COURSE OUTLINE: CSD126 - CLOUD COMPUTING

Prepared: Rodney Martin
Approved: Martha Irwin - Dean

Course Code: Title	CSD126: CLOUD COMPUTING
Program Number: Name	2095: COMPUTER PROGRAMMING
Department:	COMPUTER STUDIES
Academic Year:	2025-2026
Course Description:	Much software development and infrastructure is managed in the cloud. This course focuses on the development and deployment of software in cloud environments. Learners will gain a comprehensive understanding of cloud computing principles, architectures, and services. The course covers key concepts such as Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS), and associated tools and services. Emphasis will be placed on practical skills for using leading cloud platforms like Microsoft Azure, Amazon Web Services (AWS), and Google Cloud Platform (GCP).
Total Credits:	4
Hours/Week:	4
Total Hours:	56
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course: Please refer to program web page for a complete listing of program outcomes where applicable.	**2095 - COMPUTER PROGRAMMING** VLO 1 Identify, analyze, develop, implement, verify and document the requirements for a computing environment. VLO 3 Implement and maintain secure computing environments. VLO 10 Contribute to the development, documentation, implementation, maintenance and testing of software systems by using industry standard software development methodologies based on defined specifications and existing technologies/frameworks. VLO 12 Model, design, implement, and maintain basic data storage solutions. VLO 13 Contribute to the integration of network communications into software solutions by adhering to protocol standards.
Essential Employability Skills (EES) addressed in this course:	EES 6 Locate, select, organize, and document information using appropriate technology and information systems. EES 7 Analyze, evaluate, and apply relevant information from a variety of sources.
Course Evaluation:	Passing Grade: 50%, D A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.

Other Course Evaluation & Assessment Requirements:	Students are expected to be present to write all tests in class, unless otherwise specified. If a student is unable to write a test due to illness or a legitimate emergency, that student must contact the professor prior to class and provide reasoning. Should the student fail to contact the professor, the student shall receive a grade of zero on the test.

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If a student is not present 10 minutes after the test begins, the student will be considered absent and will not be given the privilege of writing the test.
Students exhibiting academic dishonesty during a test will receive an automatic zero. Please refer to the College Academic Dishonesty Policy for further information.

In order to qualify to write a missed test, the student shall have:
a.) attended at least 75% of the classes to-date.
b.) provide the professor an acceptable explanation for his/her absence.
c.) be granted permission by the professor.

NOTE: The missed test that has met the above criteria will be an end-of-semester test.

Labs / assignments are due on the due date indicated by the professor. Notice by the professor will be written on the labs / assignments and verbally announced in advance, during class.

Labs and assignments that are deemed late will have a 10% reduction per academic day to a maximum of 5 academic days at 50% (excluding weekends and holidays). Example: 1 day late - 10% reduction, 2 days late, 20%, up to 50%. After 5 academic days, no late assignments and labs will be accepted. If you are going to miss a lab / assignment deadline due to circumstances beyond your control and seek an extension of time beyond the due date, you must contact your professor in advance of the deadline with a legitimate reason that is acceptable.

It is the responsibility of the student who has missed a class to contact the professor immediately to obtain the lab / assignment. Students are responsible for doing their own work. Labs / assignments that are handed in and are deemed identical or near identical in content may constitute academic dishonesty and result in a zero grade.

Students are expected to be present to write in-classroom quizzes. There are no make-up options for missed in-class quizzes.

Students have the right to learn in an environment that is distraction-free, therefore, everyone is expected to arrive on-time in class. Should lectures become distracted due to students walking in late, the professor may deny entry until the 1st break period, which can be up to 50 minutes after class starts or until that component of the lecture is complete.

Grade
Definition Grade Point Equivalent
A+ 90 - 100% 4.00
A 80 - 89%
B 70 - 79% 3.00
C 60 - 69% 2.00
D 50 - 59% 1.00
F (Fail) 49% and below 0.00

CR (Credit) Credit for diploma requirements has been awarded.
S Satisfactory achievement in field /clinical placement or non-graded subject area.
U Unsatisfactory achievement in field/clinical placement or non-graded subject area.
X A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.

NR Grade not reported to Registrar`s office.
W Student has withdrawn from the course without academic penalty.

Books and Required Resources:	Free

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
1. Describe the nature of cloud computing technologies	1.1 Explain core cloud concepts such as elasticity, scalability, fault tolerance, and high availability. 1.2 Differentiate between service models (IaaS, PaaS, SaaS) and describe typical use cases for each. 1.3 Compare deployment models (public, private, hybrid, multi-cloud) and their trade-offs. 1.4 Describe shared responsibility models and how responsibilities are divided between provider and customer. 1.5 Explain virtualization and containerization at a conceptual level. 1.6 Identify common cloud architectural patterns and why they are used.

Course Outcome 2	Learning Objectives for Course Outcome 2
2. Manage users, permissions, and security in the cloud	2.1 Explain identity and access management (IAM) concepts such as users, roles, groups, and policies. 2.2 Apply the principle of least privilege when assigning permissions. 2.3 Configure authentication and authorization mechanisms for cloud resources. 2.4 Describe common cloud security risks and mitigation strategies. 2.5 Manage secrets and credentials securely within a cloud environment.

Course Outcome 3	Learning Objectives for Course Outcome 3
3. Provision cloud systems	3.1 Provision compute resources using manual and automated methods. 3.2 Select appropriate resource types based on performance, cost, and scalability requirements. 3.3 Configure basic networking components required for cloud systems. 3.4 Use infrastructure-as-code concepts to define and reproduce environments. 3.5 Modify and decommission cloud resources safely. 3.6 Explain how provisioning choices affect reliability and maintainability.

Course Outcome 4	Learning Objectives for Course Outcome 4
4. Store data in the cloud	4.1 Distinguish between object, block, and file storage models. 4.2 Choose appropriate storage solutions based on access patterns and durability needs. 4.3 Configure data persistence and lifecycle policies. 4.4 Explain data redundancy, replication, and backup strategies.

		4.5 Apply basic access controls and encryption to stored data.
		4.6 Describe data consistency and availability trade-offs.
	Course Outcome 5	**Learning Objectives for Course Outcome 5**
	5. Run applications in the cloud	5.1 Deploy applications using virtual machines, containers, or managed platforms.
		5.2 Configure runtime environments and application dependencies.
		5.3 Configure scaling and load-balancing mechanisms.
		5.4 Manage application configuration using environment-based settings.
		5.5 Explain how cloud environments support application resilience.
		5.6 Explain concepts such as redundancy, failover, and disaster recovery.
		5.7 Configure backups and recovery processes.
	Course Outcome 6	**Learning Objectives for Course Outcome 6**
	6. Configure automatic integration and deployment processes	6.1 Explain the goals and benefits of CI/CD in cloud environments.
		6.2 Configure automated build and deployment pipelines.
		6.3 Integrate version control systems with deployment workflows.
		6.4 Describe environment separation (development, testing, production).
		6.5 Explain how automation reduces operational risk.
	Course Outcome 7	**Learning Objectives for Course Outcome 7**
	7. Monitor and debug cloud services and costs	7.1 Configure monitoring and alerting mechanisms.
		7.2 Use billing data to monitor costs.
		7.3 Use monitoring data to diagnose performance and availability issues.
		7.4 Discuss strategies for cost optimization and waste reduction.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Formative Assessments and Quizzes	5%
Lab Assignments	25%
Quizzes	10%
Test 1 (theory + practical)	30%
Test 2 (theory + practical)	30%

Date: December 18, 2025

Addendum: Please refer to the course outline addendum on the Learning Management System for further information.