

SYLLABUS COURSE DESCRIPTION YEAR 2025/26

COURSE TITLE	Operating Systems
COURSE CODE	76270
SCIENTIFIC SECTOR	INFO-01/A
DEGREE	Bachelor in Computer Science
SEMESTER	2nd
YEAR	1nd
CREDITS	9
MODULAR	Yes
TOTAL LECTURING HOURS	50
TOTAL LAB HOURS	40
ATTENDANCE	Attendance is not compulsory; non-attending students may contact the lecturer at the start of the course to get support on the modalities of the independent study.
PREREQUISITES	For the entire module knowledge and skills in programming are strongly recommended. For Foundations of Artificial Intelligence, discrete mathematics and linear algebra, for Machine Learning in Practice, probability theory and statistics are also strongly recommended.
COURSE PAGE	The course page will be made available on the Microsoft Teams class for this course or on https://ole.unibz.it , as communicated by the lecturer. Additional materials can also be found in the university's Reserve Collection at https://www.unibz.it/en/services/library/new-rc/ .
SPECIFIC EDUCATIONAL OBJECTIVES	<p>This course belongs to the type "Attività formative di base" and the subject area is "Informatica".</p> <p>The goal of this module is to provide students with a solid understanding of operating systems and their core components and functionalities, the fundamentals of programming in C, scheduling algorithms, process management and synchronization, as well as memory management techniques.</p>

MODULE 1	Operating Systems and Networking
MODULE CODE	76270A
MODULE SCIENTIFIC SECTOR	INFO-01/A
CREDITS	6
LECTURER	Andrea Janes (andrea.janes@unibz.it)
SCIENTIFIC SECTOR OF THE LECTURER	INFO-01/A
TEACHING LANGUAGE	English
OFFICE HOURS	Office BZ B1 4.24, Mondays 14:00–16:00, by appointment via email
TEACHING ASSISTANTS	/
OFFICE HOURS	/
LIST OF TOPICS COVERED	<ul style="list-style-type: none"> – Operating Systems Structures – Processes, Threads and Concurrency – CPU Scheduling and Synchronization – Memory and Mass-Storage – I/O, File Systems – Networks and Distributed Systems
TEACHING FORMAT	The course includes frontal lectures and lab sessions.

MODULE 2	Programming in C
MODULE CODE	76270B
MODULE SCIENTIFIC SECTOR	INFO-01/A
CREDITS	3
LECTURER	Nicola Gigante (nicola.gigante@unibz.it)
SCIENTIFIC SECTOR OF THE LECTURER	INFO-01/A
TEACHING LANGUAGE	Italian

OFFICE HOURS	Office BZ B1 5.35, Mondays 14:00–16:00, by appointment via email
TEACHING ASSISTANTS	/
OFFICE HOURS	/
LIST OF TOPICS COVERED	<ul style="list-style-type: none"> – Data types, variables, operators, control structures (loops, conditionals), functions, and pointers – Dynamic memory allocation, arrays, structures, linked lists, stacks, and queues – File handling, bitwise operations, multi-file programs, debugging, and optimization
TEACHING FORMAT	The course includes frontal lectures and lab sessions.

LEARNING OUTCOMES	<p>Knowledge and Understanding</p> <ul style="list-style-type: none"> – Know the fundamental principles of programming. – Know the innovative aspects of the last generation of operating systems. <p>Applying knowledge and understanding</p> <ul style="list-style-type: none"> – Ability to develop programs to interact with microcontrollers and the operating systems of modern computers. <p>Ability to make judgments</p> <ul style="list-style-type: none"> – Be able to work autonomously according to the own level of knowledge and understanding. <p>Communication skills</p> <ul style="list-style-type: none"> – Be able to use one of the three languages English, Italian and German, and be able to use technical terms and communication appropriately. <p>Learning skills</p> <ul style="list-style-type: none"> – Have developed learning capabilities to pursue further studies with a high degree of autonomy. – Be able to follow the fast technological evolution and to learn cutting edge IT technologies and innovative aspects of last generation information systems.
--------------------------	--

ASSESSMENT	<p>Assessment includes programming assignments and projects aimed at implementing operating system functionalities or simulating system behavior, as well as a written exam designed to evaluate the understanding of fundamental concepts and in-depth knowledge of operating systems. The exam features open-ended questions that cover both theoretical topics and practical lab exercises. Non-attending students are expected to contact the lecturer at the beginning of the course to arrange an appropriate plan for independent study.</p>
-------------------	---

ASSESSMENT LANGUAGE	Italian
EVALUATION CRITERIA AND CRITERIA FOR AWARDING MARKS	The final grade will be composed of the grade obtained at the written exam (70%) and, of the grade obtained for the labs/projects work (30 %). A passing grade to all projects is necessary to access the exam. Project grades records last for the academic year. All grades reflect the correctness and 2/3 clarity of answers. Attending and non-attending students are evaluated the same way.
REQUIRED READINGS	<ul style="list-style-type: none"> – Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, and Riccardo Melen. Sistemi operativi. Concetti ed esempi. Ediz. Mylab. Con Contenuto digitale per accesso online. Pearson, 10th edition, February 2019. ISBN 978-88-919-0455-3. – C tutorial at https://www.w3schools.com/c/
SUPPLEMENTARY READINGS	<ul style="list-style-type: none"> – Burattini and P. Chianese. Che C serve? Per iniziare a programmare. Maggioli Editore, 2nd edition, 2016. ISBN 978-88-916-1173-4. – Andrew Tanenbaum and Herbert Bos. Modern Operating Systems. Pearson, Boston, 4th edition, March 2014. ISBN 978-0-13-359162-0.
SOFTWARE USED	<ul style="list-style-type: none"> – Ubuntu (https://ubuntu.com) – C (https://gcc.gnu.org) – Oracle VirtualBox (https://www.virtualbox.org) – Visual Studio Code (https://code.visualstudio.com) – Code Runner (https://marketplace.visualstudio.com/items?itemName=formulahendry.code-runner) – clang-format (https://docs.kernel.org/dev-tools/clang-format.html)