University of Puerto Rico
Mayagüez Campus
College of Engineering
Department of Electrical and Computer Engineering
Bachellor of Science in Computer Engineering

Course Syllabus

1. General Information:

Alpha-numeric codification: ICOM 5007
Course Title: Operating Systems
Number of credits: 4
Contact Period: 3 hours of lecture and three hours of laboratory per week
Rquired in ICOM

2. Course Description:

English: Concepts of operating systems, multiprogramming, multiprocessing, batch, partitioned and real-time. Organization and processing of file systems.Study of queueing theory and information flow control.

Spanish: Conceptos de Sistemas Operativos, Multiprogramacion, Multiprocesa- Miento, Procesamiento Por Lotes, Por Tiempo Compartido y Por Tiempo Real. Organizacion y Manejo de Sistemas de Archivo. Estudio de la Teoria de Colas y Del Control de Flujo de Informacion.

3. Pre/Co-requisites and other requirements:

Prerequisites ICOM4035, ICOM 4206

4. Course Objectives:

Students will gain an understating of the various modules in an operating system, and their relationship with he underlying computer architecture. In addition, students will design and implement various software modules for a simple operating system.

5. Instructional Strategies:

☒conference ☒discussion ☒computation ☒laboratory

☒seminar with formal presentation ☐seminar without formal presentation ☐workshop

☐art workshop ☐practice ☐trip ☐thesis ☐special problems ☐tutoring

☐research ☒other, please specify: project

6. Minimum or Required Resources Available:

Students will use Departmental computer laboratories to complete course projects.

7. Course time frame and thematic outline

Outline	Contact Hours
Introduction: operating system structures and function	1.5
Processes, threads, and concurrency:	9
Memory management and virtual memory	4.5
CPU scheduling	3
I/O management and the disk block cache	3
File systems	3
Distributed processing and network implementation	9

Security issues	3
Project in-class reports (definition and requirements, design, implementation and verification)	6
Exams and discussions	3
Laboratory sessions (45 hours equivalent	45 laboratory
Total hours: (equivalent to contact period)	45

8. Grading System

☒ Quantifiable (letters) ☐ Not Quantifiable

9. Evaluation Strategies (Suggested): The faculty member teaching the course will provide the student with the evaluation strategy he/she will be using throughout the semester. This will be done within the first week of classes.

	Quantity	Percent
☒ **Exams**	**3**	**45%**
☒ **Final Exam**	**1**	**15%**
☐ **Short Quizzes**	**variable**	**10%**
☐ **Oral Reports**		
☐ **Monographies**		
☐ **Portfolio**		
☒ **Projects**	**1**	**15%**
☐ **Journals**		
☐ **Other, specify: laboratory, oral and written reports are included in projects**		**25%**
TOTAL:		**100%**

10. Bibliography:

Andrew S. Tanenbaum, "Modern Operating Systems", 2nd Edition, Prentice Hall.
Andrew S Tanenbaum, Albert S Woodhull, "Operating Systems Design and Implementation, 3rd Edition, Prentice Hall, 2006.

Abraham Silberschatz, Peter Baer Galvin, and Greg Gagne, "Operating System Concepts", 7th Ed., John Wiley, 2004.

11. According to Law 51

Students will identify themselves with the Institution and the instructor of the course for purposes of assessment (exams) accommodations. For more information please call the Student with Disabilities Office which is part of the Dean of Students office (Chemistry Building, room 019) at (787)265-3862 or (787)832-4040 extensions 3250 or 3258.

12. Contribution of Course to meeting the requirements of Criterion 5:

Math	Basic Science	General	Engineering Topic
			√

Map to Program

13. Course Outcomes	**Outcomes**
1. Understand the different resource types of an operating system	(a)
2. Analyze the differences between contemporary operating system structure	(b)
3. Analyze the organization of a particular open source OS code and describe how it accomodates various platforms and I/O devices	(b)
4. Program and analyze performance of representative concurrency examples	(c)
5. Relate memory management techniques to process structure and reliable OS functioning	(b)
6. Analyze a typical device driver, understanding methods to link it to the OS as a whole	(b)
7. Program a threaded application in a language supporting monitors such as Java	(c)
8. Relate system security aspects to OS internals	(b)
9. Analyze malware and hacking attacks as they relate to OS	(b)
10. Define, implement and test a significant OS project	(c)
11. Coordinate group accomplishment of the project	(d)

Person (s) who prepared this description and date of preparation: Thomas Noack.
Submitted by: Manuel Rodríguez, March, 2007