Course unit Descriptor	Faculty of Economics Subotica 	UNIVERZITET U NOVOM SADU UNIVERSITY OF NOVI SAD

GENERAL INFORMATION	
Study program in which the course unit is offered	Business Information Systems
Course unit title	Data Models and Database Systems
Course unit code	OPI04
Type of course unit[1]	Compulsory
Level of course unit[2]	Bachelor
Semester when the course unit is offered	First
Year of study (if applicable)	1
Number of ECTS allocated	6
Name of lecturer/lecturers	Sasa Bosnjak
Mode of course unit delivery[3]	Face-to-Face
Course unit pre-requisites (if any)	None

PURPOSE AND OVERVIEW (max 5-10 sentences)

The objective of the course is to acquire knowledge about fundamental principles and concepts of data models, databases and database management systems. This goal involves understanding and application of basic data models (ER DM), as well as methods and techniques of logical data modeling, with the proper management of data resources in databases. The specific objectives of the course are studied the architecture of the DBMS and the Structured Query Language (SQL) as the standard language in most commercial database management systems, which makes it inextricably linked with the fundamental principles of theory, as well as the practice of business database applications.

LEARNING OUTCOMES (knowledge and skills)

Students are trained to understand the fundamentals of relational database systems including: data models, database architectures, and database management. They are able to understand the theories and techniques in developing database applications and deepen their knowledge in the field of databases using DBMS products such MS SQL Server. Students are prepared to apply abstract Entity–relationship model to define structure of relation and database scheme, to define data structure in DBMS and to manage data using Structured Query Language, The course provides the knowledge about new trends in development business information systems using relational DBMS.

[1] Compulsory, optional
[2] First, second or third cycle (Bachelor, Master's, Doctoral)
[3] Face-to-face, distance learning, etc.

SYLLABUS (outline and summary of topics)
Theory Introduction to database management systems - basic concepts; the concept of database management system and characteristics of software products for relational database management; methodological aspects of database implementation; transaction management – concurrency; database modelling; different approaches to data modelling and data models; two most common data models: the entity-relationship model and the relational data model; the relational data model and conceptual design: mapping relational model; SQL an introduction, SQL (DDL), SQL (DML); relational commands and SQL, functional dependencies in relational data model; algorithms of normalization Practice Relational algebra and relational commands; mapping relational algebra and relational commands to SQL commands; applied SQL (DDL), SQL (DML) and SQL (queries) for manage data in business information systems; practical aspect of data modelling and data models in business information structure; algorithm of normalization - method synthesis – heuristic approach

LEARNING AND TEACHING (planned learning activities and teaching methods)
Lectures supported by Power Point presentations, case studies and group discussions, individual and teamwork in computer laboratory
REQUIRED READING
1. R. Elmasri, S.B. Navathe "Database Systems, Models, Languages, Design and Application programing", Sixfh Edition, PEARSON 2011, Global Edition 2. T.M. Connolly, C.E. Begg „Database Systems – A Practical Approach to Design, Implementation and Management", 2015, 6th edition, Addison Wesley
ASSESSMENT METHODS AND CRITERIA
Theoretical test 20 written exam 30 Practical work in computer laboratory 10 oral exam 40
LANGUAGE OF INSTRUCTION
English