Syllabus

Course Description

Course Title	Modeling and Databases with Project
Course Code	76445
Course Title Additional	
Scientific-Disciplinary Sector	
Language	English
Degree Course	Bachelor in Informatics and Management of Digital Business
Other Degree Courses (Loaned)	
Lecturers	Prof. Marco Montali, marco.montali@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/31326 Prof. Davide Lanti, Davide.Lanti@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/34107
Teaching Assistant	Dott. Albulen Pano
Semester	Second semester
Course Year/s	1
CP	12
Teaching Hours	80
Lab Hours	40
Individual Study Hours	180
Planned Office Hours	36
Contents Summary	- Introduction to Business Process Management - Data modeling - Descriptive process modeling - Analytic process modeling - Decision modeling - Relational Model - Query languages (relational algebra and SQL)

	- Query management - Database design - Building database applications - NoSQL and large-scale data management
Course Topics	Students attending this course will study and put into practice languages, methodologies, and techniques for modelling data, business processes and decisions that are instrumental to the creation of information systems supporting contemporary organizations in their operations management. In addition, they will be able to translate a data model into a corresponding database, and learn how to make use of the basic functionalities (definition, update, and querying) of database management systems in the context of development and deployment of information systems. The course focuses specifically on relational databases, the SQL language, and software programs accessing them, but the taught methods and principles are of a more general nature, and can be applied also in those contexts where data models and database systems different from relational ones are adopted.
Keywords	data modelling process modelling databases SQL Entity-Relationship Diagrams BPMN
Recommended Prerequisites	Students should have a solid mathematical foundation and be familiar with the basic programming concepts.
Propaedeutic Courses	
Teaching Format	Frontal classroom lectures plus exercises.
Mandatory Attendance	Not compulsory. Non-attending students should contact the lecturers at the beginning of the course in order to get indications on how to best follow the course.
Specific Educational Objectives and Learning Outcomes	The course belongs to the type "attività formative di base – formazione informatica di base". Students attending this course will study and put into practice

	languages, methodologies, and techniques for modelling data, business processes and decisions that are instrumental to the creation of information systems supporting contemporary organizations in their operations management. In addition, they will be able to translate a data model into a corresponding database, and learn how to make use of the basic functionalities (definition, update, and querying) of database management systems in the context of development and deployment of information systems. The course focuses specifically on relational databases, the SQL language, and software programs accessing them, but the taught methods and principles are of a more general nature, and can be applied also in those contexts where data models and database systems different from relational ones are adopted. Knowledge and understanding: - D1.4 - Understand the key principles and modeling structures of data and processes. - D1.5 - Know the main foundations of relational database systems and methods of designing, developing and optimising such systems. Applying knowledge and understanding: - D2.4 - Ability to formalise and to analyse procedures and operational processes, to recognise and use optimisation potentials. - D2.7 - Ability to plan and use access to (relational) databases. Communication skills - D4.5 - Ability to collaborate in interdisciplinary teams to achieve IT objectives. Learning skills - D5.3 - Ability to follow rapid technological developments and to learn about innovative aspects of the latest generation of information technology and systems.
Specific Educational Objectives and Learning Outcomes (additional info.)	
Assessment	- Project work to test knowledge application skills and communication skills, done in small groups to present their work written and orally.

	- Written exam with verification questions and questions to test knowledge application skills.
Evaluation Criteria	- 40% project work - 60% written exercises Relevant for assessment of Module 1: ability to work in teams, skill in applying knowledge in a practical setting, ability to summarize in own words. Relevant for assessment of Module 2: clarity of answers, ability to recall principles and methods used in database systems, skill in applying knowledge such as developing and querying databases.
Required Readings	• Raghu Ramakrishnan, Johannes Gehrke. Database Management Systems. 3rd edition. McGraw-Hill, 2005. • Dumas, M., La Rosa, M., Mendling, J. and Reijers, H. A.: Fundamentals of Business Process Management (II edition). Springer, 2018. Subject Librarian: David Gebhardi, David.Gebhardi@unibz.it
Supplementary Readings	
Further Information	Software used: PostgreSQL Database Management System
Sustainable Development Goals (SDGs)	Quality education

Course Module

Course Constituent Title	Data and Process Modeling for Busines Informatics
Course Code	76445A
Scientific-Disciplinary Sector	IINF-05/A
Language	English
Lecturers	Prof. Marco Montali, marco.montali@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/31326

Teaching Assistant	
Semester	
CP	6
Responsible Lecturer	
Teaching Hours	40
Lab Hours	20
Individual Study Hours	90
Planned Office Hours	18
Contents Summary	- Introduction to Business Process Management - Data modeling - Descriptive process modeling - Analytic process modeling - Decision modeling
Course Topics	
Teaching Format	Frontal classroom lectures plus exercises.
Required Readings	• Raghu Ramakrishnan, Johannes Gehrke. Database Management Systems. 3rd edition. McGraw-Hill, 2005. • Dumas, M., La Rosa, M., Mendling, J. and Reijers, H. A.: Fundamentals of Business Process Management (II edition). Springer, 2018. Subject Librarian: David Gebhardi, David.Gebhardi@unibz.it
Supplementary Readings	

Course Module

Course Constituent Title	Introduction to Databases for Business Informatics
Course Code	76445B
Scientific-Disciplinary Sector	IINF-05/A
Language	English
Lecturers	Prof. Davide Lanti, Davide.Lanti@unibz.it https://www.unibz.it/en/faculties/engineering/academic-

	staff/person/34107
Teaching Assistant	Dott. Albulen Pano
Semester	
CP	6
Responsible Lecturer	
Teaching Hours	40
Lab Hours	20
Individual Study Hours	90
Planned Office Hours	18
Contents Summary	- Relational Model - Query languages (relational algebra and SQL) - Query management - Database design - Building database applications - NoSQL and large-scale data management
Course Topics	
Teaching Format	Frontal classroom lectures plus exercises.
Required Readings	• Raghu Ramakrishnan, Johannes Gehrke. Database Management Systems. 3rd edition. McGraw-Hill, 2005. • Dumas, M., La Rosa, M., Mendling, J. and Reijers, H. A.: Fundamentals of Business Process Management (II edition). Springer, 2018. Subject Librarian: David Gebhardi, David.Gebhardi@unibz.it
Supplementary Readings	