COURSE DESCRIPTION

Dept., Number	CSci 523	Course Title	Operating Systems
Semester hours	3	Course Coordinator	P. Tobin Maginnis, Associate Professor

Current Catalog Description

Design and construction of operating systems for shared program computers; various contemporary operating systems.

Textbook

Love, Robert, *Linux Kernel Development,* 2nd Ed., Novell Press, 2005.

Plus various research articles.

References

Class website: http://pix.cs.olemiss.edu/csci523/

Course Outcomes

Upon successful completion of this course, the students can:

1. describe a model of an operating system;
2. describe the Linux kernel GNU GCC idioms, and the X86 architecture;
3. describe the memory management "block move" problem and provide an analysis of state management;
4. describe the control flow of read, write, and close system service calls;
5. describe the look-up tables and virtual file system jump tables and explain how they implement operating system abstractions;
6. describe shared libraries, memory management, and data caching;
7. describe system bootstrapping and task initialization.

Relationship between Course Outcomes and Program Outcomes

This is a course taken primarily by computer science graduate students; it is sometimes taken by undergraduate computer science students as an elective to enrich their programs. The course outcomes contribute to the program outcomes as follows: 1 to (a), (b), and (c); 2 through 7 to (b), (c), and (i).

Prerequisites by Topic

1. Operating systems (CSci423)

Major Topics Covered in the Course

1. Operating system models (2 hours)
2. C programming language, GNU GCC idioms, and X86 architecture review (3 hours)
3. Analysis of state management implementation and the "block move" problem (3 hours)
4. Process management (2 hours).
5. Logical memory drivers (1 hour)
6. Timing service (1 hour).
7. Process duplication and creation (4 hours)
8. Memory management (4 hours)
9. Data caching (2 hours)
10. Open call (4 hours)
11. Name service (3 hours)
12. Read, write, and close calls (3 hours)
13. System bootstrapping and task initialization (3 hours)

Assessment Plan for the Course

This is an elective course offered infrequently (e.g., only once in the past four years) and primarily to computer science graduate students. An offering typically has 4 examinations and a semester project. Outcomes 1 through 7 are assessed by exam questions and through the semester project. The instructor evaluates the student performance informally and makes changes to the course content, organization, and pedagogy as indicated.

How Data in the Course are Used to Assess Program Outcomes (unless adequately covered already in the assessment discussion under Criterion 4)

Estimate Curriculum Category Content (Semester hours)

Area	Core	Advanced	Area	Core	Advanced
Algorithms			Software design		1
Data structures		1	Concepts of programming languages		1