

 FLORIDA ATLANTIC UNIVERSITY	COURSE CHANGE REQUEST Undergraduate Programs		UUPC Approval <u>3-29-21</u> UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____
	Department Computer & Electrical Eng & Comp Sci College Engineering & Comp Science		
Current Course Prefix and Number CAP 4773		Current Course Title Introduction to Data Science and Analytics	
<i>Syllabus must be attached for ANY changes to current course details. See Checklist. Please consult and list departments that may be affected by the changes; attach documentation.</i>			
Change title to: Change prefix From: _____ To: _____ Change course number From: _____ To: _____ Change credits* From: _____ To: _____ Change grading From: _____ To: _____ Change WAC/Gordon Rule status** Add <input type="checkbox"/> Remove <input type="checkbox"/> Change General Education Requirements*** Add <input type="checkbox"/> Remove <input type="checkbox"/> <small>*Review Provost Memorandum</small> <small>**WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to this form. See WAC Guidelines.</small> <small>***General Education criteria must be indicated in syllabus and approval attached to this form. See GE Guidelines.</small>		Change description to: Change prerequisites/minimum grades to: (EEE 4541 OR STA 4821 OR STA 2023) AND (COP 3530 or COP 3410) OR permission of the instructor Change corequisites to: Change registration controls to: Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade (default is D-).	
Effective Term/Year for Changes: Fall 2021		Terminate course? Effective Term/Year for Termination:	
Faculty Contact/Email/Phone Hari Kalva, hkalva@fau.edu, 561-297-0511			
Approved by Department Chair <u>Hanqi Zhuang</u> <small>Digitally signed by Hanqi Zhuang Date: 2021.03.05 18:32:51 -05'00'</small> College Curriculum Chair <u>Dan Meeroff</u> College Dean <u>Frederick Bloetscher</u> UUPC Chair <u>Jerry Haky</u> Undergraduate Studies Dean <u>Edward Pratt</u> UFS President _____ Provost _____		Date _____ <u>3-18-21</u> <u>3-18-21</u> <u>3-29-21</u> <u>3-29-21</u> _____ _____	

Email this form and syllabus to mjenning@fau.edu seven business days before the UUPC meeting.

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and Computer Science
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Course Syllabus**

1. Course title/number, number of credit hours	
Introduction to Data Science and Analytics - CAP 4773-001 CRN 15393, 002 CRN 16622, 003 CRN 16724	3 credit hours
2. Course prerequisites, corequisites, and where the course fits in the program of study	
Prerequisites: (EEE 4541 OR STA 4821 OR STA 2023) AND (COP 3530 or COP 3410) OR permission of the instructor	
3. Course logistics	
Term: Spring 2021 Class location and time: General Classroom South, Room 120; Wednesdays 4:20-7:00pm	
4. Instructor contact information	
Instructor's name	Dr. Raquel Assis
Office address	Engineering East, Room 432
Office Hours	TBD via Zoom
Contact telephone number	561-297-3927
Email address	rassis@fau.edu
5. TA contact information	
TA's name	Connor Shorten
Office address	TBD
Office Hours	TBD
Contact telephone number	TBD
Email address	TBD
6. Course description	
This course deals with the principles of data science and analytics. Topics covered include statistical analysis of data, measurement techniques and tools, machine learning methods, knowledge discovery and representation, and classification and prediction models.	
7. Course objectives/student learning outcomes/program outcomes	
Course objectives	In this course, students will: <ol style="list-style-type: none"> Learn fundamental principles of data science and its applications Use R programming to wrangle, visualize, and explore data Apply a variety of statistical learning techniques to data in R Write a report describing findings of a data analysis project
Student learning outcomes & relationship to ABET 1-7 outcomes	Upon successful completion of this course, students will be able to: <ol style="list-style-type: none"> Define and differentiate key terminology in data science (ABET 1) Perform data wrangling, visualization, and exploration in R (ABET 1) Apply a diversity of statistical learning techniques in R (ABET 1) Select appropriate statistical learning techniques to address targeted questions (ABET 6) Present interpretations of findings in a written report (ABET 6) <p>ABET Outcomes:</p> <ol style="list-style-type: none"> An ability to identify, formulate, and solve complex computing/engineering problems by applying principles of computing, engineering, science, and mathematics (Problem solving) 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

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	engineering/computing-based solutions/conclusions (Experimentation and/or simulation)	
8. Course evaluation method		
Homework (5 total, 15% each)	75%	Hands-on data analysis in R
Final paper	25%	Written report of a data analysis project
9. Course grading scale		
A	A-	B+
B	B-	C+
C	C-	D+
D	D-	F
[90-100]	[87-90]	[83-87]
[80-83]	[77-80]	[73-77]
[70-73]	[67-70]	[63-67]
[60-63]	[51-60]	[0-51]
10. Policy on makeup tests, late work, and incompletes		
<i>Late assignments</i> will be graded with a penalty of 10% for each day after the due date, up to a maximum of 3 days late (<i>i.e.</i> , 30% penalty), beyond which they will receive a grade of 0 (zero).		
<i>Incomplete grades</i> will only be given if there is solid evidence of a medical or otherwise serious emergency <u>and</u> the student is currently passing the class.		
11. Special course requirements		
N/A		
12. Classroom etiquette policy		
To enhance and maintain a productive atmosphere for learning, personal communication devices such as cell phones are to be disabled during 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 non-attendance. After two full weeks of face to face instruction with consecutive 'no show' of any students in person in the classroom, the modality of this course section may be changed to remote instruction only at the discretion of the university.		
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 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		

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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](#).

17. Required texts/reading

An Introduction to Statistical Learning: with Applications in R by Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani (2013). Free pdf copy at <http://faculty.marshall.usc.edu/gareth-james/ISL/>

18. Supplementary/recommended readings

Additional reading materials may be provided on Canvas as needed during the semester.

19. Course topical outline (and associated readings)

1. Fundamentals of data science (chapters 1-2)
2. Introduction to R for data science (chapter 2)
3. Linear regression (chapter 3)
4. Classification (chapter 4)
5. Cross-validation (chapter 5)
6. Feature selection and regularization (chapter 6)
7. Nonlinear modeling approaches (chapter 7)
8. Tree-based methods (chapter 8)
9. Support vector machines (chapter 9)
10. Unsupervised learning (chapter 10)