Утверждено приказом ФГАОУ ВО СПбПУ № 71 от 19.01.2026 г.

Name of the entrance exam

Power Plant Engineering

Field/fields of study

13.04.01 Heat power engineering

Educational program/programs

13.04.01_03 Power Plant Engineering (international education program)

Abstract

The program contains a list of topics (questions) in the disciplines of the basic part of the professional cycle of the bachelor's degree curriculum in the field of 13.04.01 Thermal Power Engineering and thermal engineering, included in the content of tickets (test tasks) for the entrance examinations to the magistracy. The entrance test is evaluated on a one-hundred-point scale and consists of an interdisciplinary exam in the scope of the requirements imposed by the state educational standards of higher education for the bachelor's degree level in the field corresponding to the master's degree, conducted in person in writing or remotely (the maximum score is 100). The minimum number of points confirming its successful completion is set by the Admission Rules approved for the current academic year.

Disciplines included in the program of entrance examinations for the Master's degree program

1. Thermodynamics and heat-and-mass transfer;
2. Thermotechnical measurements;
3. Fluid mechanics.

Content of academic disciplines

1. Thermodynamics and heat-and-mass transfer
1. The laws of thermodynamics. Thermodynamic processes and cycles;
2. Real gas. Moisture vapor. Moist air;
3. Flow thermodynamics;
4. Thermodynamic analysis of cycle efficiency;
5. Phase transitions;
6. Thermodynamic cycles of steam and gas turbines. Cycles of combined cycle gas turbines;
7. Heat exchange theory: thermal conductivity, convection, radiation;
8. Heat exchange processes calculation;
9. Refrigerating and cryogenic engineering;
10. Heat-transfer enhancement;
11. Fuel and the fundamentals of combustion theory;
12. Heat application in the industry;
13. Secondary energy resources.

References

1. Kirillin V.A. Engineering Thermodynamics / Kirillin V.A. Sychev V.V. Sheindlin A.E. M.: Energoatomizdat press, 1983. — 416 p.
2. Isachenko, V.P. Heat Transfer / V.P. Isachenko, V.A. Osipova, A.S. Sukomel. 7th ed., corrected and expanded. - M: "Energoizdat", 1981. - 415 p.

2. Thermotechnical measurements
1. Basic concepts of metrology;
2. Standardisation and certification of measuring instrument;
3. Measurement uncertainty;
4. Methods and instruments for temperature measurement;
5. Measuring pressure, rarefaction and differential pressures;
6. Measuring flow velocity;
7. Measuring the flow rate of liquids, gas, steam and heat;
8. Analysis methods for gases and solutions;
9. Measuring transmitters and telemetering systems.

References

1. Heat-engineering measurements and instruments / Preobrazhensky V.P – M.: Energia, 1978.

Entrance exam assessment criteria

The final score is determined by the percentage scored from the maximum number of test points, the essay is evaluated according to the following criteria: disclosure of the topic, the volume of the text, the volume of the original text.

Assigned group
Chairman of the Subject Committee: Director of IE, V.V. Barskov. Compiled by: Educational program manager A.V. Ivshin. Educational program manager V.Ya. Vladimirov.