DO NOT TYPE IN THIS BOX

Bulletin #: 2

Academic Year: 2019-20

# FLORIDA INTERNATIONAL UNIVERSITY
# UNIVERSITY CURRICULUM COMMITTEE
## *Proposal for a Course Change*

## PART I. FILL OUT THIS SECTION COMPLETELY

1. **School/College** Engineering and Computing

   **Div./Dept. in Which Taught** School of Computing and Information Sciences

2. | Alpha Prefix | 1st Digit | Last 3 Digits | "C"-lec-lab "L"-Lab | Cr. Hrs. |
   |---|---|---|---|---|
   | CEN | 4 | 083 | | 3 |

3. **Present Course Title** Introduction to Cloud Computing

## PART II. FILL OUT CHANGE INFORMATION ONLY

**Change Effective** 8 / 24 / 2020

4a. **New Course Title** _____

b. **New Abbreviated course Title** *(for computer class schedules, transcripts)* _____

LIMITED TO 25 Characters *(including spaces)*

5a.

| New Alpha Prefix | New 1st Digit | New Last 3 Digits | Change "C"-lec-lab "L"-Lab |
|---|---|---|---|
| | | | |

**5b. Change Credit Hours: From** _____ **To** _____

6. **New Catalog Description/Major Topics** *(not to exceed 200 characters including spaces)*
   *College of Medicine and College of Law: Attach description not exceeding 1,000 characters including spaces.*

7. **New Prerequisite(s):** (CNT-4713 and (CDA-3102 or CDA-4101)) or permission of the instructor

8. **New Corequisite(s):** _____

9. **Explain Reclassification Request:**

   New course CDA-3102 (as part of CS restructuring in Spring 2020) will be equivalent to CDA-4101. For students passing either of these courses to enroll in CEN-4083, this pre-req change is proposed.

10. **Does this proposed change impact the assessment process of a program or certificate? If yes, then send notification to assessment@fiu.edu.**

**PROPOSAL REQUESTED BY:**

| | | | |
|---|---|---|---|
| **Faculty Contact** | Nagarajan Prabakar | N Prabakar | 10 / 24 / 2019 |
| | **(Type name)** | **(Signature)** | |
| | prabakar@cis.fiu.edu | 305-348-2033 | |
| | **(Email address)** | **(Phone number)** | |
| **Chairperson (Dept./Div.)** | S.S. Iyengar | S. S. Iyengar | 10 / 24 / 2019 |
| | **(Type name)** | **(Signature)** | |
| **Chairperson (Curr. Comm.)** | Wei-Chiang Lin | Wei-Chiang Lin | 10 / 31 / 2019 |
| | **(Type name)** | **(Signature)** | |
| **College/School Dean** | John Volakis | | 11 / 5 / 2019 |
| | **(Type name)** | **(Signature)** | |

Submit one original form. Attach one copy of the Course Justification and Course Syllabus: Course Description, Objectives, Learning Outcomes, Major Topics and textbooks.

**CEN-4083 Introduction to Cloud Computing**

**Course Change Justification**

During the CS curriculum restructuring process in March 2019, two architecture specific required courses (CDA-3103 and CDA-4101) have been replaced with one new course (CDA-3102) effective from Spring 2020. However, SCIS will also offer CDA-4101 in 2020 for students who are admitted prior to 2020.

In Fall 2020, we will have students completed either CDA-4101 or CDA-3102, and would like to enroll in CEN-4083. Hence, this course change proposal to replace
the current prerequisite "(CNT-4713 and CDA-4101) or permission of the instructor"
with "(CNT-4713 and (CDA-3102 or CDA-4101)) or permission of the instructor",
is essential to permit both stream of students to enroll in CEN-4083.

## School of Computing and Information Sciences

**Course Title:** Introduction to Cloud Computing **Date:** 9 30 19

**Course Number:** CEN-4083

**Number of Credits:** 3

| | |
|---|---|
| **Subject Area:** Computer Systems | **Subject Area Coordinator:** Jason Liu<br>**email:** liux@cs.fiu.edu |
| **Catalog Description:**<br>Topics include the concepts and principles of cloud computing and the techniques of using cloud systems and developing cloud applications. | |
| **Textbook:** None. | |
| **References:** | |
| **Prerequisites Courses:** (CNT-4713 and (CDA-3102 or CDA-4101)) or permission of the instructor | |
| **Corequisites Courses:** | |

Type: CS Elective

Prerequisites Topics:

- Knowledge of computer organization and computer networks
- Experience in network programming

Course Outcomes:

1. Master the concepts and principles of cloud computing
2. Be familiar with the concepts and principles of virtualization
3. Master the techniques of using Infrastructure-as-a-Service, Platform-as-a-Service and big data systems
4. Master the techniques of developing, deploying, and managing cloud applications

# School of Computing and Information Sciences
# CEN-4083
# Introduction to Cloud Computing

## Outline

| Topic | Lecture Hours | Outcome |
|---|---|---|
| • Introduction<br>  • Background and history of cloud computing<br>  • Cloud computing models | 3 | 1 |
| • Virtualization<br>  • Background and history of virtualization<br>  • Virtual machines, virtual networks, virtual storage | 3 | 2 |
| • Infrastructure as a Service (IaaS)<br>  • IaaS system architecture<br>  • IaaS programming | 10 | 3,4 |
| • Platform as a Service (PaaS)<br>  , PaaS system architecture<br>  • PaaS programming | 10 | 3,4 |
| • Big data<br>  , Big data system architecture<br>  • Big data programming | 10 | 3,4 |

**School of Computing and Information Sciences**
**CEN-4083**
**Introduction to Cloud Computing**

**Course Outcomes Emphasized in Laboratory Projects / Assignments**

| | Outcome | Number of Weeks |
|---|---|---|
| 1 | Create a cloud virtual machine<br>Outcomes: 1,2 | 2 |
| 2 | Manage a cloud virtual machine through both user interface and programming interface<br>Outcomes: 2,3 | 3 |
| 3 | Create a PaaS program<br>Outcomes: 3,4 | 3 |
| 4 | Create a big data program<br>Outcomes: 3,4 | 3 |

**Oral and Written Communication:** No significant coverage

**Social and Ethical Implications of Computing Topics:** No significant coverage

**Theoretical Contents**

| | |
|---|---|
| 1. | Cloud computing models and systems architecture |
| 2. | Virtualization |
| 3. | IaaS system architecture |
| 4. | PaaS system architecture |
| 5. | Big data system architecture |

**Problem Analysis Experiences**

| | |
|---|---|
| 1. | Cloud programming (3 assignments) |

**Solution Design Experiences**

| | |
|---|---|
| 1. | Design and implementation of a PaaS program |
| 2. | Design and implementation of a big data program |

# School of Computing and Information Sciences
# CEN-4083
# Introduction to Cloud Computing

## The Coverage of Knowledge Units within Computer Science Body of Knowledge[1]

| Knowledge Unit | Topic | Lecture Hours |
|---|---|---|
| AL11 | Big data algorithms | 5 |
| | | |
| | | |
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[1] See *Computing Curricula 2001 Computer Science*. by the Joint Task Force on Computing Curricula IEEE Computer Society Association for Computing Machinery: cf. Computer Science Body of Knowledge. page 17. Available at: http //www.computer org/portal/c/document_library/get_file?p_l_id=2814020&folderId=3111026&name=DLFE-57603 pdf