FLORIDA ATLANTIC UNIVERSITY

COURSE CHANGE REQUEST
Graduate Programs

Department CEECS

College Engineering and Computer Science

UGPC Approval _____
UFS Approval _____
SCNS Submittal _____
Confirmed _____
Banner _____
Catalog _____

***Current* Course Prefix and Number**	***Current* Course Title**
CEN 5086	Cloud Computing

*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:
Graduate standing

Change corequisites to:

Change registration controls to:

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

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

Faculty Contact/Email/Phone Hanqi Zhuang/zuang@fau.edu/ 297-3413

Approved by		***Date***
Department Chair	Hanqi Zhuang — Digitally signed by Hanqi Zhuang Date: 2020.10.21 15:41:45 -04'00'	
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: 2020.10.22 12:41:03 -04'00'	
College Dean	MCardei — Digitally signed by Mihaela Cardei DN: cn=Mihaela Cardei, o=Florida Atlantic University, ou, email=mcardei@fau.edu, c=US Date: 2020.10.25 19:29:08 -04'00'	10/25/2020
UGPC Chair		
UGC Chair		
Graduate College Dean		
UFS President		
Provost		

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

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

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

	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. 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.
8. Course evaluation method	
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.
9. Course grading scale	
Relative grading, no ranges or curves	
10. Policy on makeup tests, late work, and incompletes	
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	
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.

16. Required texts/reading

Class notes/slides placed on Canvas

Slides on UML.

17. Supplementary/recommended readings

Chellammal Surianarayanan , Pethuru Raj Chelliah,
Essentials of Cloud Computing: A Holistic Perspective
Springer International Publishing, 2019

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

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. **Assignment 1**

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. **Assignment 2**

Week 11: Wireless clouds. Effect on security and functionality

Week 12: The Internet of Things. Fog computing.

Week 13: Clouds and cyber-physical systems
Week 14: Multiclouds, brokers, cloud ecosystems
Week 15: Summary **Final exam**

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.

KMW
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
777 Glades Road
Boca Raton,FL 33431
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kwagne15@fau.edu
Twitter: @kevinwagnerphd
www.fau.edu/politicalscience

On Thu, Nov 5, 2020 at 10:21 AM Mihaela Cardei <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
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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