

COURSE DESCRIPTION – ACADEMIC YEAR 2019/2020

Course title	Software and Systems Security
Course code	76060
Scientific sector	ING-INF/05
Degree	Master in Software Engineering for Information Systems (LM-18)
Semester	2
Year	1
Credits	6
Modular	No
Total lecturing hours	40
Total exercise hours	20
Attendance	Recommended especially for the labs.
Prerequisites	Students should have a solid mathematical foundation and be familiar with basic programming concepts, data structures and algorithms. These prerequisites are covered in any Bachelor degree in Computer Science.
Course page	https://ole.unibz.it/
Specific educational objectives	<p>The course belongs to the type "caratterizzanti – discipline informatiche" - "Advanced Topic in Software /Systems Engineering".</p> <p>The main aim of this module is to provide an introduction to the field of information security. The students learn about the technical as well as the management side of security in information systems. They acquire knowledge about fundamental principles of security and also about practical approaches to securing information systems.</p>
Lecturer	Barzegar Hamid Reza
Contact	Piazza Domenicani 3, Room 1.08, hbarzegar@unibz.it
Scientific sector of lecturer	ING-INF/05
Teaching language	English
Office hours	By previous arrangement via e-mail
Lecturing Assistant (if any)	El Ioini Nabil
Contact LA	Piazza Domenicani 3, Room 1.08, nelioini@unibz.it
Office hours LA	By previous arrangement via e-mail
List of topics	<ul style="list-style-type: none"> • Security by design • Security coding • Security of distributed systems • System Vulnerabilities and attacks
Teaching format	Frontal class room lecture plus lab. sessions
Learning outcomes	<p>Knowledge and understanding:</p> <p>D1.1 To have a sound knowledge of both the fundamentals and the application aspects of the various core areas of information technology;</p> <p>D1.4 To know in depth the principles, structures and use of computer systems for the automation of information systems;</p>

	<p>D1.8 To be able to read and understand specialist scientific documentation, such as conference proceedings, articles in scientific journals, technical manuals.</p> <p>Applying knowledge and understanding:</p> <p>D2.1 To know how to apply the fundamentals of empirical analysis of ICT data to the construction of mathematical models for the evaluation and prediction of characteristics of applications and software systems;</p> <p>D2.4 To be able to define an innovative technical solution to an application problem that meets technical, functional and organisational constraints and requirements;</p> <p>D2.5 To be able to extend and modify in an original way an existing technical solution or a formal model taking into account changed conditions, requirements and evolution of the technology</p> <p>Making judgments</p> <p>D3.2 To be able to plan and re-plan a technical project activity and to carry it out in accordance with defined deadlines and objectives;</p> <p>D3.3 To be able to define work objectives compatible with the time and resources available;</p> <p>Communication skills</p> <p>D4.2 To be able to present the contents of a scientific/technical report to an audience, including non-specialists, at a fixed time;</p> <p>D4.5 To be able to prepare and conduct technical presentations in English;</p> <p>Learning skills</p> <p>D5.1 To be able to independently extend the knowledge acquired during the course of study by reading and understanding scientific and technical documentation in English;</p> <p>D5.2 To be able to keep up to date independently with developments in the most important areas of information technology;</p>
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Assessment	<ul style="list-style-type: none"> • Project work to test knowledge application skills and communication skills • Written exam with verification questions and questions to test knowledge application skills
Assessment language	English
Assessment typology	Monocratic commission
Evaluation criteria and criteria for awarding marks	<ul style="list-style-type: none"> • 30 points project work • 70 points written exam • 10 points for additional activities <p>Relevant for assessment 1: ability to work in teams, skill in applying knowledge in a practical setting, ability to summarize in own words.</p>

	Relevant for assessment 2: clarity of answers, ability to recall principles and methods used in system security, skill in applying knowledge such as testing the security of systems
Required readings	Materials in the form of slides and scientific papers provided by the teacher
Supplementary readings	<ul style="list-style-type: none"> • Principles of information security 6th edition, Michael E. Whitman, Herbert J. Mattord, ISBN 978-1337102063 • Cryptography and Network Security: Forouzan Mukhopadhyay, Mc Graw Hill, ISBN 9339220951, 9789339220952 • CompTIA Security+ Guide to Network Security Fundamentals 6th Edition, Mark Ciampa ISBN 978-1337288781 • Computer security 3rd, Rditiondieter gollmann, Wiley, ISBN10 0470741155 • Coding for Penetration Testers: Building Better Tools, Jason Andress, Ryan Linn, ISBN 9781597497299 • Social Engineering: The Art of Human Hacking, Christopher Hadnagy, ISBN 9780470639535
Software used	Provided by teacher and tutor during lectures / lab sessions