

Study program: Technics and informatics / Engineering Management			
Type and level of studies: Integrated academic studies / Undergraduate academic studies			
Course unit: Thermotechnics			
Teacher in charge: Snežana Dragičević			
Teaching assistant: Milan Marjanović			
Language of instruction: English			
ECTS: 6			
Prerequisites: None			
Semester: Winter Semester			
Course objectives			
Introduction to basic concepts and definitions of thermodynamic, energy conversion methods, types of heat transfer, principles and limitations of thermal energy transformation from the practical application point of view.			
Learning outcomes			
Upon completion of the course students will be able to: use thermodynamic terminology correctly, explain fundamental thermodynamic properties, derive and discuss the first and second laws of thermodynamics, solve problems using the properties and relationships of thermodynamic fluids, analyse basic thermal cycles, and solve basic heat transfer problems.			
Course contents			
<i>Theoretical classes</i>			
Introduction to thermodynamics, concept of energy. Ideal gas. Equation of state. Mixture of ideal gases, First and second law of thermodynamics. Polytropic processes. Cycles of internal combustion engines and compressors. Fundamentals of heat transfer: conduction, convection, thermal radiation, heat transfer through separating walls, heat insulation.			
<i>Practical classes</i>			
In the context of computational exercises, students are trained to apply their theoretical knowledge in solving specific problems that occur in thermodynamic state changes of an ideal gas, thermodynamic cycles, and heat transfer. Theoretical classes are followed by practical classes which involve a high degree of student's individual work in solving practical tasks.			
Literature			
[1] P. S. Schmidt, O. A. Ezekoye, J. R. Howell, D. K. Baker, Thermodynamics, An Integrated Learning System, John Wiley & Sons Inc.; International Ed edition, ISBN 978-0471661269, USA, 2006.			
[2] M. J. Moran, H. N. Shapiro, D. D. Boettner, M. B. Bailey, Fundamentals of Engineering Thermodynamics, Eight Edition, ISBN 978-1-118-41293-0, John Wiley & Sons, USA, 2014.			
Number of active teaching hours			Other classes: 0
Lectures: 2	Practice: 2	Other forms of classes: Independent work: 0	
Teaching methods			
Theoretical teaching includes oral presentations using computers, presentations, demonstrations and discussions. Active learning method and individual work for practical classes. Individual work with students for homework tasks.			
Examination methods (maximum 100 points)			
Exam prerequisites	No. of points:	Final exam	No. of points:
Student's activity during lectures		oral examination	20
Practical classes/tests	40	written examination	20
Projects		
Seminars/homework	20		
Other			
Grading system			
Grade	No. of points	Description	
10	91-100	Excellent	
9	81-90	Exceptionally good	
8	71-80	Very good	
7	61-70	Good	
6	51-60	Passing	
5	less than 50	Failing	