**Table 5.2.** Specification of subjects

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| **Study program:** Advanced Data Analytics in Business | | | | |
| **Name of the subject: Programming for business applications 2** | | | | |
| **Teacher(s):** Marko D. Petković, Jovica Stanković, Ronal Hochreiter | | | | |
| **Status of the subject:** еlective | | | | |
| **Numebrs of ECTS credits: 7** | | | | |
| **Conditions:** none | | | | |
| **Subject goal**  Acquiring knowledge about advanced programming techniques for statistical data analysis. Training students to use the R programming language in the analysis of data from the field of economics. | | | | |
| **Outcome of the subject**  After mastering the R programming language, students will be able to:   * perform statistical data processing; * generate data at the request of decision makers; * use of R to write efficient and structured programs. | | | | |
| **Subject content**  *Theory*  **Introduction:** Introduction to R, installation and packages, IDE-s (RStudio, PyCharm, etc.), variables and data types. assignment statement and loops, functions and parameters, strings and operations on strings.  **Data analysis in R**: File manipulations, data cleaning, basic distributions and corresponding R functions, descriptive statistics, linear regression, hypothesis testing, ANOVA, data visualization.  Advanced data analysis in R: clusterization, decision trees, Bayesian analysis, neural networks.  *Practical learning*  Practical work in computer classroom. Practical exercises on the topics covered by lectures. | | | | |
| **Literature**   1. G. Grolemund, H. Wickham, R for Data Science, O'Reilly 2017. 2. Y. Xie, J.J. Allaire, G. Grolemund, R Markdown: The Definitive Guide, CRC Press 2020. 3. A. Field, J. Miles, Z. Field, Discovering Statistics Using R, SAGE Publications Ltd 2012. | | | | |
| **Number of active teaching classes** | **Theoretical teaching:** 30 | | **Practical teaching:** 45 | |
| **Learning activities methods**  Interactive lectures using screen sharing in the computer classroom.  In order to fulfill pre-examination obligations and the final exam, students need about 60 hours of independent study and practice, of which 2 hours a week during the semester and about 30 hours of preparation during the exam period. | | | | |
| **Evaluation of knowledge (maximum number of points 100)** | | | | |
| **Pre-exam activities** | points | **Exam results** | | Points |
| Activity during lectures | 10 | Written exam | | 0 |
| Practical teaching | 10 | Oral exam | | 50 |
| Colloquium | 20 | Project presentation | | 0 |
| Seminar(s) | 10 | **Total** | | **100** |