	NEW COURSE PROPOSAL **Undergraduate Programs**	
FLORIDA ATLANTIC UNIVERSITY	**Department** Computer and Elctrical Eng and Computer Science **College** Engineering and Computer Science (*To obtain a course number, contact **erudolph@fau.edu***)	UUPC Approval _____ UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____

Prefix CAP **Number** 4612	*(L = Lab Course; C = Combined Lecture/Lab; add if appropriate)* **Lab Code**	**Type of Course** Lecture	**Course Title** Applied Machine Learning and Data Mining
Credits *(Review Provost Memorandum)* 3 **Effective Date** *(TERM & YEAR)* Spring 2021	**Grading** *(Select One Option)* **Regular** ⦿ **Pass/Fail** ◯ **Sat/UnSat** ◯	**Course Description** *(Syllabus must be attached; Syllabus Checklist recommended; see Guidelines)* This course covers theoretical foundations and tools for machine learning and data mining. The class introduces fundamental machine learning topics such as data engineering, supervised learning and unsupervised learning with case studies.	

Prerequisites, with minimum grade*	**Corequisites**	**Registration Controls** *(Major, College, Level)*
STA 2023 or equivalent		Opened to all majors except computer science and computer engineering majors.

****Default minimum passing grade is D-.** Prereqs., Coreqs. & Reg. Controls are enforced for all sections of course*

WAC/Gordon Rule Course ◯ Yes ⦿ No WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to proposal. See WAC Guidelines.	**Intellectual Foundations Program (General Education) Requirement** *(Select One Option)* None General Education criteria must be indicated in the syllabus and approval attached to the proposal. See GE Guidelines.

Minimum qualifications to teach course
PhD in Computer Science/Computer Engineering/Electrical Engineering or another related field

Faculty Contact/Email/Phone Hanqi Zhunag/Zhuang@fau.edu/561.297.3413	**List/Attach comments from departments affected by new course** CEGE, OME

Approved by		***Date***
Department Chair	Hanqi Zhuang *Digitally signed by Hanqi Zhuang DN: cn=Hanqi Zhuang, o=FAU, ou=CEECS, email=zhuang@fau.edu, c=US Date: 2020.06.19 16:34:57 -04'00'*	6/19/2020
College Curriculum Chair	*Dan Meeroff*	09/13/2020
College Dean		
UUPC Chair		
Undergraduate Studies Dean		
UFS President		
Provost		

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

1. Course title/number, number of credit hours	
CAP 4612 Applied Machine Learning and Data Mining	3 credit hours

2. Course prerequisites, corequisites, and where the course fits in the program of study
Prerequisites: STA 2023 or equivalent Opened to all majors except computer science and computer engineering majors.

3. Course logistics
Term: Spring 2021 *Class location and time:* TBA

4. Instructor contact information	
Instructor's name *Office address* *Office Hours* *Contact telephone number* *Email address*	TBA TBA TBA TBA

5. TA contact information	
TA's name *Office address* *Office Hours* *Contact telephone number* *Email address*	N/A TBA TBA N/A N/A

6. Course description
This course covers theoretical foundations and tools for machine learning and data mining. The class introduces fundamental machine learning topics such as data engineering, supervised learning and unsupervised learning with case studies.

7. Course objectives/student learning outcomes/program outcomes	
Course objectives	The goal of this class is for students to learn theoretical foundations tools on feature extraction and machine learning algorithms their applications. By completing this course, students should be able to applying data mining and machine learning tools for a practical problem, including data representation, feature extraction, machine learning algorithm design, parameter turning, and experimental validation.

8. Course evaluation method	
3 Homework Assignments (each worth 10%) 30% Midterm Exam - 30% Final Project - 40%	Students will work on a project where they will use key mechanisms of ML projects, including the life cycle of data analysis, and the reporting and validation of ML projects.

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 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

Lecture notes

18. Supplementary/recommended readings

Data Mining, Practical Machine Learning Tools and Techniques, Ian Witten Eibe, Frank Mark Hall Christopher Pal, 4th edition, Morgan Kaufmann 2016.

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

Tentative Topics
Introduction
Data representation
Feature extraction
Tools for machine learning
Supervised learning
Unsupervised learning
Recurrent learning
Reinforcement learning
Machine learning experiment design
Validation models
Machine learning applications
Project presentations