

Syllabus

Course description

Course title	Software Development: from the Idea to the Product
Course code	
Scientific sector	INF/01
Semester	Winter term, 1 st semester
Academic Year	2020-2021
Credits	3
Day and time of the lectures	Mondays
Place	Online (Teams)
Total lecturing hours	18
Attendance	Recommended but not compulsory
Prerequisites	/

Specific educational objectives	The course is designed to acquire professional skills and knowledge. In the first part of the course, participants get the project management view of software development: setting the goal and carrying out the project. Participants will be able to collect and define requirements for a software system organize these requirements in such a way that one or more programmers can implement them. A particular focus will be given on the complexity of software development and the solutions that Agile and Lean project management propose so reduce it. In the second part of the course, participants enter the role of the software engineer and learn basic elements of the language Java. The participants will understand how computer programs are made and be able to solve simple programming tasks.
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Lecturer	Andrea Janes, BZ P1.12, ajanes@unibz.it , +39 0471 016132, https://www.unibz.it/de/faculties/computer-science/academic-staff/person/2237-andrea-alexander-janes
Scientific sector of the lecturer	INF/01
Teaching language	$\frac{1}{3}$ Italian, $\frac{1}{3}$ German, $\frac{1}{3}$ English
List of topics covered	1. Software development: half engineering problem half social science. The impact of software and the complexity of developing it; 2. Requirements engineering: how to describe the problem but not the solution; 3. Agile project management: how to organize the development of something you do not know (yet) how to build;

	4. Introduction to programming (the program structure, instructions, conditions, methods): how to break down a solution, how to “talk” to a computer, how to organize the code, which results to expect.
Teaching format	1/2 Frontal lectures, 1/2 Exercises
Learning outcomes	Knowledge and understanding - Know basic principles of software project management and software development Applying knowledge and understanding - Ability to analyze business problems and to develop proposals for software solutions - Ability to manage small projects for the development of software systems - Ability to develop simple software programs Making judgments - Know how to manage small projects for the development of information systems and how coordinate small working groups Communication skills - Ability to structure and prepare technical documentation - Ability to collaborate in interdisciplinary teams to achieve software development objectives Learning skills - Improve the ability to analyze, formulate, and structure tasks - Improve the ability to organize collaborative task solving
Assessment	The assessment is based on the final, oral exam and on the delivered assignments. The weekly assignments motivate the participants to study throughout the semester. The final exam evaluates the understanding of the theoretical backgrounds and the ability of solving smaller, individual programming tasks.
Assessment language	Italian, German, English
Evaluation criteria and criteria for awarding marks	The assessment is based on (i) the assignments (up to 10 points) and (ii) the final exam (up to 20 points). Relevant for assessment of the assignments is the solution of the given task and the ability to explain the adopted strategy to reach the solution. Relevant for the

	assessment of the final exam: clarity of answers, mastery of language, ability to summarize, evaluate, and establish relationships between topics.
Required readings	Lecture notes will be handed out during the course.
Supplementary readings	- Brooks, F.P. Jr.: No silver bullet: Essence and accidents of software engineering. IEEE Comput. 20(4), 10–19 (1987) - Naur, P., Randell, B. (eds.): Software Engineering: Report on a Conference Sponsored by the NATO Science Committee, Garmisch, Germany, 7th to 11th October 1968. Scientific Affairs Division, NATO (1969) - Beck, K.: Extreme Programming Explained: Embrace Change. Addison Wesley, Reading (1999) - Ono, T.: Toyota Production System: Beyond Large-Scale Production. Productivity Press, Cambridge (1988) - Janes, A., Succi, G.: Lean Software Development in Action. Springer (2014)