

SYLLABUS COURSE DESCRIPTION

COURSE TITLE	Systems Engineering
COURSE CODE	76226
SCIENTIFIC SECTOR	INF/01
DEGREE	Bachelor in Computer Science
SEMESTER	1st
YEAR	3rd
CREDITS	6

TOTAL LECTURING HOURS	40
TOTAL LAB HOURS	20
PREREQUISITES	-
ATTENDANCE	<p>Attendance is not compulsory but highly recommended.</p> <p>Non-attending students have to contact the lecturer at the start of the course to agree on the modalities of the independent study. In particular, they should visit the course web page and check carefully the modalities for carrying on the required homework.</p> <p>The exam modalities for non-attending students are indicated below, in the fields "Assessment" and "Evaluation criteria and criteria for awarding marks".</p>
COURSE PAGE	https://ole.unibz.it/

SPECIFIC EDUCATIONAL OBJECTIVES	<p>The course belongs to the type caratterizzanti – discipline informatiche.</p> <p>It is designed to give specific professional skills in constructing systems, with a focus on estimating effort, automating deployment, and evaluating the performance of software systems.</p>
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LECTURER	Matteo Camilli
SCIENTIFIC SECTOR OF THE LECTURER	INF/01
TEACHING LANGUAGE	English
OFFICE HOURS	Thursdays, 10:00-12:00, Office POS 1.13, matto.camilli@unibz.it , +39 0471 016179. Arrange by email.

TEACHING ASSISTANT	TBA
OFFICE HOURS	Wednesdays, 14:00-16:00, Office POS 1.13, xx.xx@unibz.it +39 375 6071913. Arrange by email.
LIST OF TOPICS COVERED	<ul style="list-style-type: none"> • Principles of system estimation • Tools and techniques for system estimating • Continuous development and DevOps • Continuous integration and deployment • Operations and monitoring • Performance engineering
TEACHING FORMAT	Frontal lectures

LEARNING OUTCOMES	<p>Knowledge and understanding:</p> <ul style="list-style-type: none"> • To have a thorough knowledge of the main fundamentals, techniques and methods of software design, development and maintenance <p>Applying knowledge and understanding:</p> <ul style="list-style-type: none"> • Ability to perform simple experimental activities on computer systems, acquiring measures related to the system and its behavior through experimental hypotheses • Knowing how to choose and use innovative technologies and methods appropriate to the context and the application problem • Knowing how to manage small IT system development projects and coordinate small working groups <p>Making judgments</p> <ul style="list-style-type: none"> • Ability to collect and interpret data useful for forming autonomous judgments on information systems and their use; <p>Communication skills</p> <ul style="list-style-type: none"> • Ability to structure and draft technical documentation; • Ability to collaborate in working groups on the development of information systems. <p>Learning skills</p> <ul style="list-style-type: none"> • Ability to follow the rapid technological evolution and to learn the innovative aspects of the latest generation of technologies and information systems.
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ASSESSMENT	<p>The assessment is based on the lab assessment and the final exam. The lab assessment is composed of a number of assignments. The assignments motivate the students to study throughout the semester. The final exam evaluates the students' understanding of the theoretical backgrounds and the ability of solving problems.</p> <p>Both, attending and non-attending students will be assessed through the lab assessments and the final exam. Both, attending and non-attending students have complete access to the lab. material and additional exercises from the course web page.</p>
ASSESSMENT LANGUAGE	English
EVALUATION CRITERIA AND CRITERIA FOR AWARDING MARKS	<p>For both, attending and non-attending students, the assessment is based on (i) the lab assessment (score between 0 and 30) and (ii) the final exam (score between 0 and 30). The final mark is the average between the lab assessment score and the final exam score. The assignments can be accessed only during the lecturing period.</p> <p>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.</p>

REQUIRED READINGS	<ul style="list-style-type: none"> - INCOSE. Systems Engineering Handbook: A Guide for System Life Cycle Processes and Activities. 4th ed. Wiley, 2015. p. 304. ISBN: 9781118999400 - National Aeronautics and Space Administration. NASA Systems Engineering Handbook (NASA/SP-6105). Rev 2. [Online available https://www.nasa.gov/connect/ebooks/nasa-systems-engineering-handbook] - ISO/IEC/IEEE International Standard - Systems and software engineering -- Life cycle processes -- Requirements engineering (29148-2011)
SUPPLEMENTARY READINGS	- Scientific papers provided during the course
SOFTWARE USED	Open Source software downloaded and installed during the course, software available to students of the Free University of Bozen-Bolzano (like gitlab.inf.unibz.it) or software requiring a free registration like github.com.