Course unit title:	Databases and Data Visualization
Course unit code:	AMDM223
Type of course unit:	Required
Level of course unit:	Bachelor (1st cycle)
Year of study:	2
Semester when the unit is delivered:	4 (Spring)
Number of ECTS credits allocated :	6
Learning outcomes of the course unit:	By the end of the course, the students should be able to: 1. Understand databases and database management systems from the viewpoint of the designer, developer, and user. 2. Describe relational databases, and use simple SQL for creating, manipulating, and processing relational databases. 3. Using tools to design, create, and directly interact with databases and data sets. 4. Understand the essence and the impact of data visualisations, and describe the process of forming successful data visualisations. 5. Apply and use data visualisation techniques for publishing and disseminating results by employing the proper tools.
Mode of delivery:	Face-to-face
Prerequisites:	AMDM182, AMDM100 **Co-requisites:** None
Recommended optional program components:	None
Course contents:	**Introduction to Databases**: Understanding data, information, and knowledge, defining databases, characteristics of database approach, types of database systems, understanding the DBMS functions and components. **The Relational Data Model**: Introducing the database design process, using tools for database design, the ER model, and examples, defining tables, rows, attributes and data types, defining primary and foreign keys, forming table relations, maintain integrity constraints. **Working with Databases**: Creating and using databases, creating tables, altering and deleting structures, using basic SQL, exploring databases and tables. Using plugins to directly interact with Databases using spreadsheet programs for browsing schemas, tables, views, edit, append, import, and export data. **Introduction to Data Visualization**: Stages in visualizing data, types of visualisation, pre-processing and processing of data, find data, evaluate, extract, clean, correct and merge data, forming the right questions, forming connections and correlations, making successful data visualizations, publishing and disseminating data visualizations. **Tools for Data Visualizations**: Tools for creating visualizations, Google Spreadsheet, Google Fusion Tables, Tableau, and Datawrapper.

Recommended and/or required reading:	
Textbooks:	R. Elmasri, S. B. Navathe, **Fundamentals of Database Systems**, Pearson, 6th Edition, 2010. S. Few, **Show Me the Numbers: Designing Tables and Graphs to Enlighten**, Analytics Press, 2nd Edition, 2012.
References:	J Gray, L. Chambers, L. Bounegru, **The Data Journalism Handbook**, O'Reilly Media, 2012. J. Jeffrey D.Ullman, J. Widom, **A First Course in Database Systems**, Pearson, 3rd Edition, 2014. S. Few, **Information Dashboard Design: Displaying Data for At-a-Glance Monitoring**, Analytics Press, 2013.
Planned learning activities and teaching methods:	The taught part of course is delivered to the students by means of lectures, conducted with the help of computer presentations. Lecture notes and presentations are available through the e-learning platform and the web for students to use in combination with the textbooks. Lectures are supplemented with extensive laboratory work. During laboratory sessions, students are able to practice the material delivered during the lectures and experience the various features of software application packages.
Assessment methods and criteria:	• Lab Assignments: 20% • Midterms: 20% • Final Exam: 60%
Language of instruction:	English
Work placement(s):	No