Course Unit Descriptor

Study Programme: Engineering Management

Course Unit Title: Production and service systems

Course Unit Code: IM1027

Name of Lecturer(s): Milovan Lazarević, Nemanja Sremčev, Aleksandar Rikalović

Type and Level of Studies: bachelor

Course Status (compulsory/elective): compulsory

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: 6

Prerequisites: none

Course Aims:.

The course is aimed at discussing the process of systemic transformation of inputs into finished goods and services in different production systems. The goal of course is to prepare students for the development and design of production and service delivery system, defining their characteristics, design manufacturing processes that take place in them. Students are trained to use the tools for shaping the flows of materials, design of system structures and processes, and this provides the basis for the design of energy systems. During the program, students acquire the knowledge necessary to determine the spatial distribution of the elements of the system as a way of selecting the macro and micro sites. In the present program, service creation and service delivery are studied separately because of their specificity.

Learning Outcomes:
Students will be prepared to develop and design manufacturing system and system for the creation and delivery of services, to recognize and understand the importance of the production system, production and service processes and manufacturing products as essential purposes of the production system and the basic definitions of energy support to the functioning of the system. Through lectures, exercises and practical work, students will gain knowledge about the company as an integrated whole with the connection of all functional elements.

Syllabus.
Content / Structure of the course: The basic elements of production and business systems, Conditions for developing production and business systems, Utility systems and delivery of services, Product and production program, Intangible products / services, the nature and manner of perceiving, Workflow and system capacity, Design of material flow, Individual approach in the design flow, Group approach in the design flow, General model of the flow of materials, balance of flows in the system design flow systems in the service, Design the structure of production and business systems, Process approach to shaping the structure, Subject approach in designing structures, The basic foundation for design of structures, Defining the elements of the system, Creating spatial structure of the system design flow of energy, Determination of energy needs, Designing energy structure, Location of production systems, Location determination system in the narrow and broad sense, Relocation (outsourcing) function or process to another location or to another production system, The conditions for outsourcing, delegating responsibility and competence. Simulation of business systems in order to design and re-configure flow.

Required Reading:
Relevant literature in English, tbd

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

Teaching Methods:
Lectures are auditory based character with the required number of theoretical case studies. Exercises for the students are auditory, introduction for observing in the problem, and a case study of interactive processing and calculation examples for the purpose of mastering the practical tools for system design and group work on the preparation of project tasks. Students work in small groups on aspecific project task which aims to use the knowledge acquired in the design of real production systems and service delivery. Laboratory exercises include training on a specially equipped workplaces, which are tied into the production line, in the specific laboratory under the supervision of laboratory technicians. Public display of project tasks is planned. During the course, company visits are provided.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	**Final exam**	points
Attendance			
Computer exercises			
Tests (4x)			