

# **CLOUD ENGINEER (Competency-Based)**

## **APPENDIX A**

O\*NET CODE 15-1299.08

**Competency/performance-based apprenticeship occupations are premised on attainment of demonstrated, observable and measurable competencies. In competency/performance-based occupations apprentices may accelerate the rate of competency achievement or take additional time beyond the approximate time of completion.**

This training outline is a minimum standard for Work Processes and Related Instruction. Changes in technology and regulations may result in the need for additional on-the-job or classroom training.

### **WORK PROCESSES**

#### **A. Workplace Orientation and Safety**

1. Describe workplace organizational structure.
2. Describe and adhere to workplace policies and procedures.
3. Comply with employer-specific building safety protocols.
4. Develop understanding of company structures, business transactions and activities.
5. Learn to use/use office equipment, such as copier, scanner, computer, filing system(s), storage.

#### **B. Office Administration**

1. Perform general office duties, such as filing, answering telephones, and handling routine correspondence.
2. Label and catalog documents according to company procedures.

#### **C. Systems Architecture**

1. Work with virtualization technology.
2. Monitor and audit systems.
3. Demonstrate knowledge of networking concepts (e.g., Domain Name Servers (DNS), Transmission Control Protocol/Internet Protocol (TCP/IP), and firewalls).
4. Demonstrate ability to translate architectural requirements into functional network applications.

5. Deploy, manage, and operate scalable, highly available, and fault-tolerant systems.
6. Know how to implement and control the flow of data, both to and from a service provider.
7. Select appropriate services based on compute, data, or security requirements.
8. Estimate usage costs and identify operational cost control mechanisms.
9. Demonstrate ability to migrate on-premises workload to service providers.

#### **D. Cloud Development**

1. Develop, deploy & debug cloud applications.
2. Skills in Application Programming Interface (API) usage, Command Line Interface (CLI), and Software Development Kits (SDKs) for writing applications.
3. Knowledge of key features of Cloud Service Providers (e.g., IBM, Amazon Web Services (AWS), salesforce).
4. Demonstrate an understanding of Application Life-cycle Management (ALM).
5. Use continuous integration and distribution pipelines to deploy applications.
6. Code to implement essential security measures.
7. Write, correct, and debug code modules.
8. Write code for serverless applications.
9. Understand the use of containers in development processes.

#### **E. Cloud Solutions Architecture**

1. Design and deploy dynamically scalable, available, fault-tolerant, and reliable applications on the Cloud.
2. Select appropriate Cloud services to design and deploy an application based on given requirements.
3. Migrate complex, multi-tier applications on Cloud Platforms.
4. Design and deploy enterprise-wide scalable operations on Cloud Platforms.
5. Implement cost-control strategies.

**Approximate Total Hours      1000-2000**

**Apprentices in Competency-Based Programs shall participate in no fewer than 1,000 documented hours of on-the-job training, and until they have demonstrated a competency for each skill in the Work Processes, with the understanding competency will be demonstrated reasonably proximate to the maximum on-the-job training hours. Competency Assessment referenced in Appendix B.**

*Apprenticeship work processes are applicable only to training curricula for apprentices in approved programs. Apprenticeship work processes have no impact on classification determinations under Article 8 or 9 of the Labor Law. For guidance regarding classification for purposes of Article 8 or 9 of the Labor Law, please refer to <https://dol.ny.gov/public-work-and-prevailing-wage>*

**CLOUD ENGINEER**  
**APPENDIX B**  
**RELATED INSTRUCTION**

**Safety and the Workplace**

1. Local, State and Federal Guidelines Affecting Accounting (if applicable)
2. Sexual Harassment Prevention Training – must comply with Section 201-g of the Labor Law

**Trade Theory and Science**

1. Software Design
2. Introduction to Network Concepts
3. Cloud Computing: Infrastructure and Services
4. Linux System Administration
5. Virtual Infrastructure: Instruction and Configuration
6. Information Storage and Management
7. Administration of Network Resources
8. Advanced Database Management
9. Network Security Basics

**Business Skills**

1. Oral and Written Communication, Time Management
2. Teamwork
3. Customer Service (if applicable)

**Competency Assessment**

1. Test Preparation
2. Written/Practical Proficiency Examination(s)

**Other Related Topics As Necessary**

At least 144 hours of Related Instruction per year must be available for the apprentice at the time of his/her indenture. However, the apprentice may test out earlier if able to demonstrate competence for each topic on the Related Instruction outline.

Appendix B topics are approved by New York State Education Department.