Study program / course: **Mechanical Engineering**	
Type and level of study: **Bachelor academic studies**	
Course: **Data bases**	
Lecturers:**Eric D. Milan, Ph.D. assist. professor, Grujovic A. Nenad, Ph.D., full professor**	
Status of course: **Elective for module M$_7$, VI semester**	
Number of ECTS: **6**	
Precondition: **none**	

The objective of course

Acquiring and mastering of basic knowledge on logic and physical frameworks of data bases, data base controls systems, data base design and communication between applications and data bases.

The outcome of course

Student will be able to independently design, create and maintain data bases.

Syllabus

"Data bases" course comprises the following subjects: **Introduction** (Classic data processing and its deficiencies; Definition and basic concepts of data bases.) **Basic concepts** (Information, data, entity, attribute, domain, logical record, data file, data files collection, data bases, data banks, automatic data processing, information system). **Data models** (conceptual modeling, structures and limits, hierarchical, network, relational model, E-R data model, object oriented data model). **Data base types (**Data base control systems**)**. **Relational data bases** (Relational algebra, relational calculus, design of relational data bases, concept of data normalization, translation of E-R models to relational models, types of relations). **Software support** (Tools for design of information systems and SUBP – CASE tools, definition, division and elements). **Basic elements of query language SQL** (definition of structure concept, operations – queries, data base update, view, limits; Commands for data definition, commands for data manipulation and commands for control functions). **Design of relational data bases** (Concept of data normalization, theory of dependence, normal forms). **Basics of analytical (multidimensional) data bases (**Data storage; Transactional and analytical processing; Data miming and knowledge detection). **Data base competitive approach** (Control over transactions and data base recovery). Data bases security (Protection against unauthorized use of data base).

Practical studies: Exercises, independent work, visits to computer centers

Recommended reading

1. Lazarevic B., "Data bases", Faculty of organizational sciences, Belgrade, 2003
2. Alagic S., "Relational data bases", "Svjetlost", Sarajevo, 1985
3. Pavlovic-Lazetic G., "Basics of relational data bases", Faculty of mathematics, Belgrade, 2000

The number of hours of active teaching:				Other classes: 1
Theory: 3	Practical classes: 1.6	Other forms of teaching: 0.4	Research study: 0	

Methods of teaching

1. Work in small groups, 2. Individual work, 3. Ex cathedra, 4. Work Shops

Evaluation of knowledge			
Pre-final exam obligations	**points**	**Final exam**	**points**
Activities during the classes:	**10**	written	**25**
Practical classes:	**/**	verbal	**5**
Colloquiums(s) :	**45**		
Seminar(s) :	**15**		