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| Title of the course | **Databases (offered in English)** | | |
| Title of the Academic Programme | BA “Sociology and Social Informatics” | | |
| Type of the course | Elective | | |
| Prerequisites | Information Systems, Algebra and Analysis, Probability and Mathematical Statistics | | |
| ECTS workload | 5 | | |
| Total indicative study hours | Directed Study | Self-directed study | Total |
| 44 | 146 | 190 |
| Course Overview | This course introduces database design and querying in different DBMS. Emphasis is both on DB design and on applications of databases to analytical tasks.  **In 2018-19 the course will be blended, with lectures replaced by online course, but labs and seminars will be in class. The course will require a lot of practical work.**  We will cover database theory, characteristics of contemporary DBMS landscape, Relational Algebra, ER-modeling of different domains, SQL and its dialects, different approaches to data modelling.  Course DB project will include group modelling of a complex domain area, design and implementation of DB for this area, including relationships, triggers, stored procedures, complex queries.  Applications of databases to Business Intelligence are also discussed through the course, including integration of predictive analytics with DBMS and and-user BI systems.  Course BI project will include defining BI goals, setting KPI, designing dashboards and predictive analytics models for a particular case from different domain areas. Visualization of business metrics and dashboards design will become a special topic of the course, which will allow students to get familiar with the process of data communication. Data-driven dashboards, being one of the most essential part of Business Intelligence, will be discussed a lot. | | |
| Intended Learning Outcomes (ILO) | Upon completion, students should be able to:   * Model different domain areas using ER approach * design and implement normalized database structures by creating database tables, queries, triggers, stored procedures, reports, and forms * perform typical BI reporting queries using SQL and analytical tools * understand applications of BI to decision support in modern companies * perform simple integrations of DB and predictive analytics models * custom reports and dashboards based on DB data in Tableau and/or Power BI | | |
| Teaching and Learning Methods | Teaching and learning methods include lectures, tutorials, project work, home assignments. | | |
| Indicative Assessment Methods and Strategy | * Seminar participation (20% of the cumulative grade) * Homework (20% of the cumulative grade) * DB Project + Presentation (20% of the cumulative grade) * BI Project + Presentation (20% of the cumulative grade) * 80-minute test (20% of the cumulative grade)   Cumulative grade equals to final | | |
| Readings / Indicative Learning Resources | Clare Churcher. 2012. *Beginning Database Design: From Novice to Professional*. 2 edition. New York, NY: Apress.  Jeffrey D. Ullman, and Jennifer Widom. 2007. *A First Course in Database Systems*. 3 edition. Upper Saddle River, NJ: Pearson.  Rainer, R. K., Prince, B., & Cegielski, C. G. (2013). Introduction to Information Systems, 5th Edition: Fifth Edition. John Wiley and Sons, Incorporated  Laursen, Gert H. N., and Jesper Thorlund. 2010. *Business Analytics for Managers: Taking Business Intelligence Beyond Reporting*. 1 edition. Hoboken, N.J: Wiley.  Stanford’s Introduction to Databases MOOC https://lagunita.stanford.edu/courses/Engineering/db/2014\_1/about | | |
| Academic Support for the Course | Academic support for the course is provided via e-mail | | |
| Facilities, Equipment and Software | Computer class, PostgreSQL/MSSQL Server, Tableau and/or PowerBI, diagramming software, MSSQL Server Studio, MS Access | | |