Knight Foundation School of Computing and Information Sciences

Course Title: Computer Operating Systems **Date:** 3/22/2023

Course Number: CGS 3767

Number of Credits: 3

Subject Area: System	**Subject Area Coordinator:** Deng Pan **email:** pand@fiu.edu
Catalog Description: Introduction to fundamental concepts of operating systems and their implementation in UNIX and Windows.	
Textbook: 1) Guide to Operating Systems by Tomsho Cengage 2021 (ISBN: 9780357433904) 2) The Linux Command Line by William Shotts Free Online	
References:	
Prerequisites Courses: COP 2210 or COP 2250 or COP 2270	
Corequisites Courses: None	

Type: Required (CY, IT)

Prerequisites Topics:

- Primitive data types
- Basic program control structures
- Familiarity with methods or functions

Course Outcomes:

1. Describe hardware and software concepts [Understanding]
2. Explain OS functions and management [Understanding]
3. Interpret management of file systems [Understanding]
4. Demonstrate the use of text editors [Understanding]
5. Perform basic command line with security functions [Applying]
6. Create simple shell scripts with security features [Creating]
7. Use Linux and Windows operating systems [Applying]

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Association between Student Outcomes and Course Outcomes

BS in Computing: Student Outcomes	Course Outcomes
1) Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.	1, 2, 7
2) Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.	3, 4
3) Communicate effectively in a variety of professional contexts.	
4) Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.	
5) Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.	

Program Specific Student Outcomes

6) Apply computer science theory and software development fundamentals to produce computing-based solutions. [CS]	N/A
6) Apply security principles and practices to maintain operations in the presence of risks and threats. [CY]	5, 6
6) Use systemic approaches to select, develop, apply, integrate, and administer secure computing technologies to accomplish user goals. [IT]	5, 6

Assessment Plan for the Course and how Data in the Course are used to assess Student Outcomes

Student and Instructor Course Outcome Surveys are administered at the conclusion of each offering, and are evaluated as described in the School's Assessment Plan: https://abet.cis.fiu.edu/

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Outline

Topic	Number of Lecture Hours	Outcome
• Hardware o Hardware and peripherals o Maintenance and testing o Anti-tamper physical security technologies	3	1
• Software o Virtual machines o Software components o Functions of an operating system o Interaction between OS and hardware o Common OS o Common utilities and applications o Software updates to fix security vulnerabilities	3	1,2
• File Systems o Characteristics of file systems o Creating and managing file systems o Directory commands o Files and file attributes o File and directory permissions	6	2,3
• Text Editors o Windows editors o Unix editors	6	4
• Command Line o File and directory commands o Utility commands o Command files (scripts) o Connection security (ping, ipconfig, traceroute, netstat)	3	2,5
• GUI o Windows o KDE o GNOME	3	2,6
• OS Management o Administrative activities o User policies o Authentication (multifactor, password, passphrase) o Authorization (access control)	3	2
• Shell programming o File processing tools o Variables: configuration/environment/shell o Operators: defining/evaluating/arithmetic o Logic: sequential/decision/loop/case o Debugging scripts o String tests, integer tests, Boolean conditions o Script development cycle	13	2, 7

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Course Outcomes Emphasized in Laboratory Projects / Assignments

	Outcome	Number of Weeks
1	Hardware, software Outcomes: 1,2	2
2	File system, command line, editor Outcomes: 3,4,5	2
3	System management Outcomes: 2,6	2
4	Shell script with security features Outcomes: 7	2

Oral and Written Communication: No significant coverage

Number of written reports:

Approximate number of pages for each report:

Number of required oral presentations:

Approximate time for each presentation:

Social and Ethical Implications of Computing Topics

No significant coverage

Topic	Class time	Student performance measures

Theoretical Contents

Topic	Class time

Problem Analysis Experiences

Solution Design Experiences

1.	Design of simple bash and PowerShell scripts
2.	