

 FLORIDA ATLANTIC UNIVERSITY	COURSE CHANGE REQUEST Undergraduate Programs		UUPC Approval _____ UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____
	Department Comp. and Electrical Eng. and Comp. Sci. College Engineering and Computer Science		
Current Course Prefix and Number CAP 4613		Current Course Title Introduction to Deep Learning	
<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: COP 3530 or COP 3043 with minimum grade of "C" 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: Spring 2021		Terminate course? Effective Term/Year for Termination:	
Faculty Contact/Email/Phone Dr. Hanqi Zhuang, zhuang@fau.edu, 561-297-3413			
Approved by Department Chair _____ Hanqi Zhuang College Curriculum Chair _____ Dan Meeroff College Dean _____ UUPC Chair _____ Jerry Haky Undergraduate Studies Dean _____ Edward Pratt UFS President _____ Provost _____		Date _____ 9-3-20 9/4/20 _____ 9-15-20 _____ 9-15-20 _____ _____	

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

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

1. Course title/number, number of credit hours	
Introduction to Deep Learning – CAP 4613	3 credit hours
2. Course prerequisites, corequisites, and where the course fits in the program of study	
Prerequisites: <i>COP 3530 or COP3043 or permission of the instructor</i>	
3. Course logistics	
<i>Term:</i> Spring 2021	
<i>Class location and time:</i> TBD	
4. Instructor contact information	
<i>Instructor's name</i>	Dr. Xingquan Zhu
<i>Office address</i>	Engineering East (EE-503B) Bldg., Room 503B
<i>Office Hours</i>	TBD
<i>Contact telephone number</i>	561-297-3452
<i>Email address</i>	xzhu3@fau.edu
5. TA contact information	
<i>TA's name</i>	N/A
<i>Office address</i>	N/A
<i>Office Hours</i>	N/A
<i>Contact telephone number</i>	N/A
<i>Email address</i>	N/A
6. Course description	
<p>This course teaches students basic concepts of deep learning. The class will cover three major topics including statistical machine learning, neural network structures, and deep neural networks. Detailed topics include introduction to machine learning algorithms, perceptron learning, and multi-layer neural networks, and deep neural network structures and learning algorithms. The lectures will include practical sessions dedicated to the implementation and programming of deep learning framework.</p>	
7. Course objectives/student learning outcomes/program outcomes	
<i>Course objectives</i>	<p>The goal of this class is for students to gain hands-on experiences on deep learning and its applications to numerous domains. At the end of the class, students should be able to understand the whole process of building deep learning framework. We will use R as the programming language and teach students how to implement deep learning modules for object recognition, classification, etc.</p>
8. Course evaluation method	

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Home Work -	40%
Midterm -	15%
Term Project -	20%
Final -	25%
9. Course grading scale	
Grading Scale: 90 and above: "A", 85-89: "A-", 76-84: "B+", 70-75: "B", 66-74: "C+", 60-65: "C", 50-59: "D", 49 and below: "F."	
10. Policy on makeup tests, late work, and incompletes	
<p><i>Makeup tests</i> 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</p> <p><i>Late work</i> is not acceptable.</p> <p>A <i>grade of incomplete</i> will be assigned only in the case of solid evidence of medical or otherwise serious emergency situation.</p>	
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/	

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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](#).

17. Required texts/reading

1. Deep Learning with R, François Chollet with J. J. Allaire, ISBN 9781617295546, January 2018

18. Supplementary/recommended readings

1. Neural Networks for Pattern Recognition , Christopher M. Bishop, Clarendon Press, 1996 (Online version available)
2. Deep Learning , Ian Goodfellow, Yoshua Bengio, and Aaron Courville, The MIT Press, 2016

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

Weekly course topics

Weekly schedule	Topic
Week 1	Introduction to neural networks and R programming
Week 2	R programming basics (<i>homework 1</i>)
Week 3	Perceptron learning
Week 4	Multi-Layer Neural Networks
Week 5	Backpropagation Learning (<i>homework 2</i>)
Week 6	R Programming for Neural Networks
Week 7	Deep Learning Neural Network Structures (<i>midterm</i>)
Week 8	Convolutional Neural Networks (CNN)
Week 9	R Programming for CNN (<i>homework 3</i>)
Week 10	CNN for Image Recognition
Week 11	Auto-Decoder (<i>homework 4</i>)

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Week 12	Auto-Decoder for Fraud Detection
Week 13	Word Embedding Learning
Week 14	Word Embedding Learning for Document Classification
Week 15	Final Report (term project report)

Project: The goal of the term project is to practice knowledge learned from the class and have each student to work on a hands on project during the second part of the class. Each student is required to identify a suitable topic (such as image recognition or text classification), and apply deep learning skills learned from the class to solve a research problem, implement and validate the design, and collect experimental results for reporting. Students will prepare a minimum 4-page technical report, and present their work in the class.