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 Electrical and Computer Engineering

2. | CNT | 4 | 149 | | 3 |
   |---|---|---|---|---|
   | Alpha Prefix | 1st Digit | Last 3 Digits | "C"-lec-lab "L"-Lab | Cr. Hrs. |

3. **Present Course Title** Sensor & IoT Data Analysis with Deep learning

PART II. FILL OUT CHANGE INFORMATION ONLY

Change Effective 1 / 1 / 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):** None

8. **New Corequisite(s):** _____

9. **Explain Reclassification Request:**
   The course has been structured in a manner that prerequisite are not required, as the course provides all of the required knowledge for students to comprehend the course concepts

10. **Does this proposed change impact the assessment process of a program or certificate?**

PROPOSAL REQUESTED BY:

Faculty Contact Dr. Alexander Perez-Pons _____ 9 / 3 / 20 19
(Type name) (Signature)

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(Email address) (Phone number)

Chairperson (Dept./Div.) Dr. Shekhar Bhansali _____ 10 / 10 / 20 19
(Type name) (Signature)

Chairperson (Curr. Comm.) Dr. Wei-Chiang Lin _____ / _____ / 20_____
(Type name) (Signature)

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

Submit one original form.

Department of Electrical and Computer Engineering

CNT 4149 Sensor & IoT Data Analysis with Deep Learning

Catalog Data: This course will focus on the application of deep learning techniques and algorithms on structured and unstructured data received from sensors and IoT devices. Students will learn classifying images received form IoT devices using convolution neural network, classify senor data using deep neural network and analysis of sequential / time series data using recurrent neural network. Popular open source and commercial deep learning framework will be used for building the models and prediction using large sensor and IoT datasets.

Prerequisites: **None**

Corequisites: **None**

Textbooks **Hands-On Machine Learning with Scikit-Learn by Aurelien Geron, O'Reilly Media Inc**

Type: Elective for All BS students

Course Objectives:

This course will teach students various IoT and sensor data analysis using deep learning techniques and applications. Students will gain hands on experience on popular open source framework like Tensor Flow, Keras and CNTK. Students will learn about Deep Neural Network, Convolution Neural Network, Recurrent Neural Network and its application to large IoT and Sensor datasets. Students will learn about automatic feature extraction, build / validate models and perform prediction using large sensor datasets. Student will learn about parameter optimization to improve network performance. Case studies will be provided to assist students in establishing real-world scenarios for IoT data analysis and visualization using deep learning.

Course Learning Outcomes:

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

- Understand fundamentals of Sensor and IoT analytics using Deep Learning
- Knowledge of IoT deep learning architecture and network
- Identify and apply Deep Neural Network to categorize IoT and Sensors data
- Apply Convolutional Neural Network to classify image data received from IoT devices
- Apply Recurrent Neural Network to forecast based on time series and sequential data received from sensors and IoT devices
- Identify sensor data anomaly using deep learning algorithms

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.

The prerequisite of the course have been re-evaluated and modified accordingly to reflect the background expectation required for student success. The prerequisite modification will provide a greater opportunity for students to enroll in the courses, since adequate background information is now covered in the course.