

 <b>FLORIDA ATLANTIC UNIVERSITY</b>	<b>COURSE CHANGE REQUEST</b> <b>Graduate Programs</b>		UGPC Approval _____ UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner _____ Catalog _____
	<b>Department</b> CEECS  <b>College</b> Engineering and Computer Science		
<b>Current Course Prefix and Number</b> CAP 5615		<b>Current Course Title</b> Introduction to Neural Networks	
<i>Syllabus must be attached for ANY changes to current course details. See <a href="#">Guidelines</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> <b>From:</b> _____ <b>To:</b> _____ <b>Change course number</b> <b>From:</b> _____ <b>To:</b> _____ <b>Change credits*</b> <b>From:</b> _____ <b>To:</b> _____ <b>Change grading</b> <b>From:</b> _____ <b>To:</b> _____ <b>Academic Service Learning (ASL) **</b> <b>Add</b> <input type="checkbox"/> <b>Remove</b> <input type="checkbox"/>		<b>Change description to:</b>  <b>Change prerequisites/minimum grades to:</b> Graduate Standing  <b>Change corequisites to:</b>  <b>Change registration controls to:</b>	
* Review <a href="#">Provost Memorandum</a> ** Academic Service Learning statement must be indicated in syllabus and approval attached to this form.		Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade.	
<b>Effective Term/Year for Changes:</b> Spring 2021		<b>Terminate course? Effective Term/Year for Termination:</b>	
<b>Faculty Contact/Email/Phone</b> Hanqi Zhuang/zuang@fau.edu/ 297-3413			
<b>Approved by</b> Department Chair _____ <b>Hanqi Zhuang</b> College Curriculum Chair _____ <b>Francisco Presuel-Moreno</b> College Dean _____ <i>M. Cardelino</i> UGPC Chair _____ UGC Chair _____ Graduate College Dean _____ UFS President _____ Provost _____		Digitally signed by Hanqi Zhuang Date: 2020.10.21 15:32:23 -04'00'  Digitally signed by Francisco Presuel-Moreno DN: cn=Francisco Presuel-Moreno, ou=Florida Atlantic University, ou=Ocean and Mechanical Engineering, email=fpresuel@fau.edu, c=US Date: 2020.10.21 11:38:01 -04'00'  Digitally signed by Mhuela Cardelino DN: cn=Mhuela Cardelino, ou=Florida Atlantic University, ou=email-mcardel@fau.edu, c=US Date: 2020.10.21 15:04:01 -04'00'	<b>Date</b> _____ _____ 10/25/2020 _____ _____ _____ _____

Email this form and syllabus to [UGPC@fau.edu](mailto:UGPC@fau.edu) 10 days before the UGPC meeting.

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

<b>1. Course title/number, number of credit hours</b>	
Introduction to Neural Networks/ CAP 5615	3 credit hours
<b>2. Course prerequisites, corequisites, and where the course fits in the program of study</b>	
Prerequisite: <i>Graduate standing</i>	
<b>3. Course logistics</b>	
Term: Class location and time:	
<b>4. Instructor contact information</b>	
<i>Instructor's name Office address Office Hours  Contact telephone number Email address Webex Link:</i>	
<b>5. TA contact information</b>	
<i>TA's name Office address Office Hours Contact telephone number Email address</i>	
<b>6. Course description</b>	
Brief introduction to biological neural systems. Models of neural mechanisms of learning and memory. Neural net applications to image processing, pattern recognition, machine learning, optimization problems, and robotics. Hardware implementation issues.	
<b>7. Course objectives/student learning outcomes/program outcomes</b>	
<i>Course objectives</i>	<ol style="list-style-type: none"> <li>1. Learn fundamental concepts of artificial neural networks, classification models, Bayes networks, and advanced learning framework, such as deep learning.</li> <li>2. Develop abilities to analyze artificial neural networks.</li> <li>3. Develop the basic understanding of Back Propagation for weight updating in neural networks.</li> <li>4. Develop the ability to design basic learning systems.</li> </ol>
<i>Student learning outcomes &amp; relationship to ABET objectives</i>	<ol style="list-style-type: none"> <li>1. Proficiency in the areas of software design and development, data structures, and operating systems</li> <li>2. An ability to plan and execute an engineering design to meet an identified need</li> </ol>

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**8. Course evaluation method**

1. Homework
2. Final Exam
3. Participation

**9. Course grading scale**

Grading Scale:

- |                             |                             |
|-----------------------------|-----------------------------|
| √ 90% and above             | A (including A, A-)         |
| √ 70-89%                    | B (including B+, B, and B-) |
| √ 60-69%                    | C (including C+, C, and C-) |
| √ 40-59%                    | D (including D+, C, and D-) |
| √ 39% and below or cheating | F                           |

**10. Policy on makeup tests, late work, and incompletes**

*Makeup tests* 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 exam should be administered and proctored by department personnel unless there are other pre-approved arrangements

*Late work* is subject to late penalty.

*Incomplete grades* are against the policy of the department. Unless there is solid evidence of medical or otherwise serious emergency situation and the student is currently passing the class, incomplete grades will not be given.

**11. Special course requirements**

All homework assignments and all lab work in this course must be **INDIVIDUAL** effort. Please take the time to read the documentation. You are responsible for the information outlined in it. Please see the instructor, any teaching assistant, or Engineering Student Services tutoring for assistance. Check the **Where to Find Help** Section on Blackboard.

**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.

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**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/](http://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](#).

**17. Texts/reading**

**Textbook:**

- [Deep Learning](#), Ian Goodfellow, Yoshua Bengio, and Aaron Courville, The MIT Press, 2016

**18. Supplementary/recommended readings**

**Reference books:**

1. [Neural Networks for Pattern Recognition](#), Christopher M. Bishop, Clarendon Press, 1996 (Online version available)
2. [Pattern Recognition and Machine Learning](#) Christopher M. Bishop, Springer, October, 2007, (Online version available)

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

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**Topics:**

- Introduction to machine learning & Python Programming (week 1)
- Pattern Recognition and Machine Learning
  - Decision Trees (Week 1)
  - Decision Tree learning using Python (Week 2)
- Neural Networks
  - Neural Network Structures (Week 3)
  - Single Layer Perceptron Learning (Week 3)
  - Multilayer Feedforward Neural Networks (Week 4)
  - Radial-Basis Function Networks (Week 5)
- Intro to Deep Learning (Week 6)

**From:**Rainer Steinwandt <RSTEINWA@fau.edu>  
**Sent:**Thursday, November 5, 2020 10:54 AM  
**To:**Mihaela Cardei <mcardei@fau.edu>  
**Cc:**Hanqi Zhuang <zhuang@fau.edu>  
**Subject:**RE: CEECS - Course Perquisite Changes

Hello,

Sounds good. The proposed prerequisite of "Graduate Standing" makes the courses accessible to our graduate students, which is very welcome. There are no concerns from math w.r.t. this change. Thanks for checking.

Best,  
Rainer

**From:**Mihaela Cardei <mcardei@fau.edu>  
**Sent:**Thursday, November 5, 2020 10:50 AM  
**To:**Rainer Steinwandt <RSTEINWA@fau.edu>  
**Cc:**Hanqi Zhuang <zhuang@fau.edu>  
**Subject:**CEECS - Course Perquisite Changes

Hello Dr. Steinwandt,

CEECS department is changing prerequisites of the following graduate courses which are listed in the Cyber Security Certificate.

CDA5326 Cryptographic Engineering  
CIS5371 Practical Aspects of Modern Cryptography

The prerequisites are changed to Graduate Standing.

Changing of the prerequisites for these courses were discussed in UGPC yesterday November 4th, and the UGPC committee asked us to check with the other colleges where we have joint interdisciplinary programs. The next meeting, UGC, is on November 13 from 10:00 AM.

Please let us know if Mathematical Sciences has any objections to these prerequisite changes.

Best regards,  
Mihaela Cardei

**From:**Kevin Wagner <kwagne15@fau.edu>  
**Sent:**Thursday, November 5, 2020 10:26 AM  
**To:**Mihaela Cardei <mcardei@fau.edu>  
**Cc:**Hanqi Zhuang <zhuang@fau.edu>; Taghi Khoshgoftaar <khoshgof@fau.edu>  
**Subject:**Re: MS DSA Steering Committee

Fine with me.

*KW*

*Kevin M. Wagner, J.D., PhD*  
**Professor and Chair, Department of Political Science**  
**President, FAU Faculty Senate**  
**Trustee, FAU Board of Trustees**  
**Director of the Jack Miller Forum**  
**Dorothy F. Schmidt College of Arts and Letters**  
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Florida has a very broad public records law. As a result, any written communication created or received by Florida Atlantic University employees is subject to disclosure to the public and the media, upon request, unless otherwise exempt. Under Florida law, e-mail addresses are public records.

On Thu, Nov 5, 2020 at 10:21 AM Mihaela Cardei <[mcardei@fau.edu](mailto:mcardei@fau.edu)> wrote:  
Hello Dr. Wagner,

CEECs department is changing the prerequisites for the following courses which are listed in the MS DSA program:

CORE course in MS DSA:  
CAP6673: Data Mining and Machine Learning

ELECTIVE courses in MS DSA:  
CAP5615: Introduction to Neural Networks  
CAP6315: Social Networks and Big Data Analytics

CAP6619: Deep Learning  
CAP6776: Information Retrieval  
CAP6777: Web Mining  
CEN6405: Computer Performance Modeling

The prerequisites are changed as follows:  
6000 level courses - change to no prerequisites  
5000 level courses - change to Graduate Standing

These courses were discussed in UGPC yesterday November 4th, and the UGPC committee asked us to check with MS DSA Steering Committee if they have any objections. The next meeting, UGC, is on November 13 from 10:00 AM.

Please let us know if the MS DSA Steering Committee has any objections.

Best regards,  
Mihaela Cardei



**From:**Tamara Dinev <tdinev@fau.edu>  
**Sent:**Thursday, November 5, 2020 10:41 AM  
**To:**Mihaela Cardei <mcardei@fau.edu>  
**Cc:**Hanqi Zhuang <zhuang@fau.edu>  
**Subject:**RE: CEECS - Course Perquisite Changes

Thank you Dr. Cardei. I will come back soon

Best Regards:  
Tamara

=====  
Tamara Dinev, Ph.D., Department Chair and Professor  
Dean's Distinguished Research Fellow  
Department of Information Technology and Operations Management, FL 219  
College of Business, Florida Atlantic University  
Boca Raton, Florida 33431  
tel. (561) 297-3181, email: tdinev@fau.edu  
Google Scholar:<https://scholar.google.com/citations?user=YH8QZ-YAAAAJ&hl=en>

**From:**Mihaela Cardei <mcardei@fau.edu>  
**Sent:**Thursday, November 5, 2020 10:35 AM  
**To:**Tamara Dinev <tdinev@fau.edu>  
**Cc:**Hanqi Zhuang <zhuang@fau.edu>  
**Subject:**CEECS - Course Perquisite Changes

Hello Dr. Dinev,

CEECS department is changing prerequisites of the following graduate courses which are listed in the MS ITM and/or Big Data Analytics Certificate.

MS ITM:

CEN 5035 is a core in CEECS concentrations only.

Electives: CAP 5615, CAP 6315, CAP 6619, CAP 6640, CAP 6673, CAP 6776, CAP 6777, CEN 6405, CEN 5086

Big Data Certificate:

CAP 5615, CAP 6315, CAP 6619, CAP 6640, CAP 6673, CAP 6776, CAP 6777, CEN 6405.

The prerequisites are changed as follows:

6000 level courses - change to no prerequisites

5000 level courses - change to Graduate Standing

These courses were discussed in UGPC yesterday November 4th, and the UGPC committee asked us to check with the other colleges where we have joint interdisciplinary programs. The next meeting, UGC, is on November 13 from 10:00 AM.

Please let us know if ITOM has any objections to these prerequisite changes.

Best regards,  
Mihaela Cardei