

Course Description**CIS3641C | Cloud Developer | 4.00 credits**

This course focuses on software development with cloud technologies. Students learn about core cloud services, basic architecture, and best practices used in the development and maintenance of applications in a cloud platform. Proficiency is gained in application lifecycle management, serverless computing, and containers using primary cloud platform tools, including IDE's, distributed version control systems, CI/CD pipelines, and security. API usage, command line interfaces, and software development kits (SDKs) will be emphasized. Prerequisites: COP1047C and CTS1145.

Course Competencies

Competency 1: The student will demonstrate the ability to deploy applications in cloud environments by:

1. Deploying written code using existing CI/CD pipelines, processes, and patterns
2. Using appropriate versioning control systems for branching and release management
3. Applying appropriate cloud tools for managing the software architecture process
4. Analyzing and troubleshooting technical issues in compiling, debugging, and deployment of code
5. Understanding how cloud infrastructure as code works
6. Creating and introducing cloud application stacks, including resources and environments
7. Determining cloud resources necessary for application deployment
8. Validating application health using cloud tools
9. Understanding the difference between Development, Test, and Production environments

Competency 2: The student will apply appropriate security methods and practices to cloud development by:

1. Understanding how security works in cloud environments
2. Understanding the least privilege policies
3. Applying the policies of least privilege to applications
4. Implementing encryption using appropriate services both at rest and in transit
5. Implementing application authentication and authorization

Competency 3: The student will develop serverless applications by:

1. Comparing and contrasting server-based vs. serverless applications
2. Understanding how decoupling applications work in cloud infrastructure
3. Understanding serverless cloud environments, including environment parameters, variables, and system design
4. Applying serverless computing to databases for information capture and retrieval. e) Associating serverless applications with appropriate databases
5. Applying appropriate synchronous and asynchronous invocations
6. Creating applications using caching, messages, and stateless environments

Competency 4: The student will troubleshoot applications by:

1. Optimizing applications using appropriate cloud resources
2. Understanding how to migrate applications through isolating dependencies
3. Understanding how to refactor an application

Competency 5: The student will demonstrate monitoring and troubleshooting by:

1. Writing code that can be monitored through cloud-native dashboards
2. Building systems with correct logging
3. Building correct systems enabling performance tracing
4. Performing root cause analysis on system faults in testing and production
5. Understanding build and testing history
6. Tracking specific issues to underlying components