Department of Electrical and Computer Engineering
CNT 4151 - IoT & SENSOR DATA VISUALIZATION
Fall 2022

Instructor   :   Dr. Mohammad Shah Alam
Office Hours   :   by appointment
                             MWF 10:30 am -11:30 am

Office   :   EC – 3105
Phone   :   (305)348-3163
Email   :   moalam@fiu.edu

Section/Classroom/Time
                    :   Available through FIU Canvas

Catalog Description:
Introduction to aspects of the engineering profession. Computer tools and basic engineering science. Team-based engineering projects. (3 Credits)

Reference Textbook:
1. Kieran Healy
    Data Visualization: A Practical Introduction
    ISBN-10: 0691181624

2. Roger Silva
    Power BI, Excel and Tableau - Business Intelligence Clinic: Create and Learn
    ISBN-13: 979-8632777667

Course Objectives:

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

- Understand fundamentals of Data Visualization framework
- Knowledge of various data ingestion techniques for IoT
- Understand IoT data structures and formats
- Compare different visualization tools in client server and web environment applied to Sensor and IoT data
- Learn client and web interface for different tools & libraries like Power BI, Tableau, Matplotlib etc. applied to IoT dataset
- Learn to connect to various data sources
- Develop dashboards and reports using Power BI or Tableau with IoT and sensor datasets.
- Learn connecting to SQL Azure, HD Spark, and SQL Server Analysis Services on Azure Cloud
- Display analytics results and reporting with IoT data visualization tools

ABET Relationship of course to program outcomes:
  (Select corresponding boxes below to applicable program outcomes for the course.)
  ☒ 1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
  ☒ 2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
  ☐ 3. an ability to communicate effectively with a range of audiences.
  ☐ 4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
  ☐ 5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
  ☐ 6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
  ☒ 7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Grading Scale:		the University's Code of Academic Integrity http://academic.fiu.edu/academic_misconduct.html
A	>94	"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."
A-	90-94	
B+	87-89	
B	83-86	
B-	80-82	
C+	77-79	
C	70-76	
D	60-69	
F	< 60	

Department Regulations Concerning Incomplete Grades
To qualify for an Incomplete, a student:
  1. Must contact (e.g., phone, email, etc.) the instructor 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 moalam@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:** Work is due before midnight on the date specified. Late submissions within one week will receive up to half credit. After one-week, late work will not be accepted. Late submissions are graded after the final exam. Participation deadlines are absolute – no late completions or makeups.

- **Submissions:** This class is paperless. Submissions are made using the web form listed on the class web site (both online and in class sections). All submissions must be a) a single document, b) web accessible by anyone and readable with a browser c) accessible using a single URL reference

- **DO NOT** send assignments by email unless asked by the instructor to do so.

- Instructor reserves right to change course materials or dates as necessary.

Grading Scale:

Course Requirements	Number of Items	Points for Each	Total Points Available	Weight
Project	1	200	200	20%
Exams	2	200	400	40%
Discussion/Participation	4	50	200	20%
Assignments	4	50	200	20%
Total	11	N/A	1000	100%