Syllabus for CYB-4500—Cloud Computing

COURSE DESCRIPTION

Cloud Computing examines frameworks and techniques used to design, develop, and implement cloud computing systems. Emphasis is on applied and project-based learning approaches to set up Windows-based clouds using client portals, servers, virtual machines, and the accompanying network infrastructure.

COURSE TOPICS

- History, influences, and challenges of cloud computing
- Virtualization components and platforms
- Cloud services (SaaS, PaaS, DaaS, IaaS)
- Legal and privacy issues
- Deployment models (private, public, community, hybrid)
- Cybersecurity storage
- Performance
- Service-oriented architecture

COURSE OBJECTIVES

After completing this course, you should be able to:

CO 1 Outline the history of the creation and growth of the cloud, including the expansion of cloud service providers.

CO 2 Compare and contrast the three common cloud service delivery models.

CO 3 Identify challenges to cloud computing and recommend mitigation techniques.

CO 4 Implement cloud virtualization components (hypervisor, virtual machine (VM), and virtualized infrastructure).

CO 5 Manage and improve the performance and storage capability of a cloud network.

CO 6 Delineate the components of the cloud's network infrastructure.

CO 7 Use best practices from the cybersecurity industry to provide defense-in-depth to cloud services.

COURSE MATERIALS

You will need the following materials to complete your coursework. Some course materials may be free, open source, or available from other providers. You can access free or open-source materials by clicking the links provided below or in the module details documents. To purchase course materials, please visit the University's textbook supplier.

Required Textbook

- Vanderburg, E., & Wilson, S. (2018). *CompTIA Cloud+ certification study guide* (2nd ed.). McGraw Hill Education.
  ISBN-13: 978-1260116618

Other Requirements

- A Microsoft Azure account using Windows Virtual Machines is required to complete the final project. Introduction information and methods for signing up for the Azure service can be found here: Azure Free Account. Visit the Final Project area of the course for additional details.

  Note: Although the Microsoft Azure account is free for the first 12 months, there may be additional costs associated with this account based on usage. Visit Windows Virtual Machines Pricing for details.

COURSE STRUCTURE

Cloud Computing is a three-credit, online course consisting of **six** modules. Modules include an overview, topics, learning objectives, study materials, and activities. Module titles are listed below.

- **Module 1: Historical Influences and Uses of Cloud Computing**
  Course objective covered in this module: CO 1

- **Module 2: Cloud Service Models**
  Course objective covered in this module: CO 2

- **Module 3: Cloud Computing Challenges**
  Course objective covered in this module: CO 3

- **Module 4: Cloud Virtualization Components**
  Course objective covered in this module: CO 4

- **Module 5: Cloud Network Performance and Components**
  Course objectives covered in this module: CO 5, CO 6

- **Module 6: Cybersecurity Best Practices**
  Course objectives covered in this module: CO 5, CO 7

ASSESSMENT METHODS

For your formal work in the course, you are required to participate in online discussion forums, complete written assignments, complete a midterm project, and complete a two-part final project. See below for details.

Consult the Course Calendar for due dates.

Promoting Originality—One or more of your course activities may utilize a tool designed to promote original work and evaluate your submissions for plagiarism. More information about this tool is available in this document.

 *Discussion Forums*

In addition to an ungraded Introductions Forum, you are required to participate in **six** graded online class discussions.

Communication with your mentor and among fellow students is a critical component of online learning. Participation in online class discussions involves two distinct activities: an initial response to a discussion question and at least two subsequent comments on classmates' responses.

All of these responses must be substantial. Meaningful participation is relevant to the content, adds value, and advances the discussion. Comments such as "I agree" and "ditto" are not considered value-adding participation. Therefore, when you agree or disagree with a classmate or your mentor, state and support your position.

You will be evaluated on the quality and quantity of your participation, including your use of relevant course information to support your point of view, and your awareness of and responses to the postings of your classmates. Remember, these are discussions: responses and comments should be properly proofread and edited, mature, and respectful.

Written Assignments

You are required to complete **five** written assignments. The written assignments are on a variety of topics associated with the course modules. Consult the Course Calendar for due dates.

Midterm Project

You are required to complete a midterm project. The midterm project allows you to utilize both theory and application from the first three modules of the course to critically analyze the implementation for cloud services.

For additional information and requirements, reference the Midterm Project details provided in Module 4. Consult the Course Calendar for due dates.

Final Project

You are required to complete a two-part final project (Lab Activity and Written Report). Cloud projects take various forms and uses through the different industries that have adopted the cloud. You will complete a Microsoft Azure project as a practice exercise and demonstration, including a written report.

Links to introduction information and methods for signing up for the Azure service to complete this project can be found within the required course materials section of the syllabus. For full details and final project requirements, please reference the Final Project section.

Consult the Course Calendar for due dates.

GRADING AND EVALUATION

Your grade in the course will be determined as follows:

- **Online discussions (6)**—20%
- **Written assignments (5)**—30%
- **Midterm project**—20%
- **Final project (2 parts)**—30%
    - Part 1: Lab activity (Microsoft Azure) (15%)
    - Part 2: Written report (15%)

All activities will receive a numerical grade of 0–100. You will receive a score of 0 for any work not submitted. Your final grade in the course will be a letter grade. Letter grade equivalents for numerical

grades are as follows:

A	= 93–100	C+	= 78–79
A–	= 90–92	C	= 73–77
B+	= 88–89	C–	= 70–72
B	= 83–87	D	= 60–69
B–	= 80–82	F	= Below 60

To receive credit for the course, you must earn a letter grade of C or better (for an area of study course) or D or better (for a course not in your area of study), based on the weighted average of all assigned course work (e.g., exams, assignments, discussion postings).

STRATEGIES FOR SUCCESS

First Steps to Success

To succeed in this course, take the following first steps:

- Read carefully the entire Syllabus, making sure that all aspects of the course are clear to you and that you have all the materials required for the course.
- Take time to read the entire Online Student Handbook. The Handbook answers many questions about how to proceed through the course and how to get the most from your educational experience at Thomas Edison State University.
- Familiarize yourself with the learning management systems environment—how to navigate it and what the various course areas contain. If you know what to expect as you navigate the course, you can better pace yourself and complete the work on time.
- If you are not familiar with web-based learning, be sure to review the processes for posting responses online and submitting assignments before class begins.

Study Tips

Consider the following study tips for success:

- To stay on track throughout the course, begin each week by consulting the Course Calendar. The Course Calendar provides an overview of the course and indicates due dates for submitting assignments, posting discussions, and submitting the final project.
- Check Announcements regularly for new course information.

Using AI Ethically: A Guide for TESU Students

TESU's Academic Code of Conduct permits student AI use in support of their writing and research process--not as a replacement for original writing. Document AI use with an acknowledgment statement at the end of each assignment, noting the tools and prompts used. Cite any AI-generated content on the References page. Please review Using AI Ethically: A Guide for TESU Students for more detailed information.

COMMITMENT TO DIVERSITY, EQUITY, AND INCLUSION

Thomas Edison State University recognizes, values, and relies upon the diversity of our community. We strive to provide equitable, inclusive learning experiences that embrace our students' backgrounds, identities, experiences, abilities, and expertise.

ACCESSIBILITY AND ACCOMMODATIONS

Thomas Edison State University adheres to the Americans with Disabilities Act (ADA, 1990; ADAAA, 2008) and Section 504 of the Rehabilitation Act of 1973. The Office of Student Accessibility Services (OSAS) oversees requests for academic accommodations related to disabilities; a student who is pregnant, postpartum, or a student parenting a newborn who is not the birth parent [as covered under NJSA18A]; and students requesting academic accommodation for a short-term/temporary illness and/or injury. Information can be found on the Office of Student Accessibility Services webpage and questions can be sent to ADA@tesu.edu.

ACADEMIC POLICIES

To ensure success in all your academic endeavors and coursework at Thomas Edison State University, familiarize yourself with all administrative and academic policies including those related to academic integrity, course late submissions, course extensions, and grading policies.

For more, see:

- University-wide policies
- Undergraduate academic policies
- Undergraduate course policies
- Graduate academic policies
- Graduate course policies
- Nursing student policies
- Nursing graduate student policies

- International student policies
- Academic code of conduct