## **COMPUTER ENGINEERING (LM55)**

(Lecce - Università degli Studi)

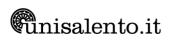
<b>Teaching in italian</b> SYSTEM AND NETWORK PROGRAMMING <b>Teaching</b> SYSTEM AND NETWORK PROGRAMMING	Course year 1 Language INGLESE
SSD code ING-INF/05	Curriculum PERCORSO COMUNE
<b>Reference course</b> COMPUTER ENGINEERING	
Course type Laurea Magistrale	Location Lecce
Credits 12.0	Semester Primo-Semestre
<b>Teaching hours</b> Ore-Attivita-frontale: 108.0	Exam type Orale
For enrolled in 2019/2020	Assessment Voto-Finale
Taught in 2019/2020	<b>Course timetable</b> https://easyroom.unisalento.it/Orario
	NETWORK PROGRAMMING Teaching SYSTEM AND NETWORK PROGRAMMING SSD code ING-INF/05 Reference course COMPUTER ENGINEERING Course type Laurea Magistrale Credits 12.0 Teaching hours Ore-Attivita-frontale: 108.0 For enrolled in 2019/2020

## BRIEF COURSE DESCRIPTION

UNIX System Overview
UNIX Standardization and Implementations
File I/O
Files and Directories
System Data Files and Information
Process Environment
Process Control
Process Relationships
Signals
Threads
Thread Control
Daemon Processes
Advanced I/O
Interprocess Communication
Network IPC: Sockets
Terminal I/O
Cybersecurity
(Disassembling an executable
Following the execution of a process at machine code level
Buffer overflows
Shellcode)

## REQUIREMENTS

All the concepts presented in the "Sistemi Operativi" course in the first level degree "Ingegneria dell'Informazione". Namely, a good knowledge of: UNIX® basic concepts, the UNIX® bash shell, bash scripting, main UNIX® commands



COURSE AIMS	Overview The course aims at starting the students off on programming system applications (e.g. a server) on a UNIX® System. Learning Outcomes; after the course the student should * Know the most important functionalities and facilities offered by a UNIX® system, the System Calls (and, more generally, the APIs) offered to access them. * Be able to write efficient CLI (Command Line Interface) system and network applications in the C language. * Know how to write interoperable applications by complying with the UNIX® standards (SUSv3, SUSv4). * Know which are the main differences between the MacOS and the Linux varieties and how to cope with them.
TEACHING METHODOLOGY	The course is strongly oriented towards an hands-on methodology. Students must follow lectures in front of a computer which must be used to reproduce and test what is explained by the teacher-
ASSESSMENT TYPE	Writing a C program aimed at solving a given problem within a given time. Students are free to consult (paper and digital) texts and to use Internet search engines.
FULL SYLLABUS	UNIX System Overview UNIX Standardization and Implementations File I/O Files and Directories System Data Files and Information Process Environment Process Control Process Relationships Signals Threads Threads Thread Control Daemon Processes Advanced I/O Interprocess Communication Network IPC: Sockets Terminal I/O Cybersecurity (Disassembling an executable Following the execution of a process at machine code level Buffer overflows Shellcode)



REFERENCE TEXT BOOKS	Stevens, Rago, Advanced Programming in the UNIX Environment, 3rd Edition, Addison-Wesley, 2013 ISBN 978-0321637734
	Stevens, Fenner, Rudoff, Unix Network Programming, Volume 1: The Sockets Networking API (3rd
	Edition), Addison-Wesley, 2003 ISBN 978-0131411555
	Kerrisk, The Linux Programming Interface, NO STARCH PRESS, 2010 ISBN 978-1593272203
	Handouts delivered by the teacher through http://moodliis.unisalento.it/