DO NOT TYPE IN THIS BOX
Bulletin #: _____
Academic Year: _____

FLORIDA INTERNATIONAL UNIVERSITY
UNIVERSITY CURRICULUM COMMITTEE
Proposal for a Course Change

PART I. FILL OUT THIS SECTION COMPLETELY

1. **School/College** Engineering and Computing

   Div./Dept. in Which Taught School of Computing and Information Sciences

2. | COP | 4 | 610 | | 3 |
   |---|---|---|---|---|
   | Alpha Prefix | 1st Digit | Last 3 Digits | "C"-lec-lab "L"-Lab | Cr. Hrs. |

3. **Present Course Title** Operating Systems Principles

PART II. FILL OUT CHANGE INFORMATION ONLY

Change Effective 1 / 6 / 20 20

4a. **New Course Title** _____

b. **New Abbreviated course Title** *(for computer class schedules, transcripts)* _____

LIMITED TO 25 Characters *(including spaces)*

5a.

New Alpha Prefix	New 1st Digit	New Last 3 Digits	Change "C"-lec-lab "L"-Lab

5b. **Change Credit Hours: From** _____ **To** _____

6. **New Catalog Description/Major Topics** *(not to exceed 200 characters including spaces)*
   College of Medicine and College of Law: Attach description not exceeding 1,000 characters including spaces.

7. **New Prerequisite(s):** CDA 3XXX(Computer Architecture) and COP 4338

8. **New Corequisite(s):** None

9. **Explain Reclassification Request:**

   Since the new course CDA-3XXX (Computer Architecture) replaces both CDA-3103 and CDA-4101, the current "Prereq: CDA-4101 and COP-4338" needs to be replaced with "Prereq: CDA-3XXX and COP-4338"

10. **Does this proposed change impact the assessment process of a program or certificate? If yes, then send notification to assessment@fiu.edu.**

PROPOSAL REQUESTED BY:

Faculty Contact Nagarajan Prabakar (Type name) _____ (Signature) 3 / 21 / 20 19

prabakar@cis.fiu.edu (Email address) 305-348-2033 (Phone number)

Chairperson (Dept./Div.) S.S. Iyengar (Type name) _____ (Signature) 3 / 21 / 20 19

Chairperson (Curr. Comm.) Cesar Levy (Type name) _____ (Signature) _____ / _____ / 20 19

College/School Dean John Volakis (Type name) _____ (Signature) _____ / _____ / 20 19

Submit one original form. Attach one copy of the course justification and course syllabus: course description, objectives, learning outcomes, major topics and textbooks.

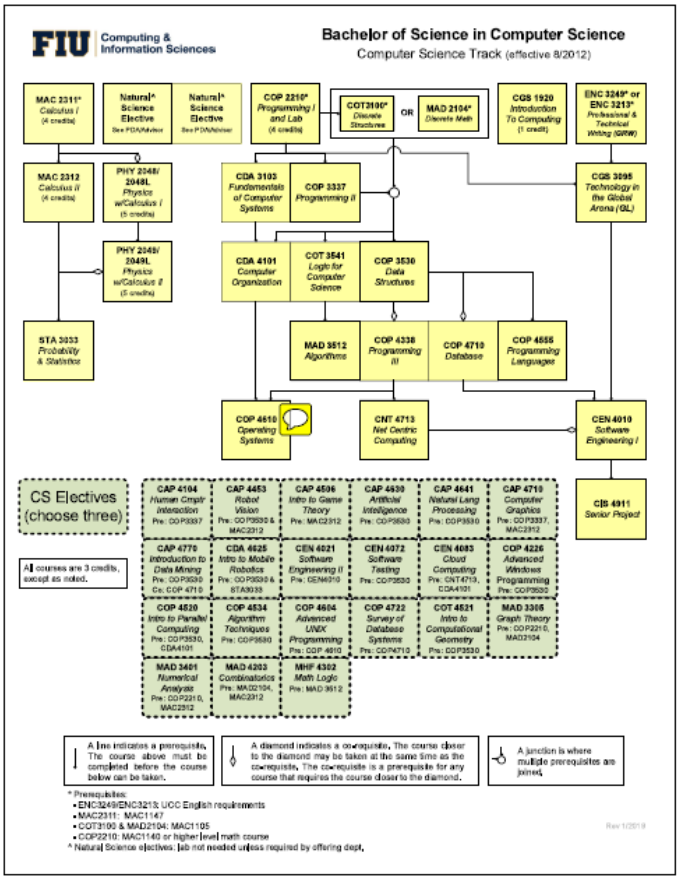
COP-4610 Operating Systems Principles

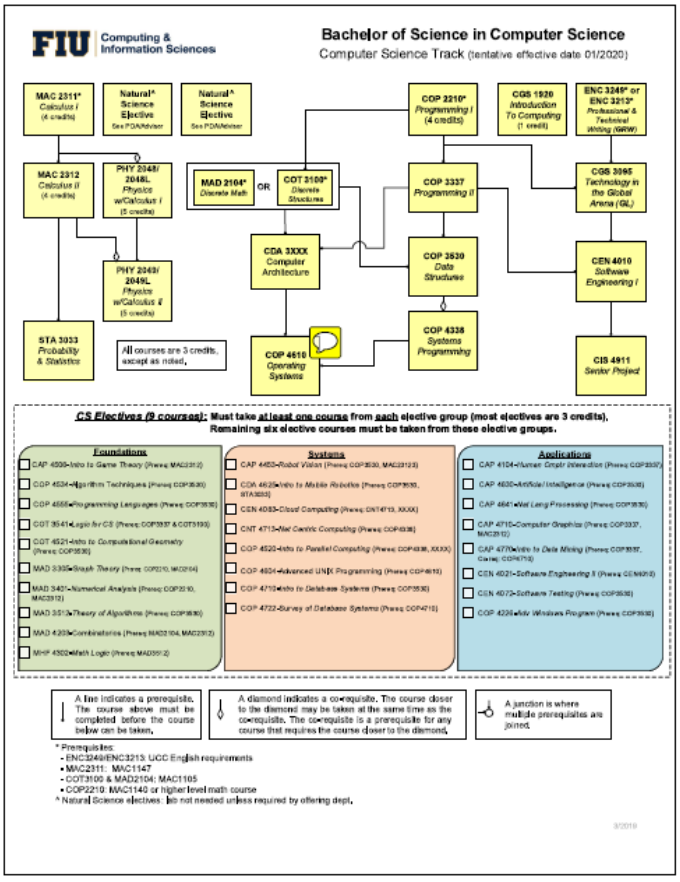
Course Change Justification

During the curriculum restructuring process, two architecture specific required courses (CDA-3103 and CDA-4101) are identified with substantial overlap with other Computer Science required courses. For this reason, these two courses have been replaced with one new course (CDA-3XXX).

Since the current "Prereq: CDA-4101 and COP-4338" as in the left flowchart (present curriculum model) below, will not be valid with the removal of CDA-4101 course. Hence the new "Prereq: CDA-3XXX and COP-4338" is needed as shown in the right flowchart (restructured new curriculum model) below.

This course change is necessary as part of the curriculum restructuring process so that students will gain one additional elective course to widen their skills in emerging technologies that would increase their career opportunities.





School of Computer Science

Course Title: Operating Systems Principles **Date:** March 18, 2019

Course Number: COP-4610

Number of Credits: 3

Subject Area: Computer Systems	**Subject Area Coordinator:** S. Masoud Sadjadi **email:** sadjadi@cs.fiu.edu
Catalog Description: Operating systems design principles and implementation techniques. Address spaces, system call interface, process/threads, interprocess communication, deadlock, scheduling, memory, virtual memory, I/O, file systems.	
Textbook: Operating System Concepts, 6th Edition Silberschatz, Galvin, and Gagne John Wiley (ISBN: 0471250600)	
References:	
Prerequisites Courses: CDA 3XXX(Computer Architecture) and COP 4338	
Corequisites Courses: None	

Type: Required

Prerequisites Topics:

- CPU, cache, memory organization
- Instruction set architecture
- Multithreading
- Fundamental data structures

Course Outcomes:

1. Master the functions and structures of operating systems
2. Be familiar with issues in the design of operating systems
3. Master techniques of memory management
4. Master file and storage systems
5. Master concepts of process synchronization and communication

School of Computing and Information Sciences
COP-4610
Operating System Principles

Relationship between Course Outcomes and Program Outcomes

BS in CS: Program Outcomes	Course Outcomes
a) Demonstrate proficiency in the foundation areas of Computer Science including mathematics, discrete structures, logic and the theory of algorithms	
b) Demonstrate proficiency in various areas of Computer Science including data structures and algorithms, concepts of programming languages and computer systems.	1,2,3,4
c) Demonstrate proficiency in problem solving and application of software engineering techniques	5
d) Demonstrate mastery of at least one modern programming language and proficiency in at least one other.	
e) Demonstrate understanding of the social and ethical concerns of the practicing computer scientist.	
f) Demonstrate the ability to work cooperatively in teams.	
g) Demonstrate effective communication skills.	

Assessment Plan for the Course & how Data in the Course are used to assess Program 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: http://www.cis.fiu.edu/programs/undergrad/cs/assessment/

School of Computer Science
COP-4610
Operating System Principles

Outline

Topic	Number of Lecture Hours	Outcome
• Overview o Operating system history o Computer-system organization o Operating-system structure	6	1,2
• Process management o Processes o Threads o CPU scheduling o Process synchronization o Deadlocks	15	2,5
• Storage management o Memory management o Virtual memory o File-system interface o File-system implementation	9	3
• I/O systems o I/O processing o Mass-storage structure	6	4

School of Computer Science
COP-4610
Operating System Principles

Course Outcomes Emphasized in Laboratory Projects / Assignments

	Outcome	Number of Weeks
1	Client-server project Process scheduling, queuing, I/O service Outcome: 1,3,5	6

Oral and Written Communication:

No significant coverage

Social and Ethical Implications of Computing Topics

No significant coverage

School of Computer Science
COP-4610
Operating System Principles

Approximate number of credit hours devoted to fundamental CS topics

Topic	Core Hours	Advanced Hours
Algorithms:		**1.0**
Software Design:		
Computer Organization and Architecture:		**1.0**
Data Structures:		**1.0**
Concepts of Programming Languages:		

Theoretical Contents

Topic	Class time

Problem Analysis Experiences

1. Critical section analysis

Solution Design Experiences

1. Synchronization of concurrent processes
2. Access to shared resources

School of Computer Science
COP-4610
Operating System Principles

The Coverage of Knowledge Units within Computer Science Body of Knowledge[1]

Knowledge Unit	Topic	Lecture Hours
OS1	Role and history of operating systems, computer-system structures, client-server systems, hand-held systems	3
OS2	Operating-system components, services, structure, and implementation	5
OS3	Critical section, semaphores, process synchronization; deadlocks detection, prevention, and recovery	6
OS4	Processes, threads, CPU scheduling	9
OS5	Memory management, virtual memory	6
OS8	File-system interface, file-system implementation, I/O systems, mass-storage structure	6

[1]See http://www.computer.org/education/cc2001/final/chapter05.htm for a description of Computer Science Knowledge units