FLORIDA ATLANTIC UNIVERSITY

COURSE CHANGE REQUEST
Graduate Programs

Department Electrical Engineering and Computer Science

College Engineering and Computer Science

UGPC Approval _____
UFS Approval _____
SCNS Submittal _____
Confirmed _____
Banner _____
Catalog _____

***Current* Course Prefix and Number**	***Current* Course Title**
CAP 5768	Introduction to Data Science

*Syllabus must be attached for **ANY** changes to current course details. See Template. 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** ☐

* See Definition of a Credit Hour.
** Academic Service Learning statement must be indicated in syllabus and approval attached to this form.

Change description to:

Change prerequisites/minimum grades to:

Change corequisites to:

Change registration controls to:
Students may not enroll in CAP 5768 if they have already taken CAP 4773

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

Effective Term/Year for Changes: Summer 2024

Terminate course? Effective Term/Year for Termination:

Faculty Contact/Email/Phone Michael DeGiorgio / mdegiorg@fau.edu / 561-297-003

Approved by	***Date***
Department Chair Hai Deng	2/20/2024
College Curriculum Chair Masoud Jahandar Lashaki	2/20/2024
College Dean M Cardei	3/4/2024
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.

CAP 5768
INTRODUCTION TO DATA SCIENCE

Days/time: TBA
3 credits

Semester: TBA
Prof. Michael DeGiorgio
Office: Engineering East room 418
Office hours: TBA
Classroom: TBA
Telephone: 561-297-003
Email: mdegiorg@fau.edu

TA name	Tuan Vo
Office	N/A
Office hours	By appointment
Telephone	N/A
Email	tvo2019@fau.edu

Course Description

This course surveys foundational topics in data science and reinforces practical programming skills in the context of data analytics. Students learn fundamentals of computational data analysis using statistics and machine learning and gain experience working with data sets from a variety of domains.

This course provides a comprehensive introduction to the tools and analysis workflows employed by data scientists that include data wrangling, visualization, exploration, and modeling. Specific topics include an overview of the field of data science and analytics, data visualization, exploratory data analysis, data transformation, parameter estimation, hypothesis testing, linear regression analysis, logistic regression classification, model selection, feature selection, dimensionality reduction, and clustering. The practical application of these techniques to real data, as well as the interpretation and presentation of analysis results, will be emphasized throughout the course.

Instructional Method

This class is designated as “In-Person w/Recorded Lecture”. In-person class sessions will be automatically recorded and uploaded to Canvas up to 24 hours afterward. Student enrolled in may choose to attend in-person classes or view recordings.

Prerequisites/Corequisites

Graduate standing or permission of instructor.
Students may not enroll in CAP 5768 if they have already taken CAP 4773.

Course Objectives/Student Learning Outcomes

In this course, students will:

1. Apply the R software and its associated packages to perform an array of data analysis techniques.
2. Effectively manipulate, curate, visualize, and explore data and draw conclusions from this

data.
3. Identify appropriate statistical models to address diverse problems in data analytic.

Course Evaluation Method

Four programming assignments	25% each
Total	**100%**

Homework assignments will consist of data manipulation, curation, visualization, and analysis exercises using simulated and real datasets.

Course Grading Scale

Grade	**Total (%)**
A	[93 – 100]
A-	[90 – 93)
B+	[87 – 90)
B	[83 – 87)
B-	[80 – 83)
C+	[77 – 80)
C	[73 – 77)
C-	[70 – 73)
D+	[67 – 70)
D	[63 – 67)
D-	[60 – 63)
F	[0 – 60)

Note: Square brackets indicate inclusive and parentheses indicate exclusive

Policy on Makeup Tests, Late Work, and Incompletes

There will be no exams, and therefore no makeup exams, in this course.

Late work will not be accepted. All assignments will be posted well in advance, and students may submit assignments early. Any assignment not turned in by the due date will result in a zero.

Incomplete grades are against the policy of the department, and they will only be assigned if there is solid evidence of medical or otherwise serious emergency situation.

Classroom Etiquette Policy

Students are required to comply with all requirements specified in the student code of conduct and not in any way disrupt the class or prevent other students from benefiting from the class. Students are to speak and behave respectfully to each other and to all FAU faculty and staff.

Policy on the Recording of Lectures

Students enrolled in this course may record video or audio of class lectures for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a

university course intended to present information or teach students about a particular subject. Recording class activities other than class lectures, including but not limited to student presentations (whether individually or as part of a group), class discussion (except when incidental to and incorporated within a class lecture), labs, clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, and private conversations between students in the class or between a student and the lecturer, is prohibited. Recordings may not be used as a substitute for class participation or class attendance and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University's Student Code of Conduct and/or the Code of Academic Integrity.

Attendance Policy

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 non-attendance. 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.

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/.

Disability Policy

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/.

Code of Academic Integrity

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.

Required Texts/Readings

R for Data Science: Import, Tidy, Transform, Visualize, and Model Data, by Hadley Wickham and Garrett Grolemund. O'Reilly, 2017, ISBN-13: 978-1491910399.
** **Free ebook** from author website https://r4ds.had.co.nz

An Introduction to Statistical Learning: with Applications in R, by Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani. Springer, 2017, ISBN-13: 978-1-4614-7137-0.
** **Free ebook** from author website https://statlearning.com/

Course Topical Outline

Topic 1: Introduction to data science
Topic 2: Introduction to R and data visualization
Topic 3: Data transformations
Topic 4: Exploratory data analysis
Topic 5: Linear regression
Topic 6: Classification with logistic regression
Topic 7: Model selection, feature selection, and regularization
Topic 8: Unsupervised learning

Instructor reserves the right to adjust this syllabus as necessary

From: Yuan Wang <YWANG@fau.edu>
Sent: Thursday, February 29, 2024 4:04 PM
To: Waseem Asghar <wasghar@fau.edu>
Cc: Hari Kalva <hkalva@fau.edu>; Mihaela Cardei <mcardei@fau.edu>
Subject: Re: CAP 5768 -- change registration control

Dear all,

We do not have any concern of your change of the registration control for CAP 5768 - Introduction to Data Science. Thank you for checking with us.

Best regards,
Yuan

Yuan Wang, Professor and Chair
Department of Mathematics and Statistics
Florida Atlantic University

x7-2672

On 2/29/2024 1:01 PM, Waseem Asghar wrote:

Dear Dr. Wang,

Hope you are doing well. Department of Electrical Engineering and Computer Science (EECS) is planning to change the registration control for CAP 5768 - Introduction to Data Science.

As there is a significant overlap between this graduate course and an undergraduate course CAP 4773 (Introduction to Data Science and Analytics), we want to make sure that FAU students who have taken CAP4773 should not take CAP 5768.

As CAP 5768 is owned by both departments, we are looking for your review and approval for this registration control change. Please see the form attached and let us know if you have any questions.

Thank you

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Regards,
Waseem Asghar, Ph.D.,
Associate Professor, Director Graduate Programs.
Department of Electrical Engineering and Computer Science,
Department of Biological Sciences (Courtesy Appointment),
Florida Atlantic University,
777 Glades Road, EE 96/Rm 435, Boca Raton, FL 33431
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