

 <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> CEN 5086	<b>Current Course Title</b> Cloud Computing		
<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. Cardie</i> UGPC Chair _____ UGC Chair _____ Graduate College Dean _____ UFS President _____ Provost _____		<b>Date</b> _____ _____ 10/25/2020 _____ _____ _____ _____	
<small>Digitally signed by Hanqi Zhuang Date: 2020.10.21 15:41:45 -04'00'</small>		<small>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: 2020.10.22 12:41:03 -04'00'</small>	
<small>Digitally signed by M. Cardie DN: cn=M. Cardie, c=Florida Atlantic University, ou, email=mcadie@fau.edu, c=US Date: 2020.10.21 19:29:08 -04'00'</small>			

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

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

<b>1. Course title/number, number of credit hours</b>	
Cloud Computing / CEN5086	# of credit hours 3
<b>2. Course prerequisites, corequisites, and where the course fits in the program of study</b>	
Prerequisites: Graduate standing	
<b>3. Course logistics</b>	
Term: Class location and time	
<b>4. Instructor contact information</b>	
Instructor's name Office address Office Hours Contact telephone number Email address	
<b>5. TA contact information</b>	
TA's name Office address Office Hours Contact telephone number Email address	
<b>6. Course description</b>	
Study of cloud computing and the use and architecture of this model of computation. Exploration of the services provided by clouds, their internal structure and their possibilities and limitations.	
<b>7. Course objectives/student learning outcomes/program outcomes</b>	
Course objectives	<p>Describe the possibilities and limitations of cloud computing from the point of view of users and designers</p> <p>Be able to understand what components and tools are used to deal with clouds</p> <p>Analyze examples of real cloud architectures with respect to their structure and function.</p> <p>Analyze and apply UML models and patterns to describe and design cloud systems.</p> <p>Be able to log into real clouds, open accounts, select services from them, and perform simple computational tasks.</p>

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	<p>Estimate the security and reliability levels of systems running different types of applications and in different environments. Define requirements and defenses to provide appropriate security and reliability levels.</p> <p>Given a set of application requirements, students should be able to select the most convenient cloud product from a set of commercial offerings, and write appropriate service contracts.</p>
<b>8. Course evaluation method</b>	
Take-home final exam (50%). Assignments (2). (50%).	The assignments are hands-on in Amazon AWS and Microsoft Azure Assignments and exam are take home.
<b>9. Course grading scale</b>	
Relative grading, no ranges or curves	
<b>10. Policy on makeup tests, late work, and incompletes</b>	
A grade of incomplete will be assigned only in the case of solid evidence of medical or otherwise serious emergency situation.	
<b>11. Special course requirements</b>	
None	
<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 and laptops, 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>	

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<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>
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 <a href="#">University Regulation 4.001</a> .
<b>16. Required texts/reading</b>
Class notes/slides placed on Canvas  Slides on UML.
<b>17. Supplementary/recommended readings</b>
Chellammal Surianarayanan , Pethuru Raj Chelliah, Essentials of Cloud Computing: A Holistic Perspective Springer International Publishing, 2019
<b>19. Course topical outline, including dates for exams/quizzes, papers, completion of reading</b>
Week 1 : Motivation and objectives, Objectives of cloud computing. Advantages and problems. Applications appropriate for clouds. Typical services.
Week 2: Service levels. Infrastructure as a Service, Middleware (Platform) as a Service. Software as a Service. Advantages and problems of each type of service. SOA and its relationship to cloud computing. Application as a Service.
Week 3: Infrastructure as a Service. Virtualization approaches. Desktop and server virtualization. Examples: Amazon EC2, Eucalyptus.. Reference architectures. <b>Assignment 1</b>
Week 4: Platform as a Service. Platform approaches. Agnostic middleware. Example: Microsoft Azure.
Week 5: Software as a Service. Example: Google Apps. Applications using multiple clouds.
Week 6: Service-oriented architectures. Web services and their standards. Service contracts
Week 7: Security. Attacks and their defenses. Misuse patterns.
Week 8: Security. Finding threats, secure architectures.
Week 9: Reliability. Providing reliability, availability, and fault tolerance in cloud systems
Week 10: Identity management. Importance and examples Governance. Policies and management. <b>Assignment 2</b>
Week 11: Wireless clouds. Effect on security and functionality
Week 12: The Internet of Things. Fog computing.

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Week 13: Clouds and cyber-physical systems
Week 14: Multiclouds, brokers, cloud ecosystems
Week 15: Summary <b>Final exam</b>

**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**  
**Florida Atlantic University**  
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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