

FLORIDA ATLANTIC UNIVERSITY™

Graduate Programs—NEW COURSE PROPOSAL¹

UGPC APPROVAL _____
 UFS APPROVAL _____
 SCNS SUBMITTAL _____
 CONFIRMED _____
 BANNER POSTED _____
 CATALOG _____

DEPARTMENT: DEPT. OF COMPUTER & ELECTRICAL
ENGINEERING AND COMPUTER SCIENCE

COLLEGE: COLLEGE OF ENGINEERING AND COMPUTER SCIENCE

RECOMMENDED COURSE IDENTIFICATION:

PREFIX _____ CAP _____ COURSE NUMBER 6780 LAB CODE (L or C) _____

(TO OBTAIN A COURSE NUMBER, CONTACT NMALDONADO@FAU.EDU)

COMPLETE COURSE TITLE: BIG DATA ANALYTICS WITH HADOOP

EFFECTIVE DATE

(first term course will be offered)

_____ FALL 2015 _____

CREDITS²:

3

TEXTBOOK INFORMATION:

Data Mining: Practical Machine Learning Tools and Techniques, by I.H. Witten and E. Frank

Selected articles and papers

GRADING (SELECT ONLY ONE GRADING OPTION): REGULAR SATISFACTORY/UNSATISFACTORY _____

COURSE DESCRIPTION, NO MORE THAN THREE LINES: THE STUDY OF TOPICS IN DATA MINING AND MACHINE LEARNING RELATING TO BIG DATA. BIG DATA CHALLENGES SUCH AS HIGH DIMENSIONALITY, CLASS IMBALANCE, QUALITY OF DATA, ETC. WILL BE EXAMINED AND ADDRESSED. HANDS-ON EXPERIENCE WITH BIG DATA ANALYSIS IN HADOOP USING A HIGH PERFORMANCE COMPUTING CLUSTER.

PREREQUISITES*:

GRADUATE STANDING OR PERMISSION OF INSTRUCTOR

COREQUISITES*:

REGISTRATION CONTROLS (MAJOR, COLLEGE, LEVEL)*:

GRADUATES IN COMPUTER ENGINEERING, COMPUTER SCIENCE, AND ELECTRICAL ENGINEERING.

* PREREQUISITES, COREQUISITES AND REGISTRATION CONTROLS WILL BE ENFORCED FOR ALL COURSE SECTIONS.

MINIMUM QUALIFICATIONS NEEDED TO TEACH THIS COURSE:

MEMBER OF THE GRADUATE FACULTY OF FAU AND HAS A TERMINAL DEGREE IN THE SUBJECT AREA (OR A CLOSELY RELATED FIELD)



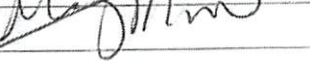

Faculty contact, email and complete phone number:

Taghi Khoshgoftaar, khoshgof@fau.edu
561-297-3994

Please consult and list departments that might be affected by the new course and attach comments.³

N/A

Approved by:

Department Chair: 
 College Curriculum Chair: 
 College Dean: 
 UGPC Chair: 
 Graduate College Dean: _____
 UFS President: _____
 Provost: _____

Date:

5/15/15
 8/3/15
 8/11/15

1. Syllabus must be attached; see guidelines for requirements: www.fau.edu/provost/files/course_syllabus.2011.pdf

2. Review Provost Memorandum: **Definition of a Credit Hour** www.fau.edu/provost/files/Definition_Credit_Hour_Memo_2012.pdf

3. Consent from affected departments (attach if necessary)

Email this form and syllabus to UGPC@fau.edu one week before the University Graduate Programs Committee meeting so that materials may be viewed on the UGPC website prior to the meeting.

**Department of Computer & Electrical Engineering and Computer Science
Florida Atlantic University
Course Syllabus**

1. Course title/number, number of credit hours	
Big Data Analytics with Hadoop CAP 6780	3 credit hours
2. Course prerequisites, corequisites, and where the course fits in the program of study	
Prerequisites: Graduate standing or permission of instructor	
3. Course logistics	
Term: Fall 2015 This is a classroom lecture course with DL sections. Class location and time: Thursday 4:00 – 6:50 PM CM130	
4. Instructor contact information	
<i>Instructor's name</i>	Dr. Taghi M Khoshgoftaar, Professor
<i>Office address</i>	Engineering East Bldg., Room 511
<i>Office Hours</i>	Tuesday and Thursday 11:00 AM – 2:00 PM
<i>Contact telephone number</i>	561-297-3994
<i>Email address</i>	khoshgof@fau.edu
5. TA contact information	
6. Course description	
The study of topics in data mining and machine learning relating to Big Data. Big Data challenges such as high dimensionality, class imbalance, quality of data, etc. will be examined and addressed. Hands-on experience with Big Data analysis in Hadoop using a high performance computing cluster.	
7. Course objectives/student learning outcomes/program outcomes	
<i>Course objectives</i>	Students will learn data mining and machine learning techniques for Big Data with Hadoop. Hands-on Big Data analysis using a high performance computing cluster. Case studies with an emphasis on real world applications will be presented.
<i>BSCS program outcomes</i>	
8. Course evaluation method	
Assignments (Homework, Programming, etc.) - 50%	
Term Project, Report – 35%	
Term Project, Presentation – 15%	
9. Course grading scale	
Grading Scale: 90 and above: "A", above 85 but below 90: "B+", 80-85: "B", above 75 but below 80: "C+", 70-75: "C", above 65 but below 70: "D+", 60-65: "D", above 55 but below 60: D-, 55 and below: "F."	
10. Policy on makeup tests, late work, and incompletes	

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Assignments are to be submitted on time, with possible point penalties for late submissions. In no case will an assignment be accepted after the graded papers for that assignment have been returned to the students. However, appropriate accommodations will be made for students having a valid medical excuse for being unable to work on an assignment during its two week period.

Unless there is solid evidence of medical or otherwise serious emergency situation incomplete grades will not be given.

11. Special course requirements

12. Classroom etiquette policy

University policy requires that in order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular phones, are to be disabled in class sessions, and laptops are only to be used for note taking and related activities.

13. Disability policy statement

In compliance with the Americans with Disabilities Act (ADA), students who require special accommodations due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) located in Boca Raton campus, SU 133 (561) 297-3880 and follow all OSD procedures.

14. Honor code policy

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and place high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. See University Regulation 4.001 at www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf

15. Required texts/reading

- (1) Data Mining: Practical Machine Learning Tools and Techniques, by I.H. Witten and E. Frank
- (2) Selected articles and papers are posted on the course web site.

16. Supplementary/recommended readings

17. Course topical outline, including dates for exams/quizzes, papers, completion of reading

**Department of Computer & Electrical Engineering and Computer Science
Florida Atlantic University
Course Syllabus**

Topics:

1. Introduction to Hadoop and the Hadoop ecosystem
2. Hadoop tools for data mining and machine learning
3. High performance cluster computing with Hadoop
4. Challenges with learning from Big Data
5. Quality of Data
6. High Dimensionality
7. Feature Selection
8. Class Imbalance
9. Data Sampling
10. Ensemble Learning
11. Applications and Trends in Data Analytics with Hadoop
12. Case Studies

Assignments are given starting on 9/10/15.