



UNIVERSITY OF NIŠ

Course Unit Descriptor

Faculty

Faculty of Mechanical Engineering

GENERAL INFORMATION

Study Program	Mechanical Engineering
Study Module (if applicable)	-
Course Title	Selected Topics in Refrigeration Devices and Heat Pumps
Level of Study	<input type="checkbox"/> Bachelor <input type="checkbox"/> Master's <input checked="" type="checkbox"/> Doctoral
Type of Course	<input type="checkbox"/> Obligatory <input checked="" type="checkbox"/> Elective
Semester	<input checked="" type="checkbox"/> Autumn <input type="checkbox"/> Spring
Year of Study	II
Number of ECTS Allocated	10
Name of Lecturer/Lecturers	Bratislav D. Blagojević
Teaching Mode	<input checked="" type="checkbox"/> Lectures <input checked="" type="checkbox"/> Group tutorials <input checked="" type="checkbox"/> Individual tutorials <input type="checkbox"/> Laboratory work <input type="checkbox"/> Project work <input checked="" type="checkbox"/> Seminar <input type="checkbox"/> Distance learning <input type="checkbox"/> Blended learning <input type="checkbox"/> Other

Purpose and Overview (max. 5 sentences)

Expanding students' knowledge related to the application of refrigeration devices in industrial cooling systems, unconventional cooling systems as well as to the application of heat pumps in energy systems. Making students capable of mathematical modelling, simulation and optimization of energy systems with refrigeration and heat pumps, as well as for using appropriate software tools. Students get knowledge on refrigeration devices and heat pumps required for their application and estimation of energy efficiency improvements and environmental impact reduction possibilities, as well as competences for self-driven scientific and research work, including completion of the doctoral dissertation.

Syllabus (brief outline and summary of topics, max. 10 sentences)

(1) Absorption refrigeration. (2) Industrial refrigeration. (3) Refrigeration devices in poligeneration systems. (4) Unconventional systems. (5) Heat pumps with use of energy from environment. Heat pumps with use of waste energy. Integration of heat pumps into district heating systems. (6) Energy consumption of cooling systems. (7) Energy efficiency improvements and environmental impact reduction. (8) Software solutions for refrigeration devices synthesis and simulation. (9) Combined heating and cooling systems energy performance modelling. (10) Environmental parameters evaluation methodology for cooling systems.

Language of Instruction

Serbian (complete course) English (complete course) Other _____ (complete course)
 Serbian with English mentoring Serbian with other mentoring _____

Assessment Methods and Criteria

Pre exam Duties	Points	Final Exam	Points
		Overall Sum	100

***Final examination mark is formed in accordance with the Institutional documents**