

1. The surrounding environment and its interaction with the aircraft, the propulsion and power plants.
2. The basic laws of thermal radiation.
3. Aircraft passive flight mechanics, the possibilities offered by the flight with thrust load.
4. The Basic Law of thermal conductivity. Temperature gradient.
5. Construction and instrumental materials.
6. The basic laws of thermodynamics. Their wording and mathematical notation.
7. The turning process. The process of machining, turning machines and tools.
8. Basic elements of modern aircraft.
9. Sources of mass and energy for aircraft engines.
10. Milling. The process of machining, turning machines and tools.
11. The main provisions of fluid and gas dynamics in different types of engines, the exposure equation.
12. The efficiency of forward and backward cycles.
13. Drilling, counterboring, deployment. The process of machining, turning machines and tools.
14. Ways of transforming primary energy into energy needed for use on different aircraft.
15. Heat transfer mechanisms: thermal conductivity, convection, thermal radiation, and their physical models.
16. Drawing. The process of machining, turning machines and tools.
17. Jet engines and rocket motors, and their characteristics.
18. Concepts and definitions in the mechanics of fluid and gas.
19. Gas supersonic flow. Normal and oblique shock waves.
20. Fundamental conservation laws and their use to organize the engine cycle.
21. Convective heat transfer. Convection types. The physical meaning of the criteria for such a convective heat exchange.
22. How to speed up working bodies and get traction effort.
23. Gas supersonic flow. Body flow with the subsonic and supersonic gas flows. Compression and dilution characteristics.
24. Abrasive machining. The process of machining, turning machines and tools.
25. Basic calculation ratios and expected engine parameters.
26. Gas supersonic flow. Supersonic flow with a steady increase in speed.
27. Thrust, exhaust velocity, power, and specific characteristics of engines.
28. The accuracy of the machining.
29. Types and characteristics of engine fuels/working mass of the engines.
30. Engine jet thrust and dynamic pneumatic processes in its elements.
31. Analytical methods for determining the machining stock.
32. The basic laws of thermal radiation.
33. Dynamic pneumatic processes in the compressor and in the turbine.
34. Engine diagrams, their main elements, and their parameters.
35. Methods for getting pre-fabricated parts and materials.
36. The gas flow in the diffusers.
37. Aircraft engine classification.
38. Characteristics of piece-work, batch and mass production.
39. The main thermodynamic processes in the engines.
40. Types of process control documentation.
41. The use of different types of engines.
42. The structure of the manufacturing process.
43. A De Laval nozzle as a device to create the traction effort, the principle of action, the shape of the supersonic nozzle.

44. Machine devices.
45. Engine interaction with different aircraft systems.
46. Classification of computer numerical control (NC) machines.
47. The current state of the major types of aircraft and their engines, and the tendencies in their development.
48. Surface layer properties of the parts.