**COURSE DESCRIPTION**

**of the discipline**

**"Automation and Control of Aircrafts"**

**1. Name of the educational program of the discipline:** 25.03.01 "Technical operation of aircraft and engines", profile "Maintenance of aircraft and aircraft engines".

**2. Total complexity:** 5 credit units.

**Place of the discipline in the structure of the educational program:**

Discipline B1.V.OD.10 belongs to the variable part of the blockB1 compulsory subjects.

The discipline occupies the level in the structure of the educational program:

This discipline should be preceded by the study of General engineering disciplines, such as mathematics, computer science, as well as special subjects of the curriculum of the specialty "General electrical engineering and electronics", "Materials science. Technology of structural materials".

Subsequent disciplines: "Aircraft maintenance", "Aircraft engines".

**The purpose of studying the discipline:** to provide basic information necessary for future specialists in the operation of automatic control systems (ACS) technical means of the aircraft. The program of the discipline provides familiarization with the main provisions and methods of the theory of automatic control.

**Requirements for the discipline results:** as a result of training, students acquire the following competencies:

General cultural competencies:

– ability to communicate orally and in writing in Russian and foreign languages to solve problems of interpersonal and intercultural interaction (OK-3);

Professional competence:

– readiness to participate and conduct monitoring, diagnostics, forecasting of technical condition, adjustment and finishing works, testing and verification of the performance of aviation systems, products for the introduction of advanced methods, forms and types of maintenance, as well as aircraft repair (PC-4);

– the ability to participate in carrying out a complex of planned preventive works to ensure the serviceability, operability and readiness of aircraft facilities for effective use for their intended purpose (PC-17);

– readiness for operation and maintenance of aircraft (PC-20);

– ready to justify the parameters of technological processes for maintenance and repair of aircraft that ensure their efficiency and quality (PC-24).

– As a result of the discipline, the student must:

know:

- basic methods of mathematical description of automatic control systems (ACS);

- methods for calculating static and dynamic indicators of ACS quality;

- methods for the synthesis of ACS with specified quality indicators.

be able to:

- identify typical blocks in aviation automation systems, establish the structure of connections between them, determine the set and characteristics of input and disturbing signals;

- make a mathematical description of electrical, electrical, mechanical and electronic components of aviation automation;

- choose technical means, their main characteristics and the structure of the ACS from the condition of ensuring the specified quality indicators of management (regulation);

possess:

- the ability to mathematically describe and calculate the model;

- methods of calculation and analysis of schemes;

- corporate evaluation and identification of models.

**3. Content of the discipline:**

linear self-propelled guns and self-Propelled guns with random signals. Nonlinear, discrete, optimal and adaptive ACS.

**4. Basic educational technologies: electronic presentations for lectures.**

**5. Forms of control: the current and boundary control (offset).**

Lecturer \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ A.S. Boldyrev