

University of Arkansas – Fort Smith
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General Syllabus

CS 3053 Operating Systems

Credit Hours: 3

Lecture Hours: 3

Laboratory Hours: 0

Prerequisite: CS 2003 Data Structures

Effective Catalog: 2020-2021

I. Course Information

A. Catalog Description

An examination of the software that provides an abstraction of hardware and manages shared resources among applications. Hardware interfaces, system calls, user mode and kernel mode tasks, and operating system design and development are emphasized.

II. Student Learning Outcomes

A. Subject Matter

Upon successful completion of this course, the student will be able to:

1. Explain the objectives and functions of modern operating systems.
2. Describe how computing resources are used by application software and managed by system software.
3. Evaluate the advantages and disadvantages of different approaches for operating system development such as monolithic and micro-kernel.
4. Explain the need for protection and security in an operating system.
5. Design and implement programs that use system calls to interface with the operating system.

B. University Learning Outcomes

This course enhances student abilities in the following area:

Analytical Skills

Critical Thinking Skills

Students will design programs that interface with operating systems using system calls and evaluate their efficiency and safety.

III. Major Course Topics

- A.** Overview of operating systems
- B.** Abstractions, processes, threads, and resources
- C.** Creation of application program interfaces
- D.** Design Issues and approaches
- E.** Device organization and management
- F.** Interrupts
- G.** User mode and Kernel mode
- H.** Concurrency
- I.** Memory management
- J.** Process management and scheduling
- K.** File systems
- L.** System Calls and C Language
- M.** Unix/Linux and Windows
- N.** System security
- O.** Virtualization