Course Unit Descriptor	Faculty	Faculty of Mechanical Engineering

GENERAL INFORMATION

Study program	**Mechanical Engineering**
Study Module (if applicable)	-
Course title	Б.7.6-И.14-9 – Modelling and identification of objects and processes
Level of study	☒Bachelor ☐ Master's ☐ Doctoral
Type of course	☐ Obligatory☒ Elective
Semester	☒ Autumn ☐ Spring
Year of study	IV
Number of ECTS allocated	6
Name of lecturer/lecturers	Vlastimir D. Nikolić
Teaching mode	☒Lectures ☐Group tutorials ☐ Individual tutorials ☒Laboratory work ☒ Project work ☒ Seminar ☐Distance learning ☐ Blended learning ☐ Other

PURPOSE AND OVERVIEW (max. 5 sentences)

Introduce students to basic techniques of the modelling, identification and simulation of various systems and processes as control objects.
The course is targeting the possession of the basic skills and necessary knowledge for development of mathematical models for typical classes of technical systems as well as for their identification and simulation.

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

1) Models of objects and control processes. Concept and classification of the model of dynamic systems. 2) Method for forming of mathematical model of objects and processes. Dynamics of motion, dosing, transportation and material storage. 3) Dynamic of electrical and thermo electrical processes. Dynamics of process with mass transfer. 4) Dynamics of machines and engines. Dynamics of traffic-transport means. Dynamics of energy facility. Dynamics of processing of materials. 5) Object-oriented modeling of systems and the techniques of graphical modeling. 6) Modeling using artificial neural networks and fuzzy models. 7) Simulation methods of objects and processes. Forming of simulation models. Mathematical lining of the digital simulation. The application of the simulation to identify, design and optimization of the automatic control systems. 8) Software for simulation. 9) Independent development and analysis of typical class of objects and processes.

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**
Activity during lectures	10	**Written examination**	25
Practical teaching	10	**Oral examination**	25
Teaching colloquia	30	**OVERALL SUM**	100
*Final examination mark is formed in accordance with the Institutional documents			