	COURSE CHANGE REQUEST Graduate Programs	UGPC Approval _____
FAU **FLORIDA ATLANTIC UNIVERSITY**		UFS Approval _____
		SCNS Submittal _____
	Department Computer and Electrical Eng. and Comp. Sci.	Confirmed _____
		Banner _____
	College Engineering and Computer Science	Catalog _____

Current Course **Prefix and Number** CAP 5625	*Current* Course Title Computational Foundations of Artificial Intelligence

*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:
 COP 2220 or COP 2034 or permission of the instructor

Change corequisites to:

Change registration controls to:
 Graduate Standing or Senior Standing

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

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

Faculty Contact/Email/Phone   Hanqi Zhuang, zhuang@fau.edu, 561-297-3413

Approved by		*Date*
Department Chair	Hanqi Zhuang — Digitally signed by Hanqi Zhuang Date: 2021.03.04 08:59:28 -05'00'	
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: 2021.03.04 09:51:35 -05'00'	
College Dean	M Cardei (Digitally signed by Mihaela Cardei)	3/4/2021
UGPC Chair	Christopher Beetle	Apr 4, 2021
UGC Chair	Paul R Peluso	Apr 5, 2021
Graduate College Dean	Robert W Stackman	Apr 5, 2021
UFS President		
Provost		

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

FAUchangecourseGR, revised Fall 2019

1. Course title/number, number of credit hours	
Computational Foundations of AI (CAP 5625)	3 credit hours

2. Course prerequisites, corequisites, and where the course fits in the program of study	
COP 2220 or COP 2034 or permission of the instructor	

3. Course logistics	
Term: TBA	
Class location and time: TBA	

4. Instructor contact information	
Instructor's name	Michael DeGiorgio
Office address	Engineering East (Building 96), Room 418
Office Hours	Thursday 1:30pm-3:30pm and by appointment
Contact telephone number	561-297-0003
Email address	mdegiorg@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 covers the mathematical and programming foundations of artificial intelligence (AI) and machine learning (ML) using contemporary programming languages and tools. As a result, students develop familiarity with mathematical methods (and associated notation, software packages and libraries) that are widely used in AI and ML projects and literature.

7. Course objectives/student learning outcomes/program outcomes	
Course objectives	By the end of the course, students will be able to:
	Understand the mathematical foundations of machine learning.
	Demonstrate proficiency in solving machine learning problems.
	Identify and apply statistical and computational models to machine learning problems.
	Analyze the performance of particular machine learning models, and justify their use and limitations.
Student learning outcomes & relationship to ABET 1-7 outcomes	N/A

8. Course evaluation method	
Two programming assignments	40% (20% each)
Data analysis assignment with report	30%
Written survey of special topics	20%
Presentation of special topic	10%

9. Course grading scale					
93-100	A	80-82	B-	67-69	D+
90-92	A-	77-79	C+	63-66	D
87-89	B+	73-76	C	60-62	D-
83-86	B	70-72	C-	0-59	F

10. Policy on makeup tests, late work, and incompletes
Makeup exams are given only if there is solid evidence of a medical or otherwise serious emergency that prevented the student of participating in the exam. Makeup exams will be administered and proctored

by department personnel unless there are other pre-approved arrangements
Incomplete grades are against the policy of the department, unless there is solid evidence of medical or otherwise serious emergency situation incomplete grades will not be given.

11. Special course requirements

None

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 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.

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

The Elements of Statistical Learning: Data Mining, Inference, and Prediction, by Trevor Hastie, Robert Tibshirani, and Jerome Friedman. Springer, 2009, 2nd Ed, 2009, ISBN-13: 978-0-3878-4857-0.
   ** **Free ebook** from author website https://web.stanford.edu/~hastie/ElemStatLearn/

18. Supplementary/recommended readings

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 http://faculty.marshall.usc.edu/gareth-james/ISL/

Pattern Recognition and Machine Learning, by Christopher M. Bishop. Springer, 2006, ISBN-13: 978-0-3873-1073-2.
 ** **Free ebook** from author website https://www.microsoft.com/en-us/research/people/cmbishop/

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

Lecture 1: Introduction
Lecture 2: Linear regression
Lecture 3: Linear and non-linear regression and model selection
Lecture 4: Feature selection and regularization
Lecture 5: Advanced regularization techniques
Lecture 6: Principal components analysis and regression
Lecture 7: Discriminant analysis
Lecture 8: Logistic regression
Lecture 9: Support vector machines
Lecture 10: Neural networks
Lecture 11: Random forests and boosting
Lecture 12: Unsupervised learning
Final lectures: Student presentations on special topics in machine learning

Week 6	Programming assignment 1 due
Week 9	Programming assignment 2 due
Week 12	Report for data analysis assignment due
Week 14	Written survey of special topics due
Week 14 and/or final exam week	Special topic presentations