CNT-6148 RXPI 1228– Advanced IoT & Sensor Big Data Analytics
Department of Electrical & Computer Engineering
Florida International University
Fall, 2022

General Information

Section:	RXPI 1228
Class time:	Tue 11.15 AM 1:00 PM
Prerequisite:	N/A
Textbook:	No textbook required
Reference:	Making Sense of NoSQL, Concepts, Tools, and Techniques to Build Intelligent Systems By Dan McCreary and Ann Kelly. ISBN: 978-1617291074 Principles and Practice of Big Data: Preparing, Sharing, and Analyzing Complex Information 2nd Edition By Jules J. Berman. ISBN: 978-0128156094 Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses By Michael Minelli, Michele Chambers, Ambiga Dhiraj. ISBN: 978-1118147603

Contact Information

Instructor:	Jayesh Soni
Office:	EC 2174
Office Hours:	TuTh 3:30 PM - 5:00 PM (By Appointment)
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Course Description

CNT-6148 RXPI 1228– Advanced IoT & Sensor Big Data Analytics. Understand the fundamentals of Sensor and IoT analytics Learn to process and stream using various big

data technologies. Understand Machine Learning Libraries for Big Data and their application to IoT.

Course Objectives

After completing this course, students are expected to have learned the following:

1. Understand fundamentals of Sensor and IoT analytics
2. Knowledge of IoT data architecture
3. Identify and apply Big Data platforms for IoT and Sensors
4. Apply NoSQL database for IoT and sensor data storage
5. Compare traditional and big data storage for large sensor data processing
6. Apply Batch processing of large IoT dataset
7. Apply Stream IoT data processing and perform analysis
8. Understand Machine Learning Libraries and its application to IoT Data

Topics Covered

1. IoT and Sensor Data Concepts
2. Sensor & IoT Data Architecture
3. IoT on Big data platform
4. IoT and Sensor data storage
5. Batch and Stream Processing for IoT Data
6. Sensor & IoT Data Ingestion with Message Broker
7. NoSQL- Cassandra / DocumentDB for IoT
8. Hadoop/Spark/Kafka Ecosystem for IoT
9. Machine Learning with Spark
10. Application of Spark Libraries to IoT Data

Grading Scheme:

Assignments: 15%
Midterm 25%
Quiz: 20%
Research Project: 15%
Final Exam: 25%

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.

Tentative Grading Scale:

A	95-100	B+	85-89.9	C+	70 - 74.9
A-	90-94.9	B	80-84.9	C	65- 69.9
		B-	75-79.9	D	60-64.9

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 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

Please visit the following websites:
http://academic.fiu.edu/
http://drc.fiu.edu

Course Policies:

- All exams are close book unless specified otherwise. Make-up exam is given only under special extenuating circumstances and up to the discretion of the instructor.
- You are required to attend every class. Exception is given only if you notify the instructor with a legitimate reason in advance.
- All assignments are due at the beginning of the class time on the due day unless specified otherwise.
- No late turn-in will be accepted.
- All assignments need to be bound well and arranged in the correct order before being turned in. Otherwise, 20 percent of total points will be marked off.
- All assignments should include your work, or else no credit will be given.
- No copying is allowed on any assignment. No credit will be given to both copier's and copiee's work.
- All behaviors of academic dishonesty will be handled according to university policy.
- DO NOT send assignments by email.
- Instructor reserves right to change course materials or dates as necessary.