

# Knight Foundation School of Computing and Information Sciences

**Course Title:** Computer Operating Systems

**Date:** 12/20/2022

**Course Number:** CGS 3767

**Number of Credits:** 3

<b>Subject Area:</b> System	<b>Subject Area Coordinator:</b> Deng Pan <b>email:</b> <a href="mailto:pand@fiu.edu">pand@fiu.edu</a>
<b>Catalog Description:</b> Introduction to fundamental concepts of operating systems and their implementation in UNIX and Windows.	
<b>Textbook:</b> 1) Guide to Operating Systems by Tomsho Cengage 2021 (ISBN: 9780357433904)  2) The Linux Command Line by William Shotts Free <a href="#">Online</a>	
<b>References:</b>	
<b>Prerequisites Courses:</b> <a href="#">COP 2250</a> or <a href="#">COP 2210</a>	
<b>Corequisites Courses:</b> 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**

<b>BS in Computing: Student Outcomes</b>	<b>Course Outcomes</b>
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.	
<b>Program Specific Student Outcomes</b>	
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
<ul style="list-style-type: none"> <li>• Hardware               <ul style="list-style-type: none"> <li>○ Hardware and peripherals</li> <li>○ Maintenance and testing</li> <li>○ Anti-tamper physical security technologies</li> </ul> </li> </ul>	3	1
<ul style="list-style-type: none"> <li>• Software               <ul style="list-style-type: none"> <li>○ Virtual machines</li> <li>○ Software components</li> <li>○ Functions of an operating system</li> <li>○ Interaction between OS and hardware</li> <li>○ Common OS</li> <li>○ Common utilities and applications</li> <li>○ Software updates to fix security vulnerabilities</li> </ul> </li> </ul>	3	1,2
<ul style="list-style-type: none"> <li>• File Systems               <ul style="list-style-type: none"> <li>○ Characteristics of file systems</li> <li>○ Creating and managing file systems</li> <li>○ Directory commands</li> <li>○ Files and file attributes</li> <li>○ File and directory permissions</li> </ul> </li> </ul>	6	2,3
<ul style="list-style-type: none"> <li>• Text Editors               <ul style="list-style-type: none"> <li>○ Windows editors</li> <li>○ Unix editors</li> </ul> </li> </ul>	6	4
<ul style="list-style-type: none"> <li>• Command Line               <ul style="list-style-type: none"> <li>○ File and directory commands</li> <li>○ Utility commands</li> <li>○ Command files (scripts)</li> <li>○ Connection security (ping, ipconfig, traceroute, netstat)</li> </ul> </li> </ul>	3	2,5
<ul style="list-style-type: none"> <li>• GUI               <ul style="list-style-type: none"> <li>○ Windows</li> <li>○ KDE</li> <li>○ GNOME</li> </ul> </li> </ul>	3	2,6
<ul style="list-style-type: none"> <li>• OS Management               <ul style="list-style-type: none"> <li>○ Administrative activities</li> <li>○ User policies</li> <li>○ Authentication (multifactor, password, passphrase)</li> <li>○ Authorization (access control)</li> </ul> </li> </ul>	3	2
<ul style="list-style-type: none"> <li>• Shell programming               <ul style="list-style-type: none"> <li>○ File processing tools</li> <li>○ Variables: configuration/environment/shell</li> <li>○ Operators: defining/evaluating/arithmetic</li> <li>○ Logic: sequential/decision/loop/case</li> <li>○ Debugging scripts</li> <li>○ String tests, integer tests, Boolean conditions</li> <li>○ Script development cycle</li> </ul> </li> </ul>	13	2, 7

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**Course Outcomes Emphasized in Laboratory Projects / Assignments**

	<b>Outcome</b>	<b>Number of Weeks</b>
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

<b>Topic</b>	<b>Class time</b>	<b>Student performance measures</b>

**Theoretical Contents**

<b>Topic</b>	<b>Class time</b>

**Problem Analysis Experiences**

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**Solution Design Experiences**

1. 

Design of simple bash and PowerShell scripts
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2. 

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