

 <b>FLORIDA ATLANTIC UNIVERSITY</b>	<b>COURSE CHANGE REQUEST</b> <b>Undergraduate Programs</b>		UUPC Approval _____ UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____
	<b>Department</b> Comp. and Electrical Eng. and Comp. Sci. <b>College</b> Engineering and Computer Science		
<b>Current Course Prefix and Number</b> CAP 4773		<b>Current Course Title</b> Introduction to Data Science and Analytics	
<i>Syllabus must be attached for ANY changes to current course details. See <a href="#">Checklist</a>. Please consult and list departments that may be affected by the changes; attach documentation.</i>			
<b>Change title to:</b>  <b>Change prefix</b> From: _____ To: _____ <b>Change course number</b> From: _____ To: _____ <b>Change credits*</b> From: _____ To: _____ <b>Change grading</b> From: _____ To: _____ <b>Change WAC/Gordon Rule status**</b> Add <input type="checkbox"/> Remove <input type="checkbox"/> <b>Change General Education Requirements***</b> Add <input type="checkbox"/> Remove <input type="checkbox"/> <small>*Review <a href="#">Provost Memorandum</a></small> <small>**WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to this form. See <a href="#">WAC Guidelines</a>.</small> <small>***General Education criteria must be indicated in syllabus and approval attached to this form. See <a href="#">GE Guidelines</a>.</small>		<b>Change description to:</b>   <b>Change prerequisites/minimum grades to:</b> (COP 3530 or COP 3043) and (STA 4821 or STA 2023) both with minimum grade of "C", or permission of the instructor  <b>Change corequisites to:</b>   <b>Change registration controls to:</b>   Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade (default is D-).	
<b>Effective Term/Year for Changes:</b> Spring 2021		<b>Terminate course? Effective Term/Year for Termination:</b>	
<b>Faculty Contact/Email/Phone</b> Dr. Hanqi Zhuang, zhuang@fau.edu, 561-297-3413			
<b>Approved by</b> Department Chair _____ Hanqi Zhuang <small>Digitally signed by Hanqi Zhuang Date: 2020.08.17 13:39:31 -04'00'</small> College Curriculum Chair <u>Dan Meeroff</u> College Dean _____ UUPC Chair _____ Undergraduate Studies Dean <u>Edward Pratt</u> UFS President _____ Provost _____		<b>Date</b> _____ <u>9-3-20</u> <u>9-15-20</u> <u>9-15-20</u> _____ _____	

Email this form and syllabus to [mjenning@fau.edu](mailto:mjenning@fau.edu) seven business days before the UUPC meeting.

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

<b>1. Course title/number, number of credit hours</b>		
Introduction to Data Science and Analytics - CAP 4773		3 credit hours
<b>2. Course prerequisites, corequisites, and where the course fits in the program of study</b>		
Prerequisites: (COP 3530 or COP3043) and (STA 4821 or STA 2023), or permission of the instructor		
<b>3. Course logistics</b>		
Term: Spring 2021 Class location and time: TBA		
<b>4. Instructor contact information</b>		
Instructor's name	Dr. Raquel Assis	
Office address	Engineering East, Room 432	
Office Hours	Thursdays 2-4pm or by appointment	
Contact telephone number	561-297-3927	
Email address	rassis@fau.edu	
<b>5. TA contact information</b>		
TA's name	N/A	
Office address		
Office Hours		
Contact telephone number		
Email address		
<b>6. Course description</b>		
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.		
<b>7. Course objectives/student learning outcomes/program outcomes</b>		
Course objectives	In this course, students will: <ol style="list-style-type: none"> <li>1. Learn fundamental principles of data science and its applications</li> <li>2. Use R programming to wrangle, visualize, and analyze data</li> <li>3. Apply a variety of statistical learning techniques to data in R</li> <li>4. Write a report describing findings of a data analysis project</li> </ol>	
Student learning outcomes & relationship to ABET 1-7 outcomes	Upon completion of this course, students will be able to: <ol style="list-style-type: none"> <li>1. Define and differentiate key terminology in data science, including predictors/features/independent variables and response/dependent variables, prediction and inference, bias and variance, model accuracy and interpretability, parametric and nonparametric methods, and supervised and unsupervised learning (ABET 1).</li> <li>2. Perform data wrangling, visualization, and analysis in R (ABET 1).</li> <li>3. Apply a diversity of statistical learning techniques in R, including linear regression, classification methods, nonlinear modeling approaches, tree-based methods, support vector machines, unsupervised learning, and resampling methods (ABET 1).</li> <li>4. Select appropriate statistical learning techniques to address targeted questions in data science (ABET 6).</li> <li>5. Present interpretations of findings from data analyses in a written report (ABET 6).</li> </ol>	
<b>8. Course evaluation method</b>		
Homework (5 total, lowest grade dropped)	40%	Hands-on data analysis in R
Quizzes (weekly, lowest grade dropped)	10%	Survey student interests and learning outcomes

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Midterm exam	25%	Test understanding of major concepts
Final paper	25%	Written report of a data analysis project
<b>9. Course grading scale</b>		
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]
<b>10. Policy on makeup tests, late work, and incompletes</b>		
<p><i>Late homework or final papers</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 o (zero).</p> <p><i>Quizzes</i> will be accessible to students for a minimum of 3 days and, therefore, late quizzes will not be accepted and will receive a grade of o (zero).</p> <p>A <i>makeup exam</i> will only be given if there is solid evidence of a medical or otherwise serious emergency that prevented the student from participating in the exam. Students must notify the instructor within 48 hours of the exam date in the case of an illness or emergency, and at least one week prior to the exam date in the case of a FAU-sponsored event (<i>e.g.</i>, participation in sporting event). If excused, the makeup exam will be scheduled within one week of the original date.</p> <p><u>Incomplete grades</u> 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.</p>		
<b>11. Special course requirements</b>		
N/A		
<b>12. Classroom etiquette policy</b>		
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.		
<b>13. Attendance policy statement</b>		
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.		
<b>14. Disability policy statement</b>		
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 <a href="http://www.fau.edu/sas/">www.fau.edu/sas/</a> .		
<b>15. Counseling and Psychological Services (CAPS) Center</b>		
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 <a href="http://www.fau.edu/counseling/">http://www.fau.edu/counseling/</a>		
<b>16. Code of Academic Integrity policy statement</b>		

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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](#).

**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, including dates for exams/quizzes, papers, completion of reading**

Week	Topic	Reading	Due
1	Fundamentals of data science	Chapters 1-2	Quiz 1
2	Introduction to R for data science	Chapter 2	Quiz 2
3	Linear regression	Chapter 3	Quiz 3
4	Linear regression	Chapter 3	Quiz 4, HW 1
5	Linear regression	Chapter 3	Quiz 5
6	Classification	Chapter 4	Quiz 6
7	Classification	Chapter 4	Quiz 7, HW 2
8	Cross-validation	Chapter 5	Quiz 8
9	Feature selection and regularization	Chapter 6	Quiz 9, HW 3
10	Nonlinear modeling approaches	Chapter 7	Quiz 10, Exam
11	Nonlinear modeling approaches	Chapter 7	Quiz 11
12	Tree-based methods	Chapter 8	Quiz 12, HW 4
13	Support vector machines	Chapter 9	Quiz 13
14	Unsupervised learning	Chapter 10	Quiz 14, HW 5
Finals	N/A	N/A	Final paper