



Syllabus of discipline  
**"GENERAL AVIATION AIRPLANE DESIGN"**  
 Specialty: 134 Aviation and Rocket-Space  
 Engineering  
 Field of study: 13 Mechanical Engineering



<b>Higher Education Degree</b>	First (Bachelor)
<b>Discipline status</b>	Academic discipline of the selective component of the professional cycle
<b>Semester</b>	Autumn
<b>Discipline volume, ECTS credits/total amount of hours</b>	4/120
<b>Language</b>	English
<b>To be studied (study subject)</b>	Design of serial piston engine airplane, propeller, engine-propeller combinations, reciprocating engines, functional systems of modern piston engine airplane.
<b>Why is it interesting and must be learned? (purpose)</b>	Course will be introducing students to a lot of new terms that are constantly referred to when describing the various operations of a propeller and piston engine airplane. The fundamental principles of propeller and reciprocating engines are described as well as design of serial piston engine airplane and its functional systems.
<b>What is studied? (learning results)</b>	<ul style="list-style-type: none"> <li>- technical characteristics of modern piston engine airplane;</li> <li>- design features of the piston engine airplane and its main components;</li> <li>- design and principle of operation of piston engine airplane functional systems;</li> <li>- design and principle of operation of propellers.</li> <li>- design and principle of operation of reciprocating engines</li> </ul>
<b>How is it possible to use the gained knowledge and skills? (competencies)</b>	The course is designed to reveal the modern piston engine airplane and their functional systems design features, as well as propellers and engine-propeller combinations.
<b>Academic logistics</b>	<p>Course content: Flight and technical characteristics and operational limitations of modern piston engine airplane. Design of fuselage, landing gear, wings tail unit and propellers. The principle of operation and design features of functional systems of modern piston engine airplane. Propeller synchronization, ice protection and pitch control. Blade element theory and propeller construction.</p> <p><b>Kind of lessons:</b> lectures, practical classes.</p> <p><b>Education methods:</b> educational discussion, online</p> <p><b>Mode of study:</b> full-time</p>
<b>Prerequisites</b>	General and professional knowledge in the field of aviation, obtained at the first (bachelor's) level of higher education.
<b>Post-requisites?</b>	Knowledge of the discipline can be used in disciplines related to piston engine airplane design and operation, as well as in writing a master's thesis
<b>Information support from the fund and repository of NAU</b>	<p>NAU library:</p> <p>Aircraft Design: A Conceptual Approach Sixth Edition Daniel P. Raymer</p> <p>AVIATION PISTON ENGINES – FLIGHT PARAMETER ANALYSIS Pawel</p>

<b>library</b>	Boguszewicz, Pawel Glowacki <b>Репозитарій НАУ:</b> <a href="https://er.nau.edu.ua/handle/NAU/31759">https://er.nau.edu.ua/handle/NAU/31759</a>
<b>Location and logistics</b>	11.126, projector, computer room
<b>Semester control, examination techniques</b>	module tests
<b>Department</b>	Department of Aircraft Structure
<b>Faculty</b>	Aerospace Faculty
<b>Lecturer(s)</b>	 <p><b>ZAKIEV VADIM ISLAMOVICH</b>  <b>Position:</b> Associate Professor  <b>Scientific degree:</b> PhD  <b>Teacher profile:</b>  <a href="http://www.lib.nau.edu.ua/naukpraci/teacher.php?id=11162">www.lib.nau.edu.ua/naukpraci/teacher.php?id=11162</a>  <b>Phone.:</b> 406-71-71  <b>E-mail:</b> vadym.zakiev@npp.nau.edu.ua  <b>Workspace:</b> 11.121</p>
<b>Originality of the discipline</b>	Author's course, teaching in English
<b>Link on discipline</b>	<a href="https://classroom.google.com/u/2/c/MTM0MzU0NTk1Njg4">https://classroom.google.com/u/2/c/MTM0MzU0NTk1Njg4</a>