



**FLORIDA INTERNATIONAL UNIVERSITY
UNIVERSITY CURRICULUM COMMITTEE**
Proposal for a New Course

DO NOT TYPE IN THIS BOX
Bulletin # : <u>3</u>
Academic Year : <u>2018-19</u>

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

2. CAP 2 C 3 CIP Code (Leave this blank): _____
Alpha Prefix 1st Digit Last 3 Digits "C"-lec-lab "L"-Lab Cr. Hrs.

CAP 2750

3. Grading Method (select one): Graded Pass/Fail

4a. Course Title Data Analytics for the Internet of Things

b. Abbreviated course Title (for computer class schedules, transcripts) Data Analytics for IoT

LIMITED TO 25 Characters (including spaces)

5. Statewide Course Numbering Subject Matter Area Computer Science & Computing Technologies

6. 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.

Concepts/applications of Data Analytics for IoT. Data science, machine learning, and artificial intelligence at the edge. Inference, sensor fusion, bandwidth, transfer learning, and generative models.

7. Attach detailed syllabus course outline and course justification on separate page(s).

8. Prerequisite(s): None

9. Corequisite(s): None

10. Objective(s) of Course:

The main objective of this course is to introduce students to the theory and practice of data analytics, data science, machine learning, and artificial intelligence as it applies to IoT devices.

11. Does this course duplicate/overlap other courses at FIU? No Yes

If yes, please explain: _____

12. What other closely related department(s) have been consulted about this course?

Department of Electrical and Computer Engineering

13. Is this course used for the assessment of a program or a certificate (if yes, then send a notification to assessment@fiu.edu)? No Yes

PROPOSAL REQUESTED BY:

Faculty Contact Miguel Alonso Jr  11 / 7 / 2018
(Type name) (Signature)

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(Email address) (Phone number)

Chairperson (Dept./Div.) S.S. Iyengar  11 / 28 / 2018
(Type name) (Signature)

Chairperson (Curr. Comm.) Cesar Levy  12 / 4 / 2018
(Type name) (Signature)

College/School Dean John Volakis  1 / 20
(Type name) (Signature)

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

New Course Justification

CAP2XXX

Data Analytics for the Internet of Things

The increased demand for professionals with training in the Internet of Things (IoT), specifically Data Analytics for IoT, is growing, while the supply of these individuals is not. This course will prepare students at FIU with a practical set of skills to perform Data Analytics for real world IoT applications. This course will provide a practical, top-down introduction to IoT Data Analytics for undergraduate students.

Currently, our curriculum does not include such a course to give practical Data Analytics skills in IoT. In this course, we will cover concepts and applications of Data Analytics for the Internet of Things. Additionally, we discuss data science, machine learning, and artificial intelligence at the edge. Case studies for inference, sensor fusion, bandwidth, transfer learning, and generative models will be reviewed. Data Analysis techniques will also be applied to real-world IoT data.

School of Computing and Information Science

Course Title: Data Analytics for the Internet of Things

Date: 11/20/2018

Course Number: CAP 2XXX

Number of Credits: 3

Subject Area: Intelligent Systems	Subject Area Coordinator: email:
Catalog Description: Concepts/applications of Data Analytics for IoT, Data science, machine learning, and artificial intelligence at the edge. Inference, sensor fusion, bandwidth, transfer learning, and generative models.	
Textbook: <i>Analytics for the Internet of Things (IoT): Intelligent analytics for your intelligent devices Paperback, Andrew Minteer</i>	
References:	
Prerequisite Courses: None	
Corequisite Courses: None	

Type: Elective

Prerequisite Topics:

- None

Course Outcomes:

Upon completing this course, students should be able to:

1. Explain what “Data Analytics” term means
2. Differentiate between traditional Data Analytics and Data Analytics for IoT
3. Enumerate and describe the fundamental concepts of Data Analysis for IoT
4. Demonstrate the ability to translate IoT data into actionable business insights
5. Evaluate the use of IoT data from acquisition through cleansing, warehousing, analytics, and visualization to drive business decisions
6. Apply Data Analytics to real-world IoT datasets

Outline:

Topic	Number of Lecture Hours (Total: 37.5 hours)	Outcome
Introduction to Data Analytics & Tools	2.5	O1, O2
IoT Analytics in the Cloud	7.5	O5
IoT Data Collection Strategies and Techniques	2.5	O5
EDA for IoT Data	2.5	O4, O5, O6
IoT Dataset Augmentation	5	O6
IoT Data Visualization and Dashboarding	5	O5, O6
Data Science, Machine Learning, & AI at the Edge	6.5	O3
Organizing IoT Data for Analytics	2.5	O5
Practical Considerations for IoT Data Analytics	2.5	O6
IoT Data Analytics Project	1	O1 – O6