# FLORIDA ATLANTIC UNIVERSITY™

## Graduate Programs—NEW COURSE PROPOSAL[1]

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 __6688_____ LAB CODE (L or C) _____

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

COMPLETE COURSE TITLE: SOCIAL NETWORKS AND BIG DATA ANALYTICS

**EFFECTIVE DATE**

**(first term course will be offered)**

__2015 FALL_____

(The course was offered in 2013 Spring, 2013 Fall, 2014 Fall, as a special topic course)

CREDITS[2]:

3

TEXTBOOK INFORMATION:

*Social Media Mining: An Introduction* , R. Zafarani, M. Abbasi, and H. Liu, Cambridge University Press, 2014.
ISBN: 9781107018853

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

COURSE DESCRIPTION, NO MORE THAN THREE LINES:

This course teaches students basic concepts of big data analytics, with focus on social network analysis and modeling. The class will cover three major topics including graphs and social network models, big data analytics platform and MapRedue (hadoop) programming, and social network analytics and mining algorithms.

| PREREQUISITES *: | COREQUISITES*: | REGISTRATION CONTROLS (MAJOR, COLLEGE, LEVEL)*: |
|---|---|---|
| COP3530 Data Structures and Algorithm Analysis | | 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:
Xingquan Zhu, xzhu3@fau.edu
561-297-3452

Please consult and list departments that might be affected by the new course and attach comments.[3]
N/A

| *Approved by:* | *Date:* |
|---|---|
| Department Chair: Nurgun Erdol | 03/27/15 |
| College Curriculum Chair: | 4/8/15 |
| College Dean: | 4/ |
| UGPC Chair: | |
| Graduate College Dean: | |
| UFS President: | |
| Provost: | |

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 and Electrical Engineering and Computer Science**
**Florida Atlantic University**
**Course Syllabus**

| **1. Course title/number, number of credit hours** | |
|---|---|
| Social Networks and Big Data Analytics – CAP 6688 | 3 credit hours |

| **2. Course prerequisites, corequisites, and where the course fits in the program of study** |
|---|
| Prerequisites: COP3530 Data Structures and algorithm analysis |

| **3. Course logistics** |
|---|
| *Term*: Fall 2015<br><br>*Class location and time*: TBD |

| **4. Instructor contact information** | |
|---|---|
| *Instructor's name* | Dr. Xingquan Zhu |
| *Office address* | Engineering East (EE-96) Bldg., Room 509 |
| *Office Hours* | TBD |
| *Contact telephone number* | 561-297-3452 |
| *Email address* | xzhu3@fau.edu |

| **5. TA contact information** | |
|---|---|
| *TA's name* | N/A |
| *Office address* | N/A |
| *Office Hours* | N/A |
| *Contact telephone number* | N/A |
| *Email address* | N/A |

| **6. Course description** |
|---|
| This course teaches students basic concepts of big data analytics, with an application in social network analysis. The class will cover three major topics including graphs and social network models, big data analytics platform and MapRedue (hadoop) programming, and social network analytics and mining algorithms. Detailed topics include general algorithms for data analytics, trend and outbreak detection from social network streams, and MapReduce based computing framework. The lectures will include practical sessions dedicated to the implementation of big data analytics with selected programming language and tools. |

| **7. Course objectives/student learning outcomes/program outcomes** | |
|---|---|
| *Course objectives* | The goal of this class is for students to gain hands-on experiences on social networks and big data analytics. At the end of the class, students should be able to understand the whole process of building a big data analytics framework. We will use Twitter as the testbed and apply the framework for social media analysis, including social event detection, large scale social anomaly detection, and real-time social trend detection. |

**Department of Computer and Electrical Engineering and Computer Science**
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## 8. Course evaluation method

| | |
|---|---|
| Home Work - | 35% |
| Test 1 - | 15% |
| Test 2 - | 15% |
| Project - | 35% |

## 9. Course grading scale

Grading Scale:
90 and above: "A", 85-89: "A-", 76-84: "B+", 70-75: "B", 66-74 : "C+", 60-65: "C", 50-59: "D", 49 and below: "F."

## 10. Policy on makeup tests, late work, and incompletes

*Makeup tests* are possible, and are given only if there is solid evidence of medical or otherwise family/personal emergency issues that prevent the student from participating in the exam. Makeup exam should be administered and proctored by department personnel unless there are other pre-approved arrangements

*Late work* is not acceptable.

*A grade of incomplete* will be assigned only in the case of solid evidence of medical or otherwise serious emergency situation. .

## 11. Special course requirements

N/A

## 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 and laptops, are to be disabled in class sessions.

## 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

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## 15. Required texts/reading

1. *Social Media Mining: An Introduction* , R. Zafarani, M. Abbasi, and H. Liu, Cambridge University Press, 2014. **ISBN:** 9781107018853

## 16. Supplementary/recommended readings

1. Matthew A. Russell, Mining the Social Web: Analyzing Data from Facebook, Twitter, LinkeeIn, and Other Social Media Sites, O'Reilly Media, 2011. ISBN-10: 1449388345
2. UC Berkeley, School of Information: Analyzing Big Data with Twitter
3. Research papers

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

| | Approximate # of 1.5 hr. Lecture |
|---|---|
| **Introduction** | 1 |
| **Graph Theory and Social Network Characteristics** | |
| • Introduction to graph theory | 3 |
| • Degree distributions, community, and PageRank | 2 |
| • Node similarity assessment | 2 |
| **Social Network Mining Algorithms** | |
| • Link prediction in social networks | 2 |
| • Community detection in social networks | 3 |
| • Classification in social network | 2 |
| • Social influence modeling | 2 |
| • Social sentiment analysis | 2 |
| **Big Data Analytics** | |
| • Big Data Analytics Algorithms | 2 |
| • Mapreduce (Hadoop) Installation and configuration | 2 |
| • Mapreduce (Hadoop) programming | 2 |
| • Social event and trend modeling | 2 |
| **Research Project Discussion** | 1 |
| **Tests** | 2 |
| **Exam dates: TBD** | |