ENGINES OF AIRPLANES AND HELICOPTERS

Specialities: *131 Applied Mechanics; 133 Industrial Machinery Engineering; 134 Aerospace Engineering; 141 Power Engineering, Electrical Engineering and Mechanics; 142 Power Engineering; 274 Automobile Transport*

Level of Higher Education	*first (Bachelor)*
Course Status	*student's choice, 6 semester*
Scope of discipline	150 hours / 5 ECTS credits
Language	*English*
What will be studied (subject of study)	The selective discipline "Engines of Airplanes and Helicopters" allows you to familiarize yourself with the general structure and principle of operation of aircraft engines and acquire the necessary knowledge of their characteristics and design. The course considers the classification of engines according to the method of creating the thrust force and implementation of working processes. Information is given on the structure and basics of the operation of the main components: the in-let duct, the compressor, the main and afterburner combustion chambers, the gas turbine and the exhaust system, as well as on the systems necessary to ensure the operation of the engine: fuel, lubrication, starting, ice protection, fire protection, etc. The basics of the working process and analysis of the influence of the main thermodynamic parameters of the engine on its main specific characteristics are given: specific work of the thermodynamic cycle, specific thrust and specific fuel consumption. On this basis, it becomes clear how the global engine industry is developing. Elements of harmonizing engine characteristics with the characteristics of airplanes and helicop-ters on which they are used are considered. Practical work is carried out on the basis of the use of a collection of real aircraft engines, which are located in the laboratories of the department
Why is it interesting/should be studied (goal)	Each aviation specialist must know the flight principles of airplanes and helicopters. It is impossible without knowing the engines operation principles and structure. All around us in the world is energy transformation. It is opportunity to know one of the greatest mystery in the world – fuel to motion transformation and significantly enhance professional background.
How can you use the acquired knowledge and skills (competencies)	The acquired skills will become necessary when mastering the disciplines of the next period of training related to aviation technology. Students studying in the Ukrainian language will acquire additional knowledge and skills in the use of English-language terminology related to aircraft engine construction
Organization of training	Types of classes: lectures, laboratory and practical works, self-studying Forms of education: full-time / part-time Forms of control: exam
Department	Aircraft engines design (203)
Faculty	Aircraft Engines

Teacher

Name	**Sergiy YEPIFANOV**
Position	Professor
Academic title	Professor
Scientific degree	
e-mail	

Links to course materials	1. Yepifanov, S. Design of aircraft engines: Handbook [Text] / S. Yepifanov, V. Chygryn. – Kharkov: National Aerospace University “Kharkov Aviation Institute”, 2021. – 362 p. 2. Yepifanov, S. Major units of aircraft gas turbine engines: Tutorial [Text] / S. Yepifanov, Y.Shoshin, Y. Gusev. – Kharkov.: National Aerospace University “Kharkov Aviation Institute”, 2013. – 101 p. 3. Yepifanov, S. Afterburners and exhaust systems of turbine engines: Tutorial [Text] / S. Yepifanov, Y.Shoshin, V. Chygryn. Kharkov.: National Aerospace University “Kharkov Aviation Institute”, 2014. – 32 p. 4. The Jet engine [Text] // The Technical Publications Department of RR plc .– Derby, England . – 1996. – 278 p. 5. Treager, I.E. Aircraft gas turbine engine technology [Text] / I.E. Treager. – 3-rd ed. – Glencoe/McGraw-Hill. 2001. – 677 p. https://mentor.khai.edu/course/view.php?id=727
Link to work program (syllabus)	