

Global Learning Semesters

Course Syllabus

Course: COMP-384 Systems Programming

Department: Computer Science

Host Institution: University of Nicosia, Nicosia, Cyprus



Course Summary		
Course Code	Course Title	Recommended Credit Hours
COMP-384	Systems Programming	3
Semester Offered	Contact Hours	Prerequisites
Please contact us	42-45	COMP-255 and COMP-354
Department	Level of Course	Language of Instruction
Computer Science	Upper Division	English

Course Description

The course covers advanced topics of systems software and systems programming. It is complementary to the class of Operating Systems and provides students with realistic experience of how major system components are implemented in practice. It includes extensive coverage of processes and threads, inter-process communication, virtual memory and storage allocation, i/o redirection and programming, including network programming, client-server systems development and distributed systems. The course material is kept, to the extent possible, machine-independent and will be delivered as a mixture of lectures, laboratory work and extensive programming assignments and projects on a real platform and on simulators.

Prerequisites

COMP-255 and COMP-354

Topic Areas

1. Introduction and background information. Evolution of the components of a programming system and of operating systems; application program interfaces and system calls.
2. Process creation and termination. Process hierarchies. Thread realisation and programming.
3. Inter-process communication. Message passing.
4. Process and thread synchronisation. Semaphores, mutual exclusion, condition variables, locks.
5. Shared memory concepts and programming.
6. Remote procedure calls.
7. TCP/IP network programming. Sockets, ports and packets. TCP VS UDP programming. Socket manipulation.
8. Client-server programming.
9. Introduction to distributed systems.

Readings and Resources

Required Textbook

- David A. Curry, UNIX Systems programming for SVR4, 1996, O'Reilley. (ISBN 1565921631).

Recommended Readings

- W. Richard Stevens UNIX Network programming 2/e Vol 1, 1998, Prentice Hall, ISBN 0-13-490012-x.