

**CS 3221 : OPERATING SYSTEMS PRACTICUM (4)**

**Catalog Description:** A hands-on introduction to operating systems and tools. Systems administration experience with Linux, Unix, or Windows. Concepts of processor management and scheduling, memory management, file systems.

**Textbook:** *A Practical Guide to Fedora and RedHat Enterprise Linux (College Edition)*, by Mark Sobell, Prentice Hall, 2007.

**Course Goals:**

The student who successfully completes this class will be able to:

- Understand the goals and design of modern operating systems,
- Install, administer, and use a modern operating system, and
- Understand the evolution of operating systems to the current day.

**Prerequisites by Course & Topic**

CS 3011: Information Systems Hardware and Software – overview of computer hardware, especially peripheral devices

**Major Topics Covered in the Course**

- Origins of Free Software Movement
- Open Source Software Licenses
- Copyright Issues
- Linux Installation
- Linux Command Line Tools and Utilities
- System Security
- Booting and Boot Records
- Kernel Patches and Upgrades
- Virtual Machines
- Client/Server Model and Applications

**Class/Laboratory Schedule:** Lecture: 3 hours per week, Laboratory: 1

**Course Outcomes**

1. Understand the goals and design of modern operating systems.
  - a. Consider the use of modern operating systems in a variety of hardware platforms, including desktop computers as well as mobile devices.
  - b. Compare the merits of monolithic kernels versus other models such as message passing.
  - c. Understand how modern copyright law can be used (and abused) with respect to software and other media.
2. Install, administer, and use a modern operating system.
  - a. Install and administer a number of different operating systems during the course of the semester.
  - b. Become skilled as both a command line and GUI user of these systems, both as a normal user and as a super-user.
  - c. Learn how to set up more complicated tools and services that are customized to a particular application or user.
3. Understand the evolution of operating systems to the current day.
  - a. Trace the development of Operating Systems from the earliest days of computing to the present time.
  - b. Study the specific development of the Unix and Linux Operating Systems, and how these have influenced other operating systems (and been influenced by others).

**Relationship to Program Outcomes**

CS 3221 is a required core course that is taken after successful completion of Information Systems Software and Hardware.

2. *Students can design, develop, and analyze significant software systems.*

The students spend considerable time examining and modifying various distributions of the Linux operating system, which is a very complex software system. Course outcomes 1-3 relate to this program outcome.

4. *Students can apply computer science principles and practices to a variety of problems.*

Operating systems and their supporting tools are complicated and wide ranging. Students gain a variety of experiences working with these systems and tools which requires them to draw upon many aspects of their backgrounds. Course outcomes 1-3 relate to this program outcome.

5. *Students can work independently and also work effectively in teams.*

The students work independently and on teams throughout the semester. The individual and team experiences include system modification and administration assignments. Course outcome 2 relate to this program outcome.

7. *Students understand social, professional and ethical issues related to computing.*

Students study the details of open source software licenses, and discuss current issues in copyright law that affect operating systems and other software and media. Course outcome 3 relate to this program outcome.

**Assessment Plan for Course:**

This course is assessed every third year by the instructor and a course assessment document covering all of the course outcomes and their effect on the program outcomes is prepared.

**Estimate CSAB Category Content**

	CORE	ADVANCED		CORE	ADVANCED
Data Structures			Computer Organization and Architecture Concept of Programming Languages		2
Algorithms					
Software Design		2			

**Coordinator/Prepared by:** T. Pedersen (March 2009)