FAU

FLORIDA ATLANTIC UNIVERSITY

COURSE CHANGE REQUEST
Graduate Programs

Department CEECS

College Engineering and Computer Science

Current Course Prefix and Number	*Current* Course Title
CAP 6315	Social Networks and Big Data Analytics

*Syllabus must be attached for **ANY** changes to current course details. See Guidelines. Please consult and list departments that may be affected by the changes; attach documentation.*

Change title to:

Change prefix

    From: **To:**

Change course number

    From: **To:**

Change credits*

    From: **To:**

Change grading

    From: **To:**

Academic Service Learning (ASL) *

    Add ☐   **Remove** ☐

* Review Provost Memorandum
** Academic Service Learning statement must be indicated in syllabus and approval attached to this form.

Change description to:

Change prerequisites/minimum grades to:
Graduate standing for CEECS students, and instructor's approval for students from other major.

Change corequisites to:

Change registration controls to:

Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade.

Effective Term/Year for Changes:	Spring 2021	**Terminate course? Effective Term/Year for Termination:**

Faculty Contact/Email/Phone Hanqi Zhuang/zuang@fau.edu/ 297-3413

Approved by		*Date*
Department Chair	Hanqi Zhuang — Digitally signed by Hanqi Zhuang Date: 2020.10.21 15:34:47 -04'00'	
College Curriculum Chair	Francisco Presuel-Moreno — Digitally signed by Francisco Presuel-Moreno DN: cn=Francisco Presuel-Moreno, o=Florida Atlantic University, ou=Ocean and Mechanical Engineering, email=fpresuel@fau.edu, c=US Date: 2020.10.22 11:42:48 -04'00'	
College Dean	M Cardei — Digitally signed by Mihaela Cardei DN: cn=Mihaela Cardei, o=Florida Atlantic University, ou, email=mcardei@fau.edu, c=US Date: 2020.10.25 19:11:44 -04'00'	10/25/2020
UGPC Chair		
UGC Chair		
Graduate College Dean		
UFS President		
Provost		

Email this form and syllabus to UGPC@fau.edu 10 days before the UGPC meeting.

1. Course title/number, number of credit hours

Social Networks and Big Data Analytics – CAP 6315	3 credit hours

2. Course prerequisites, corequisites, and where the course fits in the program of study

Prerequisites: Graduate standing for CEECS students, and instructor's approval for students from other major.

3. Course logistics

Term:
Class location and time:

4. Instructor contact information

Instructor's name *Office address* *Office Hours* *Contact telephone number* *Email address*	

5. TA contact information

TA's name *Office address* *Office Hours* *Contact telephone number* *Email address*	

6. Course description

This course teaches students basic concepts of Big Data Analytics with focus on social network analysis and modeling. The class covers three major topics: graphs and social network models, Big Data Analytics platform and MapReduce (Hadoop) programming, and social network analytics and mining algorithms.

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 etc.

Student learning outcomes & relationship to ABET 1-7 outcomes	1. An Ability to identify, formulate, and solve complex computing/engineering problems by applying principles of computing, engineering, science, and mathematics. (Problem solving)
	2. An ability to apply the computing/engineering design process to produce solutions that meet a given set of computing/engineering requirements with consideration for public health and safety, and global cultural, social, environmental, economic, and other factors as appropriate to the discipline. (Design)
	3. An ability to communicate effectively with a range of audiences in a variety of professional contexts. (Communications)
	6. An ability to apply engineering/computer science theory and hardware/software development fundamentals to develop and conduct appropriate experimentation, analyze and interpret data, and use computing/engineering judgment produce engineering/computing-based solutions/conclusions. (Experimentation and/or simulation)

8. Course evaluation method

Home Work -	40%	**Programming Requirement:** The class (homework/project) requires a significant amount of programming efforts. Homework/term project will have one or multiple programming tasks. The class will primarily use Python (and will also support R) as programming tools. Entry level programming skill is required.
Midterm -	15%	
Student Presentation -	10%	
Term Project -	15%	
Attendance -	5%	
Final Exam (or Research Report)	15%	

9. Course grading scale

Grading Scale:
[90, 100]: "A"; [85-90): "A-"
[80-85): "B+"; [75-80): "B"; [70-75): "B-"
[65-70) : "C+"; [60-65): "C"; [55-60) : "C-"
[50-55): "D"; [0, 50): "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. Attendance policy statement

Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of nonattendance.
Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

14. Disability policy statement

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at www.fau.edu/sas/.

15. Counseling and Psychological Services (CAPS) Center

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to http://www.fau.edu/counseling/

16. Code of Academic Integrity policy statement

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 an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001. If your college has particular policies relating to cheating and plagiarism, state so here or provide a link to the full policy—but be sure the college policy does not conflict with the University Regulation.

17. Required texts/reading
To reduce costs for our students, we strongly encourage you to explore the adoption of open educational resources (OER), textbooks and other materials that are freely accessible. We also encourage you to clearly state in the syllabus if course materials are available on reserve in the Library.

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

18. Supplementary/recommended readings

1. Matthew A. Russell, Mining the Social Web: Analyzing Data from Facebook, Twitter, LinkedIn, and Other Social Media Sites, O'Reilly Media, 2011. ISBN-10: 1449388345

2. Statistical Network Analysis with igraph, Gábor Csárdi, Tamás Nepusz, Edoardo M. Airoldi, Springer (https://sites.fas.harvard.edu/~airoldi/pub/books/BookDraft-CsardiNepuszAiroldi2016.pdf)

3. Statistical Analysis of Network Data with R, Eric D. Kolaczyk and Gabor Csardi, Springer, 2014.

4. Python iGraph Library: API Documentation (https://igraph.org/python/doc/python-igraph.pdf) 5. Research papers

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

Weekly course topics

Weekly schedule	Topic
Week 1	Introduction, Social network tools and platforms
Week 2	Graph theories and models
Week 3	Degree distributions, network communities, PageRank (*homework 1*)
Week 4	Network node similarity assessment
Week 5	Link prediction in social networks (*homework 2*)
Week 6	Community detection in social networks
Week 7	Classification in social networks (*project announce*)
Week 8	Social influence modeling (*homework 3*)
Week 9	Social sentiment analysis (Midterm Test, term project announcement)
Week 10	Big data analytics algorithms
Week 11	MapReduce (Hadoop) installation and configuration [*Cloudera*]
Week 12	MapReduce (Hadoop) Programming (*homework 4*)
Week 13	Social network analysis using MapReduce
Week 14	Student Presentation
Week 15	Student Presentation

Programming Requirement: The class (homework/project) requires a significant amount of programming efforts. Each homework, including term project, will have one or multiple programming tasks. The class will primarily use Python (and will also support R) as programming tools. Entry level programming skill is required.

Term Project: The goal of the term project is to practice knowledge learned from the class and have each student to work on a large project during the second part of the class. Each student is required to identify a suitable topic (a set of tentative topics, such as finding communities from a real-world social network, will be distributed in the class), and apply knowledge learned from the class to solve a research problem, implement and validate the design, and collect experimental results for reporting. The final outcomes of the project will be turned into a technical report.