**Study programme(s): Applied Mathematics (MAP)**

**Course title: DATABASES AND BUSINESS INFORMATICS (P303)**

**Lecturer(s): Djordje Herceg**

**Course status: elective**

**ECTS points: 6**

**Requirements:**

**Learning Objectives**

Acquiring the knowledge and skills needed to collect, organize, and manage large amounts of data using spreadsheet and database software, as well as using and creating Internet services to work with data.

**Learning Outcomes**

*Minimal:* Students are expected to be able to create worktables and databases, enter data into them from different sources, and write programs and features for data searching, data transformation and data processing.

*Desirable:* A student is expected to be able to recognize, analyze and perform complex requests for data collection, storage, search, analysis and processing of large amounts of data; to implement data collection tools and storage infrastructure; to use modern software for spreadsheet calculations and database management. The student is also expected to be able to write programs and features for data processing and transformation from various sources, as well as to use Internet services as sources or destinations for data. In addition, a student should understand the concept of data security and reliability and be able to implement them. A student should be capable of teamwork using online tools for collaboration and project realization monitoring.

**Syllabus**

*Theoretical instructions*

Data set types and data set record formats. Structured and unstructured data. Spreadsheet programs. Sorting and filtering. Data transformation tools. Data search and data analysis tools. Formal database specification. Design and creation of a database. Validation and referential integrity. Transactions. Data Mart and Consolidation. Analysis and reporting. External data sources and destinations. Internet services for data access. Data security and reliability. Numerical processing and data analysis.

*Practical instructions*

Practical exercises follow the theoretical lectures. Topics from lectures are processed by students who are now implementing practical task solutions using software on personal computers, on database servers, and on the Internet.

**Literature**


1. Lake, P., Crowther, P., **Concise guide to databases**, Springer, 2013.
2. Herceg, Đ., **Osnovi poslovne informatike**, Symbol, 2018.
3. B. Larson, **Delivering Business Intelligence with Microsoft SQL Server 2016**, McGraw-Hill, 2017.


| **Number of active classes** | **Lectures: 2** | **Exercises: 3** |
|---|---|---|

| **Teaching methods** | | | |
|---|---|---|---|
| Lectures and exercises are performed in a computer classroom, using online collaboration tools and a local server. The knowledge of students is tested on practical tasks during exercises, as well as on the final exam, which is realized by the development of a mini project. The practical project can be made independently or by group work. | | | |
| **Grading (maximum number of points 100)** | | | |
| **Pre-exam obligations** | Points | **Final exam** | Points |
| Practical classes | **70** | Project presentation | **30** |