Study Programme: Chemical engineering

Course Unit Title: Thermal process engineering

Course Unit Code: EEO302

Name of Lecturer(s): Assoc. Prof. Svetlana Popović, PhD

Type and Level of Studies: Ungraduate Academic Studies

Course Status (compulsory/elective): Compulsory for Eco-energetic Engineering

Semester (winter/summer): Summer

The language of instruction: English

Mode of course unit delivery (face-to-face/distance learning): Face-to-face

Number of ECTS Allocated: 7

Prerequisites: Unit operations

Course Aims:

The aim of the course is systematization and broadening of the knowledge related to the energy requirements of processes and plant. The aim of the course is to introduce the ways of benchmarking and optimization of energy consumption in the process industry.

Learning Outcomes:

In this course, students gain skills to categorize and compare energy consumption in various unit processes and in the site overall. Further, they will be capable to evaluate, set the formulations for energy savings and optimization.

Syllabus:

Theory

This course covers the approach of energy intensity and fuel equivalents. Formulation of material energy balances for the high-energy consumption processes such as reactors, distillation columns and heat exchangers. Detection and estimation of energy losses. Pinch analysis and benchmarking for process sites.

Practice

Solving problems related to the theory presented during lectures.

Required Reading:

1. Coulson, J.M., Richardson, J.F., Chemical Engineering (Vol. VI), Particle Technology and Separation Processes (R.K. Sinnott), Pergamon Press, NY, 2002.
2. SANKARANARAYANAN, Krishnan: Efficiency and Sustainability in the Energy and Chemical Industries, Boca Raton: CRC Press, 2010

Weekly Contact Hours: 6	**Lectures:** 3	**Practical work:** 3

Teaching Methods:

Lectures, solving problems and laboratory practicum students group work

Knowledge Assessment (maximum of 100 points): 100

Pre-exam obligations	points	**Final exam**	points
Test I and Test II	70	oral exam	30
Seminar(s)	0		