

Course Syllabus

SYSTEMS PROGRAMMING

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Program: Computer Science

1. Course number and name

CCPG1008 - SYSTEMS PROGRAMMING

2. Credits and contact hours

3 credits and 4 contact hours

3. Instructor's course or coordinator's name

FEDERICO XAVIER DOMINGUEZ BONINI

4. Text book, title, author, and year

*Randal Bryant y David O'Hallaron. Computer Systems: A Programmer's Perspective (3ra)

a. Other supplemental materials

*Love, R. Linux System Programming: Talking Directly to the Kernel and C Library (2da)

5. Specific course information

a. Brief description of the content of the course (catalog description)

This course is focused on low-level software development that interacts directly with the operating system and hardware. A major focus is on the use of industry standard tools for code versioning and teamwork. At the end of the course, the student should be able to design, implement, test, and analyze programs written in C for Unix/Linux operating systems.

b. Prerequisites

OBJECT ORIENTED PROGRAMMING - CCPG1005

c. This course is a: Required

6. Specific goals for the course

a. Specific outcomes of instruction

1.- The student will be able to build a simple C program using methods of layer division, error detection, and error status reflection for the creation of a robust system that requires minimal maintenance.

2.- The student will be able to implement programs with computational parallelism using events, threads, processes, and other concurrency paradigms for the efficient use of resources provided by the hardware and operating system of a computer.

3.- The student will be able to implement a simple client-server application using sockets and a basic application programming interface (API) for the creation of a scalable system with clear separation of competencies.

4.- The student will be able to program a computational system using an event-oriented paradigm for the management of external asynchronous events.

5.- The student will be able to use software collaboration, debugging, and integration tools for team management and development of a medium-sized software product.

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course

(1) Analyze a complex computing problem and to apply principles of computing and other relevant

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disciplines to identify solutions.

(6) Apply computer science theory and software development fundamentals to produce computing-based solutions.

7. Brief list of topics to be covered

- 1.- Introduction to the Linux shell and C
- 2.- Compilers and programming tools
- 3.- Data representation and memory management
- 4.- Libraries
- 5.- Input/Output
- 6.- Parallel Programming

