hydraulics and pneumatics. Equations. Flow in pipes. Pumps. Boosters. Valves. Hydraulic and pneumatic systems in aircraft.	Col. Assoc.Prof. Lyubomir Mitov, PhD
Basic radar principles	60	6	The students will learn the basic radar principles. Radar range equation and radar resolution are discussed. The principles of moving target indication are explained. Different radar types (pulse radar, CW radar, pulse-doppler radar, etc.) are considered.	Col. Prof. Marin Marinov, PhD
Mechatronics and mechatronics systems	60	6	The course concerns the following topics: - Mechatronics and mechatronics systems; - Data acquisition and processing in mechatronics systems; - Actuators in mechatronics systems; - Controlers and computers in mechatronics. The main goal of the course of “Mechatronics and mechatronics systems” is to make students familiar with the mechatronics models and systems on such level so that they are able to apply it in their professions.	Col. Assoc. Prof. Stefan Biliderov, PhD
Computers for automation control	60	4	The course includes the following topics: - Introduction to computer and computer system for automation control; - Operating systems for real time control; - The Hardware core for real time cintrol; - Computer interfaces controling real devices. The main aim of the course is to introduce these topics to the students and to teach them in developing algorithms and testing them in computer systems for controling real time devices.	Col. Assoc. Prof. Stefan Biliderov, PhD

Mobile and satellite Communications	30	2	The course provides basic knowledge of the principles of design, working conditions, operation and main services of mobile communications systems and communications systems on basis of artificial satellites of the Earth. Furthermore, practical examples of mobile communications systems and satellite communications systems are discussed.	Assoc.Prof. Georgi Stanchev, PhD
Basic principles of navigation	45	5	The goal of the course is to give basic knowledge to students about navigation systems and radars; to develop skills for calculations relating to radio navigation systems and radars; to build competences for analyzing and assesing of navigation information. Main topics are: introduction to navigation, radio waves and antenna parameters, autonomous onboard navigation systems, ADF/NDB navigation system, VOR/DME navigation system, instrument landing systems, satellite based navigation systems, satellite based navigation systems, principles and types of radars, second surveillance radar systems.	Assoos. Prof. LTC Penyo Penev, PhD Col. Prof. Marin Marinov, PhD Col. Assos. Prof. Jivo Petrov, PhD
Military English	60	4	The aim of the course is to prepare military and civilian personnel for their successful professional realization in an English-speaking military environment. A balance of receptive (reading, listening) and productive (speaking, writing) skills is developed. The course covers a variety of topics.	An English teacher from the Language department
Foreign Language - English	60	4	The aim of the course is to prepare military and civilian personnel for their successful realization in an English-speaking environment. A balance of receptive (reading, listening) and productive (speaking, writing) skills is developed. The course covers a variety of topics, including preparation for STANAG6001.	An English teacher from the Language department
Aviation English	60	4	The course is for aviation professionals and it aims to teach the radio-telephony phraseology and the language needed to communicate in routine and non-routine situations. It should increase the confidence in communication and develop the skills needed to function effectively in an aviation environment.	An English teacher from the Language department
Civil Aviation Transport System	30	3	The module aims to acquaint students with attributes and tendencies for development of the Air Transport System (ATS). - getting acquainted with the history, operating environment, structure and different elements of ATS; - learning the development trends of ATS; - discovering how Civil ATS stands among other means of transport. By completing this module successfully, students will master:	Chief assistant, Major Plamen Krastev

			- basic knowledge in ATS` operating environment, structure and functionality of individual key elements; - the basic knowledge of performing quantitative assessments of ATS` parameters. After successful completion of the module, students will be able to apply a systematic approach in examining the ATS as a whole and in inspecting its individual elements.	
Theory of automatic control	30	3	The main goals are to acquire basic theoretical knowledge and to form practical skills in building linear mathematical models, the transformation between different types of models and the simulation of their dynamic properties. The lecture material gives information about the classical methods of automatic control in open or closed control loop. • As a result of the training under this program, the trainees should acquire new knowledge about: ○ analyzing and synthesize standard models for control purposes; ○ processing and analyzing type characteristics of dynamic units; ○ apply known methods and approaches for connection and research of complex dynamic systems; transforming standard mathematical models for describing dynamic objects from one form to another;	Assos. Prof. LTC Martin Kambushev PhD
General Navigation	30	3	The main goal of the studied discipline is the need for knowledge and skills for the use of geotechnical means and navigation systems. As a result of training under this discipline, students will acquire new knowledge on: • The principle of determining the main navigation parameters for the flight of an aircraft - direction, distance, altitude, speed, influence of wind, and visual navigation; • The concept of operation of the main geotechnical means for aircraft guidance - compass, altimeter, speedometer; • The use of basic geotechnical means for aircraft navigation. As result of the stipulated in the discipline knowledge, trainees must build the following new abilities: • Solving practical tasks on the use of geotechnical means for aircraft guidance - compass, altimeter, speedometer; Planning and preparing the flight map and flight documentation for the	assos. proff. LTC Ivan Ivanov PhD

			execution of a route flight.	
Defence Management Introduction	30	3	The "Defense Management Introduction" provides students with structured and focused knowledge and skills, to master the concept of defence policy formation, subordinated to national interests and goals. Another aim is to create alternatives for development of defence capabilities of the armed forces, required to meet combinations of security challenges that arise during future security environments growth, and within the framework of available resources. Training includes a practical application of the methodologies of planning based on capabilities, program management of the development of the armed forces, and the basics of managing defence investment projects for acquisition of modern defence systems.	assos. proff. Ivan Valkov PhD
Aerospace structural components design using multi-physics engineering software (ANSYS Workbench)	30	3	Aerospace structural components design using multiphysics engineering software (ANSYS Workbench)" is an introductory course in fundamental concepts and tools for aerospace structural components design using a modern multiphysics engineering software. All students will have access to a free download of ANSYS Student. At the end of the course students will have knowledge for: • the basic workflow of the engineering analysis with multiphysics software; • the fundamental concepts and tools for 3D modelling of structural components; • aeronautics and aerospace industries; • the most common engineering analysis types. After successful completion of this course students will be able to: • plan the stages for aerospace structural component design using multiphysics software; • model the geometry of an aerospace structural component in 3D CAD environment; • perform different types of engineering analysis using the finite element method; • apply common methods for structural optimization of an aerospace structural component using multiphysics software environment; suggest a suitable method or approach for manufacturing of the designed aerospace structural component.	Captain chief assistant Nikolay Kanchev PhD

Custom policy	60	4	The goal of the course is to give basic knowledge to students about the characteristics and function of duty, customs tariffs, customs dutiable value, economical customs regimes. At the end of the course students will have knowledge for: • General aspects of the origin and development of duty; • The structure of customs tariffs; • The objectives, activities and role of custom policy in foreign trade; • The Importance of Customs policy on imported goods and services; • Different aims and tasks in economical, political, social and fiscal sphere. The training is conducted through lectures, exercises and self-study. The results of the course is assessed by coursework or exam after the training.	Col. Prof. Nikolay Nichev, PhD
Air Transport Economics	60	4	The goal of the course is to give basic knowledge to students about the characteristics and function of duty, customs tariffs, customs dutiable value, economical customs regimes. At the end of the course students will have knowledge for: • Place of air transport in the economic system • Characteristics of supply and demand in air transport. • Airline cost structure. • Market structures • Economics of freight transport • Irregular air transport and low cost airlines The training is conducted through lectures, exercises and self-study. The results of the course is assessed by coursework or exam after the training.	Col. Prof. Nikolay Nichev, PhD