CSIT 277: INTRODUCTION TO CLOUD COMPUTING

1. Course Information

Subject
CSIT - Computer Science/ Information Technology

Course Number
277

School
Science, Technology, Engineering, Mathematics

Course Title
Introduction to Cloud Computing

2. Hours

Semester Hours
4.00000

Lecture
4

Lab
0

Practicum
0

3. Catalog Description

For display in the online catalog
This course provides students with an overview of the field of Cloud Computing, its enabling technologies, main building blocks, and hands-on experience through projects utilizing popular public cloud infrastructures. Cloud computing is the delivery of computing as a service over a network, whereby distributed resources are rented, rather than owned, by an end user as a utility. The course will introduce this domain and cover the topics of cloud infrastructures, virtualization, software defined networks and storage, cloud storage, and programming models. In addition, this course will introduce the motivating factors, benefits and challenges of the cloud, as well as service models, service level agreements (SLAs), security, example cloud service providers, and use cases.

4. Requisites

Prerequisites
CSIT 185

Corequisites
None

5. Course Type

Course Type for Perkins Reporting
vocational (approved for Perkins funding)

6. Justification

Describe the need for this course
This is a required course for the planned Computer Science – Cloud Computing Option degree program. The course addresses the need of many businesses and industries for individuals knowledgeable in this field.

7. General Education

Will the college submit this course to the statewide General Education Coordinating Committee for approval as a course, which satisfies a general education requirement?

No

If the course does not satisfy a general education requirement, which of the following does it satisfy:

Program-specific requirement

8. Consistency with the Vision and Mission Statements, the Academic Master Plan, and the strategic initiatives of the College

Please describe how this course is consistent with Ocean County College's current Vision Statement, Mission Statement, Academic Master Plan, and the strategic initiatives of the College:

	Add item
1	Demonstrating the college's commitment to offer comprehensive educational programs that develop intentional learners of all ages. (Mission Statement)
2	Seeking to ensure that students will thrive in an increasingly diverse and complex world. (Vision Statement)
3	Preparing students for successful transfer to other educational institutions and/or for entrance into the workforce. (Academic Master Plan)
4	Seeking to empower students through the mastery of intellectual and Practical Skills. (Academic Master Plan)
5	Challenging students to transfer information into knowledge and knowledge into action. (Academic Master Plan)

9. Related Courses at Other Institutions

Comparable Courses at NJ Community Colleges

Institution

Essex County College

Course Title

Introduction to System and Cloud Administration

Course Number

CSC 253

Number of Credits

4

Comments

Overview of Cloud Computing from administration aspect

Institution

Mercer County CC

Course Title

Database Cloud Computing Concept

Course Number

IST 265

Number of Credits

3

Comments

Cloud based Database deployment

Transferability of Course

Rutgers - New Brunswick, Mason Gross School of the Arts

Course Code, Title, and Credits	Transfer Catagory	If non-transferable; select status
01:198:417 Distributed Systems: Concepts and Design 4 cr.		Will not transfer

10. Course Learning Outcomes

Learning Outcomes

	Students who successfully complete this course will be able to:
CLO1	Distinguish how businesses use Cloud Computing to solve business computational business needs.
CLO2	Recognize the core concepts of the cloud computing paradigm: how and why this paradigm shift came about, the characteristics, advantages and challenges brought about by the various models and services in cloud computing.
CLO3	Apply fundamental concepts in cloud infrastructures to make tradeoffs in power, efficiency and cost.
CLO4	Demonstrate knowledge of how to employ and manage single and multiple datacenters to build and deploy cloud applications that are resilient, elastic and cost-efficient.
CLO5	Discuss system, network and storage virtualization and outline their role in enabling the cloud computing system model.
CLO6	Illustrate the fundamental concepts of cloud storage and demonstrate their use in storage systems such as HDFS and other public systems.
CLO7	Analyze various cloud programming models and apply them to solve problems on the cloud.
CLO8	Apply a high-level approach and methodology for evaluating, planning and implementing cloud computing

11. Topical Outline

(include as many themes/skills as needed)

	Major Themes/ Skills	Assignments (Recommended but not limited to)	Assessments (Recommended but not limited to)	Course Learning Outcome(s)
TO1	Understanding Cloud Computing a) Origins and Influences b) Basic Concepts and Terminology c) Goals and Benefits d) Risks and Challenges	In-class exercises / Homework	Homework / Exam	CLO1, CLO2, CLO3
TO2	Fundamental Concepts and Models a. Fundamental Cloud Architectures b. Roles and Boundaries c. Cloud Characteristics d. Cloud Service Delivery Models e. Cloud Deployment Models	In-class exercises / Homework	Homework / Exam	CLO2, CLO3
TO3	Cloud-Enabling Technology a. Broadband Networks and Internet Architecture b. Data Center Technology c. Virtualization Technology d. Web Technology	In-class exercises / Homework	Homework / Exam	CLO3, CLO4, CLO6, CLO7
TO4	Fundamental Cloud Security a) Basic Terms and Concepts b) Threat Agents c) Cloud Security Threats	In-class exercises / Homework	Homework / Exam	CLO4, CLO5, CLO8

TO5	Cloud Infrastructure Mechanisms a) Logical Network Perimeter b) Virtual Server c) Cloud Storage Device d) Cloud Usage Monitor	In-class exercises / Homework	Homework / Exam	CLO4-6, CLO8
TO6	Cloud Management Mechanisms a) Remote Administration b) Resource Management	In-class exercises / Homework	Homework / Exam	CLO5, CLO8

12. Methods of Instruction

In the structuring of this course, what major methods of instruction will be utilized?

o Class lecture
o Discussion
o Demonstrations
o Lab assignments
o Programs and online presentations.

13. General Education Goals Addressed by this Course (this section is to fulfill state requirements)

Information

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Technological Competency

Yes

Related Course Learning Outcome

All

Related Outline Component

All

Assessment of General Education Goal (Recommended but not limited to)

Homework / Exam

_____

_____

_____

_____

_____

_____

_____

Independent/Critical Thinking

Yes

Related Course Learning Outcome

CLO1, CL3, CLO7, CLO8

Related Outline Component

All

Assessment of General Education Goal (Recommended but not limited to)
Homework / Exam

14. Needs

Instructional Materials (text etc.):
Appropriate textbooks will be selected. Contact the department for current adoptions. Class notes, presentations, software and online materials.

Technology Needs:
College Portal and/or College Distance Learning Platform and/or Textbook or Instructor Website.

Human Resource Needs (Presently Employed vs. New Faculty):
Four (4) presently employed full-time faculty plus additional Adjunct Professors as needed.

Facility Needs:
Laboratory classrooms equipped with computer workstations, each configured to support networking. Podium computer similarly equipped plus the ability to present audio-video presentations to the class.

15. Grade Determinants

The final grade in the course will be the cumulative grade based on the following letter grades or their numerical equivalents for the course assignments and examinations

A: Excellent

B+: Very Good

B: Good

C+: Above Average

C: Average

D: Below Average

F: Failure

I: Incomplete

R: Audit

For more detailed information on the Ocean County College grading system, please see Policy #5154.

16. Board Approval

History of Board approval dates
Board of Trustees Approval Date: December 6, 2018