

SUMMARY OF DISCIPLINE

1. *Name of discipline* Technology of centralized electricity production
2. *Symbol (code) in the curriculum* M.V12
3. *Direction (PLO)* 13.03.01 Heat and Power Engineering
4. *Qualifications (degree)* Bachelor
5. *Department:* DEPT. OF NUCLEAR AND THERMAL POWER PLANTS
6. Teacher O. Yu. Romashova, tel. 16-31, E-mail gal@tpu.ru

7. *Learning Outcomes:*

R8: the ability to analyze scientific and technical information, put to decide and publish the results of solving complex engineering analysis with the use of basic and specialized knowledge, standard documentation of modern analytical techniques, methods of mathematical analysis and modeling of theoretical and experimental studies;

R11: the ability to use the methods of analysis and simulation of electric power facilities equipment.

8. *Contents (list of the main topics (sections))*

Charts electrical load of power systems. Types of power plants and their participation in filling the load curve. Technological structure of TPP.

Processes of thermal power stations.

Technological scheme of condensing power plants. Cycle steam turbine plant. Ways to improve the efficiency of the Rankine cycle. Intermediate superheat. The regenerative feedwater heating. Technological schemes of combined heat and power. Turbine plant with industrial and district heating controlled steam and condensation. CHP Work on the thermal and electric load schedules. Fuel economy at cogeneration.

Processes in the TPP equipment.

Fuel and combustion process. Drum and once-through boilers. reliable operation of the boiler Factors (hydraulic regime; stability the combustion process; slagging; corrosion tail surfaces). The minimum and maximum boiler load. The storage capacity boilers. Modes of operation of the boiler. The process of conversion of heat to mechanical work in the turbine. Multi-stage and multi-cylinder turbine. The minimum and maximum load steam turbines. steam control system turbines. Static characteristics of SAR turbine. control mechanism turbine. The dynamic properties of large steam turbines. TPP equipment. Types of hydroelectric power plants. Manoeuvring characteristics HPP.

9. Course 1; Semester 2; the number of credits 3.

10. Type certification (exam, test) Exam

11. Author (s) Associate Professor O.Yu. Romashova