30321 - Systems Architecture

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

Course Objectives

1. Understand the structure and function of an operating system through its main elements: files and processes.
2. Acquire the basic knowledge for using the services of an operating system from the point of view of an advanced user.
3. Know the problems caused by concurrent access to data and resources as well as traditional methods of

communication between processes.

The learning process designed for this course is based on:

The monitoring of the programmed learning activities

4.2.Learning tasks

The program provided to the students to help them achieve the expected results includes the following activities:

● Assistance and achievement in class

● Solving problems in small groups

● Performing assisted laboratory practices

● Performing individual lab-work

● Independent learning and individual work using the material utilized in the classroom and laboratory in addition to a collection of problems and bibliography.

● Resolution of queries through customized tutoring or small group tutoring.

● Performing the corresponding evaluation tests

4.3.Syllabus

The content given in class will be organized as follows:

● C Languaje

❍ We will spend three hours in its description

❍ A big part of the labs, exercices and exams will consist of developing small codes in C

● Introduction

30321 - Systems Architecture

❍ Structure and function of an operating system

❍ Clasification of operating systems

❍ Review of fundamental concepts

● Processes

❍ Processes managment

❍ UNIX: process related system calls

❍ Implementation of a command interpreter

❍ Threads: managment and system calls

● File system

❍ Files managment

❍ UNIX: File system related system calls

❍ Basic comunication between processes: pipes

● Memory

❍ Memory mangement

❍ UNIX: memory related system calls

● UNIX: user vision

❍ Four hours of lab (Lab 1 and 2)

Assisted laboratory practices on the content given in lectures:

● Lab 1 y 2: UNIX: user view

● Lab 3. Processes managment

● Lab 4. Signals

● Lab 5. Tools for program development (ar and make)

● Lab 6. File system managment

● Lab 7. Comunication between processes

4.4.Course planning and calendar

Schedule of lectures and presentation of works:

It will be set for each group once the academic calendar of the University of Zaragoza and each center is approved.

4.5.Bibliography and recommended resources

[1] Silberschatz, Abraham. Fundamentos de sistemas operativos / Abraham Silberschatz, Peter Baer Galvin, Greg Gagne ; traducción Vuelapluma S. L.; revisión técnica Jesús Sánchez Allende . - 7ª ed. Aravaca (Madrid) : McGraw-Hill Interamericana, D.L. 200

[2] Stevens, W. Richard. Advanced programming in the UNIX environment / W. Richard Stevens, Stephen A. Rago . - 2nd ed., 3rd print. Upper Saddle River (NJ) : Addison-Wesley, 2006

[3] Schildt, Herbert. C : manual de referencia / Herbert Schildt ; traducción, Susana Nieto Moya, Antonio Toca Caso; revisión técnica, J. Ignacio Sánchez García . - 1a ed. en español Madrid [etc.] : McGraw Hill/Interamericana de España, 2003

[4] The material provided in class including a collection of exercices.