

Syllabus

Course Description

Course Title	Engineering of Mobile Systems
Course Code	76416
Course Title Additional	
Scientific-Disciplinary Sector	INFO-01/A
Language	English
Degree Course	Bachelor in Informatics and Management of Digital Business
Other Degree Courses (Loaned)	
Lecturers	Dr. Muhammad Azfar Yaqub, MuhammadAzfar.Yaqub@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/47326
Teaching Assistant	
Semester	Second semester
Course Year/s	2
CP	6
Teaching Hours	40
Lab Hours	20
Individual Study Hours	90
Planned Office Hours	18
Contents Summary	- Functional and declarative programming - Design of mobile applications - Frameworks and platforms for mobile development - Data and resource management in a mobile context - Mobile device sensors - Internet of Things
Course Topics	This course provides an introduction to the principles, technologies, and methodologies involved in the development of modern mobile and connected applications. It explores functional and declarative programming paradigms, focusing on techniques that improve

	software modularity, maintainability, and responsiveness through concepts such as reactive programming, immutable data, and declarative user interface design. The course also examines the design and architecture of mobile applications, emphasizing usability, accessibility, responsive interfaces, and scalable software structures. Students gain familiarity with development frameworks, software development kits, and platforms used to create native and cross-platform mobile applications, while also learning about testing, debugging, and deployment processes within contemporary mobile ecosystems.
Keywords	- Mobile Application Development - Functional and Declarative Programming - Mobile Frameworks and Platforms - User Interface and User Experience Design - Cross-Platform Development - Native Mobile Development - Mobile Device Sensors
Recommended Prerequisites	- Basic web and programming background - Basic principles of Software engineering
Propaedeutic Courses	
Teaching Format	- Frontal lectures - In-class exercises - Projects in the lab - Work in teams
Mandatory Attendance	Attendance is not compulsory, but is highly recommended, as practical exercises will be done during labs and lectures.
Specific Educational Objectives and Learning Outcomes	The course belongs to the type "caratterizzante - informatica". Students will learn the key concepts of mobile application development and the internet of things. Practical experience will be gained by using state of the art technologies for the development of mobile applications. Upon completion of the course, students shall have acquired expertise in writing mobile applications that leverage advanced mobile APIs and connect to outside web services, and shall be aware of the various tradeoffs in the development of mobile applications. - D1.11 - Know software design and development methodologies with particular regard to the mobile environment.

	Applying knowledge and understanding: - D2.6 - Ability to design, describe and present IT solutions to policy makers. - D2.8 - Ability to develop applications in the web area. Making judgments - D3.4 - Ability to assess fundamental economic and business facts on the basis of numerical data. Communication skills - D4.4 - Ability to structure and prepare technical documentation. 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	The assignments aim at ensuring a continuous interaction with the course content and will be assessed according to correctness and completeness. The project activity aims at assessing how students approach the development of an application and how they interact with each other in order to achieve a common goal. The oral exam assesses the acquisition and the understanding of the theoretical knowledge presented during lectures.
Evaluation Criteria	Oral exam (50%), assignments/Project (50%). The project and the assignments are valid for the 3 regular exam sessions within the same academic year. The assignments must be submitted during the semester, and the project can be presented before the written exam of the first exam session or before the second regular exam session on the dates announced at the beginning of the semester. Further details will be provided during the lectures and on the course web page.
Required Readings	Lecture material will be provided on the course page.
Supplementary Readings	Links to mainly online resources will be provided in the course web page.
Further Information	Software used: - React: https://reactjs.org - Native: https://reactnative.dev

	- Expo: https://expo.io - Visual Studio Code
Sustainable Development Goals (SDGs)	Quality education