

ANNOTATION

Thermodynamics		ECTS credits: 4	
- 60 h			
Ship Power Plants Department		Lecturers: Lieutenant Assist. Prof. Ph.D. Lyuba Gyurova	
Learning Objectives			
1. The students SHOULD KNOW:			
<ul style="list-style-type: none"> - relationships of energy exchange, the basic laws and processes of heat exchange; - the basic laws of thermodynamics, thermodynamic properties of substances, thermodynamic research of heat engines; - uniform and universal thermodynamic analysis methods at all stages of power conversion and energy exchange in the elements of ship power plants; - the basic laws of heat exchange and the basics of heat calculations of ship heat exchangers. 			
2. The students SHOULD BE ABLE TO:			
<ul style="list-style-type: none"> - carry out thermodynamic analysis of heat processes in the engines and in the ship power plants; - solve heat engineering tasks associated with the processing of experimental data, calculations of thermodynamic processes and cycles of ship power plants; - carry out measurements of heat engineering parameters in ship power plants. 			
Assessment System: The results of the course are assessed with a continuous assessment grade (CA) and a final grade.			
Contents:			
No.	Subject area (modules)	Lectures	Exercises
1.	Basic terms and definitions in Thermodynamics. Ideal gas.	4	2
2.	Energetic characteristics of a thermodynamic system. Laws of thermodynamics. First law of thermodynamics.	4	2
3.	Major thermodynamic processes.	4	2
4.	Second and third law of thermodynamics.	4	2
5.	Basic definitions and characteristics of real gases.	4	2
6.	Vapor power cycles. Processes gas compressor.	4	2
7.	Internal Combustion Engine. Gas turbine cycles. Refrigeration cycle.	4	2
8.	Thermodynamic principles of analysis and optimization of the processes of energy conversion.	4	2
9.	Types of heat transfer. Conduction. Convection.	4	2
10.	Radiation. Complex heat transfer. Shipboard heat exchangers.	4	2
Total:		40	20