COURSE DESCRIPTION – ACADEMIC YEAR 2021/2022

Course title	**Agile Software Development**
Course code	73022
Scientific sector	INF/01
Degree	Master in Computational Data Science (LM-18)
Semester	1
Year	2
Credits	6
Modular	No

Total lecturing hours	40
Total lab hours	20
Attendance	Attendance is not compulsory, but non-attending students are suggested to contact the lecturer at the start of the course to agree on the modalities of the independent study.
Prerequisites	Basic knowledge of software engineering activities and processes, open mindset and willingness to work under uncertainty.
Course page	https://ole.unibz.it/

Specific educational objectives	The course belongs to the type "caratterizzanti – discipline informatiche" in the curricula "Data Analytics" and "Data Management". The Agile Software Development course intends to instill into future software engineers an agile mentality, and to improve their capabilities of working on software development projects in an agile manner. The main educational objectives are: • Understanding the root and essence of agile software development and different agile approaches • Applying key agile engineering and project management practices in software development projects • Improving teamwork using agile approaches • Scaling agile software development beyond agile home ground, including distributed and large software development projects

Lecturer	Xiaofeng Wang
Contact	Office POS 1.12, xiaofeng.wang@unibz.it, +39 0471 016181
Scientific sector of lecturer	INF/01
Teaching language	English
Office hours	During the lecture time span, Fridays 15:00 - 17:00, arrange beforehand by email.
Lecturing Assistant (if any)	--
Contact LA	--
Office hours LA	--
List of topics	• Software crisis and the origin of the agile software movement • Different agile software development approaches and key agile practices • From time-boxed agile methods to continuous flow: lean software development

	• Continuous experimentation and continuous software engineering • Teamwork in agile software development • Scaling agile: distributed and/or large software development projects using agile methods
Teaching format	Frontal lectures and team projects

Learning outcomes	Applying knowledge and understanding: • D2.4 - Ability to develop programmes and use tools for the analysis and management of data and related infrastructures Making judgments • D3.1 - Ability to plan and, if necessary, re-plan a technical project activity for the analysis and management of data, or for the implementation of corresponding software systems or applications, and to complete it within the defined deadlines • D3.2 - Ability to autonomously select the documentation (in the form of books, web, magazines, etc.) needed to keep up to date in a given sector • D3.3 - Ability to identify reasonable work goals and estimate the resources needed to achieve these goals Communication skills • D4.1 - Ability to use English at an advanced level with particular reference to disciplinary terminology • D4.5 - Ability to interact and collaborate in the implementation of a project or research with peers and experts Learning skills • D5.3 - Ability to deal with problems in a systematic and creative way and to acquire problem solving techniques

Assessment	**Exam type for regularly attending students**: • Project work (50% of the final mark): a good demonstration of applying agile approaches in a software development project (team score) • Oral exam (50% of the final mark): to test the understanding of theories and knowledge application skills, and verification of project results (individual score). *Note: Positive project result is necessary to attend the oral exam. Both parts of the results must be positive to pass the exam. In case of a positive mark, the project will count for all 3 regular exam sessions.* **Exam type for non-attending students**: • Written report on a piece of research related to agile software development (agreed upon with the lecturer at the beginning of the course) (70% of the final mark); • Oral exam to test the understanding of theories and verification of written report (30% of the final mark). *Note: Positive written result is necessary to attend the oral exam. Both parts of the results must be positive to pass the exam. In case*

	of a positive mark, the written result will count for all 3 regular exam sessions.
Assessment language	English
Assessment Typology	Monocratic
Evaluation criteria and criteria for awarding marks	**For regularly attending students:** Evaluation criteria for project work: • effective application of agile practices • good teamwork • quality of developed solution Evaluation criteria for oral exam: • ability to summarize, evaluate, and make connections between various topics • clarity of answers **For non-attending students:** Evaluation criteria for written report: • good understanding of the literature • clarity of the research method • convincing research results Evaluation criteria for oral exam: • ability to summarize, evaluate, and make connections between various topics • clarity of answers

Required readings	• Agile Manifesto: http://agilemanifesto.org/ • Highsmith, Jim. Agile Software Development Ecosystems. Boston, 2002. Subject Librarian: David Gebhardi, David.Gebhardi@unibz.it
Supplementary readings	• Rubin, Kenneth. Essential Scrum: A Practical Guide to the Most Popular Agile Process. Safari, an O'Reilly Media Company, 2012. • Beck, Kent, and Andres, Cynthia. Extreme Programming Explained: Embrace Change. 2.nd ed. Boston: Addison-Wesley, 2005. • Poppendieck, Mary, and Poppendieck, Tom. Lean Software Development: An Agile Toolkit for Software Development Managers. Harlow: Addison-Wesley, 2003.
Software used	Based on types of projects, decided by project teams.