Course Unit Descriptor

Study Programme: Energy And Process Engineering
Course Unit Title: Simulations in Process Engineering
Course Unit Code: M34I14
Name of Lecturer(s): Đaković Damir
Type and Level of Studies: bachelor
Course Status (compulsory/elective): elective
Semester (winter/ summer): winter
Language of instruction: english
Mode of course unit delivery (face-to-face/distance learning): face-to-face
Number of ECTS Allocated: 5
Prerequisites: none
Course Aims:. Introduction to some numerical methods which are used more frequently, with recapitulation of acquired knowledge from the field of process engineering, as well as the mathematical methods used for its analysis. The application of acquired knowledge on simulation of the systems. Developing the perception about the modes of its utilization.
Learning Outcomes: Acquisition of knowledge about process simulation methods, as an important step in the analysis of thermal and process systems. Simulation results should serve as the basis for the further development, optimization and technical and economy analysis of the systems.
Syllabus. Mathematics in thermal and process engineering. Ordinary and partial differential equations. Analytic solutions. Defining and balancing of thermal and process systems. The concept of process modeling and simulation. Basic statistics. Regression methods. Numerical methods of finite differences, finite elements ant finite volumes, with using of software tools. Process simulation. Heat and mass transfer visualization using software tools. Fluid flow visualization. Process systems and process control. Optimal synthesis of thermal and process systems. Experiment preparation based on simulation results. The significance of process simulation in terms of modern energy and process engineering.
Required Reading: Myers, G.E Engineering Thermodynamics Prentice Hall, Englewood Cliffs 1989 Moore, H. MATLAB for Engineer Pearson Global Edition, Edinburgh 2015

Weekly Contact Hours: 3	**Lectures: 2**	**Practical work: 0**

Teaching Methods: Lectures, auditory practice, computer practice.

Knowledge Assessment (maximum of 100 points):			
Pre-exam obligations	points	**Final exam**	points
Attendance			
Computer exercises			
Tests (4x)			