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: College of Engineering and Computing

   Div./Dept. in Which Taught: Electrical & Computer Engineering

2. | Alpha Prefix | 1st Digit | Last 3 Digits | "C"-lec-lab "L"-Lab | Cr. Hrs. |
   |---|---|---|---|---|
   | EEL | 6 | 141 | N/A | 3 |

3. Present Course Title: Advanced Network Analysis

PART II. FILL OUT CHANGE INFORMATION ONLY

Change Effective: 01 / 08 / 2024

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
			N/A

5b. Change Credit Hours: From _____ To _____

6. New Catalog Description/Major Topics *(not to exceed 200 characters including spaces in the box below)*

College of Medicine and College of Law: Attach description not exceeding 1,000 characters including spaces.

The course covers the concepts to perform modeling and analysis of computer systems. The topics include optimization, Transforms, Stochastic Processes and Queueing Theory, Game Theory, Control Theory, and Information Theory.

7. New Prerequisite(s): Remove prerequisites

8. New Corequisite(s): _____

9. Explain Reclassification Request:

Modify catalog description and remove current prerequisites of the course from the catalog.

10. Did you attach a copy of the course justification and course syllabus that contains the changes you are requesting? NO ☐ YES ☑

11. Does this proposed change impact the assessment process of a program or certificate? If yes, then send notification to assessment@fiu.edu. NO ☑ YES ☐

PROPOSAL REQUESTED BY:

Faculty Contact: Alexander Perez-Pons (Type name) _____ (Signature) 8 / 30 / 2023

aperezpo@fiu.edu (Email address) (305) 348-3016 (Phone number)

Chairperson (Dept./Div.): Deidra Hodges (Type name) _____ (Signature) 10 / 12 / 2023

Chairperson (Curr. Comm.): Alexander Afanasyev (Type name) _____ (Signature) 11 / 15 / 2023

College/School Dean: John Volakis (Type name) Mark Weiss (Signature) 11 / 17 / 2023

Submit one original form. Attach one copy of the course justification and a draft of the course syllabus reflecting any changes requested in this Proposal for a Course Change. The syllabus should include the course description, objectives, learning outcomes, major topics, and textbooks. Where applicable, please ensure that the changes you are requesting are included in the syllabus and supporting documentation.

EEL 6141 – Advanced Network Analysis

Course Justification

This course will provide Computer Engineering Master students the opportunity to take a course that covers the main mathematical topics that are related to cybersecurity, digital communication, network communication, and network modeling. The course covers a multitude of math concepts that are required to understand and analysis communication system to develop the skills desired for graduate studies. The course fills a gap that currently exist in the master's in computer engineering specialization in Network Security, while also supporting other programs and students that requires these math topics for success in Computer Engineering master program and its specializations.

The reason for the modification to the course description is that the course is being enhanced to include current mathematical concepts required for a MS in Computer Engineering student. The current course description would not be indicative of the revamped course content and therefore the course description change is being requested. The course content change has also eliminated the need for the course prerequisite since all required concepts are encompassed in the course. Therefore, the proposed course description and prerequisite changes would now be representative of the new course content accurately representing the course.

Department of Electrical and Computer Engineering

EEL 6141 Advanced Network Analysis (3 credits)

Catalog Data: The course covers the concepts to perform modeling and analysis of computer systems. The topics include optimization, Transforms, Stochastic Processes and Queueing Theory, Game Theory, Control Theory, and Information Theory.

Prerequisites: **None**

Corequisites: **None**

Textbooks **Srinivasan Keshav, Mathematical Foundations of Computer Networking, 2012, Pearson Education,**
ISBN: 978-0-321-79210-5

Type: Math elective all MS students in Computer Engineering

Course Objectives: The course is designed to provide essential knowledge of concepts required to conduct modeling and analysis of computer networks. The student will develop a working knowledge of the mathematical topics required to work with computer networks and communication systems.

Course Learning Outcomes:

At the end of this course, the students will be able to:

- Apply fundamentals of probability and statistics as it applies to the functionality of networks
- Evaluate optimization techniques associated with communications
- Apply transforms and linear algebra techniques in working with network configurations
- Synthesis net models applying stochastics Processes and Queueing Theory
- Analysis game theory as it pretends to communication channels and systems
- Apply information theory to enhance communication bandwidth.

Topics Covered:

- Probability
- Statistics
- Linear Algebra
- Finite Math
- Discrete Math
- Optimization
- Signals, Systems, Transforms
- Stochastics Processes and Queueing Theory

- Game Theory
- Elements of Control Theory
- Information Theory

Grading Scheme

Grading Scale: NOTE: There are ***no makeup exams*** offered	
Quiz	20%
Midterm	30%
Final	30%
Assignments	20%

Tentative Grading Scale

A	**100-95**	**B+**	**86-89**	**C+**	**74-77**	**D**	**60-69**
A-	**90-94**	**B**	**82-85**	**C**	**70-73**	**F**	**0-59**
		B-	**78-81**				

University's Code of Academic Integrity

"Florida International University is a community dedicated to generating and imparting knowledge through excellent teaching and research, the rigorous and respectful exchange of ideas, and community service. All students should respect the right of others to have an equitable opportunity to learn and honestly to demonstrate the quality of their learning. Therefore, all students are expected to adhere to a standard of academic conduct, which demonstrates respect for themselves, their fellow students, and the educational mission of the University. All students are deemed by the University to understand that if they are found responsible for academic misconduct, they will be subject to the Academic Misconduct procedures and sanctions, as outlined in the Student Handbook."
More information can be found at http://academic.fiu.edu/academic_misconduct.html

Department Regulations Concerning Incomplete Grades
To qualify for an Incomplete, a student:
1. Must contact (e.g., phone, email, etc.) the instructor or secretary before or during missed portion of class
2. Must be passing the course prior to that part of the course that is not completed
3. Must make up the incomplete work through the instructor of the course
4. Must see the Instructor. All missed work must be finished before last two weeks of the following term.

University policies: on sexual harassment, and religious holidays, and information on services for students with disabilities
http://academic.fiu.edu/
http://drc.fiu.edu

Policies:

- **Academic Misconduct:** For work submitted, it is expected that each student will submit their own original work. Any evidence of duplication, cheating or plagiarism will result at least a failing grade for the course.
- **Unexcused Absences:** Two unexcused absences are permitted during the term. More than two will result in the loss of points from your final grade. (**1 point** per absence above two**, 3 points** per absence above 5).
- **Excused Absences:** Only emergency medical situations or extenuating circumstances are excused with proper documentation. After reviewing documentation you are **required to email** a description of the excuse and absence dates as a written record to apons@fiu.edu.
- **On Time:** As in the workplace, on time arrival and preparation are required. Two "lates" are equivalent to one absence. (Leaving class early is counted the same as tardy.)
- **Deadlines:** Assignments are due at the beginning of the class period on the date specified. Assignments submitted late (within 1 week) will receive **half credit.**
- **DO NOT** send assignments by email.
- Instructor reserves right to change course materials or dates as necessary.

Last Update: Pons, 8/21/2023