



Saint Martin's
UNIVERSITY

W A S H I N G T O N
VETS2TECH

Veterans ★ Transitioning service members ★ Military spouses

Cloud Application Development
Weekly Training Plan

Agenda

- Program Notes
- Cloud Application Development Pathway learning objectives
- Professional Development overview
- Weekly Breakdown (weeks 1-16)
 - Session 08
 - Session 09
- Questions
- Conclusion

Program Notes

- **Current pathway prerequisites:**
 - College-level Algebra
 - Behavioral Interview
- **Classroom Instruction:**
 - Academics:
 - Students will be in class Monday through Friday from 9:00 am to 5:00 pm
 - Students will attend three classes, twice a week for 2 1/2 hours each class
 - During unstructured time, students will have the opportunity to work on classwork, work on group projects, or study for certification exams
- **Professional Development:**
 - Career Development Managers will teach Professional Development classes twice a week and focus on:
 - Resumes
 - Cover Letters
 - Virtual Presence (LinkedIn, Social Media, etc.)
 - Job Search
 - Mock Interviews



Cloud Application Development (CAD) Learning Objectives

October 3, 2023

Pre-Requisites

College Algebra transcripts
or
Math placement test available online

Outcomes

- ❑ Program using Object Oriented languages
- ❑ Apply Software Development Lifecycle (SDL)
- ❑ Develop web applications
- ❑ Design & build databases

Certification Opportunities*



CSC 160: Computing Technologies (Python/ Introduction To Programing)

- ❑ Perform operations using data type and operators
- ❑ Control flow with decisions and loops
- ❑ Perform input and output operations
- ❑ Document and structure code
- ❑ Perform troubleshooting and error handling
- ❑ Perform operations using modules and tools
- ❑ Current application development with Python on AWS specialization
- ❑ Learn to troubleshoot software problems; students provide peer feedback on code revisions

CSC 235: Introduction to Linux (Open- Source Dev)

CompTIA Linux+
Exam Preparation

- ❑ Open-source software development tools
- ❑ Working from CLI (command line interface)
- ❑ Filesystem layout, partitions
- ❑ Monitoring utilities
- ❑ Linux tools for developers
- ❑ Building packages out of software in Linux
- ❑ Using Git for distributed development
- ❑ Make changes in repositories; root and user
- ❑ Installing and securing NoSQL on Linux distributions
- ❑ Control changes made by other individuals
- ❑ Discover errors in your work and go back to earlier project states
- ❑ Manage making commits, diffs, merges, rebases

CSC 230: Introduction to Web Development (HTML5, CSS3 and JavaScript)

- ❑ Describe HTML5 features & create/style HTML5 pages
- ❑ Add interactivity to an HTML5 page using JavaScript
- ❑ Create HTML5 forms with input types/validate user input
- ❑ Send/receive data using XMLHttpRequest/Fetch API
- ❑ Build web-based application with NoSQL backend
- ❑ Create well-structured JavaScript code
- ❑ Identify and use current JavaScript version compatible with web browsers
- ❑ Use HTML5 APIs
- ❑ Create Web applications that support offline operations
- ❑ Style HTML5 pages using CSS3, vector graphics, and animation
- ❑ Use web sockets to send data to web apps & servers
- ❑ Use WebPack to package web apps for production

CSC 205: Cloud Application Development (Java/Object Oriented Programming)

- ❑ Introduction to Java syntax and variables
- ❑ Define classes and instantiate objects. Use of fields and methods.
- ❑ Use instance, static, and overloaded methods Introduction to access modifiers and constructors
- ❑ Understand variable scope, encapsulation, immutable objects, class inheritance (subclasses and super classes)
- ❑ Understand four pillars of object-oriented programming, abstraction, encapsulation, inheritance and polymorphism
- ❑ Define and use enumerations. Understand reference vs value type. Understand object vs reference type
- ❑ Understand exception handling, create custom exceptions, work with arrays, and collections (including list, set, map and deque collections). Introduction to generics.
- ❑ Read and write file data using I/O streams. lambda expressions
- ❑ Composing code using Java Spring Framework

CSC 295: Introduction to Algorithms & Data Structures

- ❑ Analyze and compare code using the asymptotic analysis (Big-O)
- ❑ Implement sequential and interval search algorithms
- ❑ Implement sorting algorithms, such as: bubble sort, selection sort, insertion sort, merge sort, and quicksort
- ❑ Implement data structures such as: array lists, linked lists, stack, queues, and binary search trees graphs
- ❑ Make use of generic programming
- ❑ Acquire skillsets on troubleshooting code revisions

CSC 457: Developing Cloud Solutions (in AWS)

AWS Certified
Developer Associate
Exam Preparation

- ❑ Develop & implement AWS compute solutions using VMs, batch jobs, and by using batch services
- ❑ Create containerized solutions using Docker and Kubernetes
- ❑ Implement AWS functions, storage solutions, relational and NoSQL DB solutions
- ❑ Implement AWS security using authentication, access control & secure data solutions
- ❑ Program a solution to support scalability of apps & services
- ❑ Implement AWS monitoring & logging solutions
- ❑ Develop app service logic apps, integrate AWS search within solutions, and add-in third-party services
- ❑ Understand event-based and message-based solutions

* Three certification exam vouchers are included in lab fees. WAV2T reserves the right to change which certifications are included under the voucher program.



Professional Development

- The Career Development Managers (CDM) for the Washington Veterans to Tech (WaV2T) program are responsible for the job placement function for a cohort of WaV2T students.
- Our CDMs also maintain relationships with employers, and graduates of the WaV2T program, managing the social network of this specialized community.



Resumes

- Translating military experience
- Personal assessment
- Target Resumes



Cover Letters

- Personalization
- Selling yourself



Virtual Presence

- LinkedIn
- Personal branding
- Social Media



Job Search

- Target job market
- Hiring managers
- Recruiters



Interview skills

- Research Company
- Mock Interviews
- Negotiations
- Job offers

Week 1

Time	Monday	Tuesday	Wednesday	Thursday	Friday	
8:00 AM	WaV2T Orientation					
8:30 AM		CSC 230: Introduction to Web Development (HTML5, CSS3 and JavaScript)	CSC 160: Computing Technologies (Python/Intro duction to Programing)	CSC 230: Introduction to Web Development (HTML5, CSS3 and JavaScript)	Unstructured Time	
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Learning Outcomes

- **CSC 160**
 - Understand expectations of the course
 - Create user accounts
 - Install required software
 - Understand binary and hex
 - Intro to Python, Django, Databases and PHP
 - Complete simple exercises
- **CSC 235**
 - Understand expectations of the course
 - Install required software (Oracle Box/Ubuntu)
 - OS overview & history Unix/Linux
 - Basic Linux file management
 - Understand basic commands such as pwd and ls
- **CSC 230**
 - Understand expectations of the course
 - Install required software
 - Basics of HTML and CSS
 - Overview of industry standard tools & environments e.g., AWS framework

Professional Development

- Orientation, administrative tasks, teams and calendar overview

Week 2

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 AM	CSC 160: Computing Technologies (Python/Intro duction to Programing)	CSC 230: Introduction to Web Development (HTML5, CSS3 and JavaScript)	CSC 160: Computing Technologies (Python/Intro duction to Programing)	CSC 230: Introduction to Web Development (HTML5, CSS3 and JavaScript)	Unstructured Time
9:00 AM					
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Learning Outcomes

- **CSC 160**
 - Understand programming needs in administration
 - Understand database fundamentals
 - Understand Python variables, expressions and statements
 - Apply concepts learned, completing lab exercises
- **CSC 235**
 - Understanding the Linux shell
 - Understanding Linux installation & localization
 - Demonstrate knowledge of shell commands using CLI through assigned lab exercises
- **CSC 230**
 - Create and style web pages using HTML5 and CSS
 - Understand tools used to create HTML and CSS
 - IDs, Attributes, Forms

Professional Development

- Classes:
 - Amazon and AWS overview
 - Your focus determines your reality
 - SDE guest speaker from Amazon

Week 3

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 AM	CSC 160: Computing Technologies (Python/Introduction to Programming)	CSC 230: Introduction to Web Development (HTML5, CSS3 and JavaScript)	CSC 160: Computing Technologies (Python/Introduction to Programming)	CSC 230: Introduction to Web Development (HTML5, CSS3 and JavaScript)	Unstructured Time
9:00 AM					
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Learning Outcomes

- **CSC 160**
 - Understand statements interpretation and execution; mathematical operators; arrays, conditional and looping structures
 - Understand functions and how parameter are passed in functions
 - Automate data control tasks such as sorting and filtering to manage & manipulate data
- **CSC 235**
 - Understand system services; boot and shutdown
 - Explore Linux GUI, Desktops and Accessibility
 - Classroom exercises working with GRUB
- **CSC 230**
 - Understand React & React Architecture
 - Explore React Library – identify UIs to use for project
 - Understand how to create a React applications

Professional Development

- Classes:
 - Survey your professional environment (1)
 - Survey your professional environment (2)

Week 4

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 AM	CSC 160: Computing Technologies (Python/Intro duction to Programing)	CSC 230: Introduction to Web Development (HTML5, CSS3 and JavaScript)	CSC 160: Computing Technologies (Python/Intro duction to Programing)	CSC 230: Introduction to Web Development (HTML5, CSS3 and JavaScript)	Unstructured Time
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Learning Outcomes

- **CSC 160**
 - Use IDE/Text Editor
 - Analyze simple code using debugging tools
 - Apply concepts to write simple programs
- **CSC 235**
 - Understanding system processes and monitoring
 - Analyzing disk files & memory management
 - File system maintenance
- **CSC 230**
 - Creating Objects and Methods using JavaScript
 - Creating Interactive pages by using HTML5 APIs
 - Develop controllers

Professional Development

- Classes:
 - Constructing your Resume/Cover letter
 - Student Bio and Resume construction
 - AWS guest speaker

Week 5

Time	Monday	Tuesday	Wednesday	Thursday	Friday	
8:30 AM	CSC 160: Computing Technologies (Python/Intro duction to Programing)	CSC 230: Introduction to Web Development (HTML5, CSS3 and JavaScript)	CSC 160: Computing Technologies (Python/Intro duction to Programing)	CSC 230: Introduction to Web Development (HTML5, CSS3 and JavaScript)	Unstructured Time	
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Learning Outcomes

- **CSC 160**
 - Understand objects and classes in Python
 - Understand and apply class & static variable and methods
 - Introduction to peer code reviews
- **CSC 235**
 - System processes and monitoring
 - Memory management
 - Demonstrate Bash Shell environment
 - Demonstrate Bash Shell scripting
- **CSC 230**
 - Spring Boot Overview - Basic Annotations, Dependency Injection.
 - Spring Boot Model View Controller Structure

Professional Development

- Classes:
 - Define your target market and personal marketing plan
 - Professional Development roadmap and milestones
 - Review resumes and student bios

Week 6

Time	Monday	Tuesday	Wednesday	Thursday	Friday	
8:30 AM	CSC 160: Computing Technologies (Python/Intro duction to Programing)	CSC 230: Introduction to Web Development (HTML5, CSS3 and JavaScript)	CSC 160: Computing Technologies (Python/Intro duction to Programing)	CSC 230: Introduction to Web Development (HTML5, CSS3 and JavaScript)	Unstructured Time	
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Learning Outcomes

- **CSC 160**
 - Database creation and integration with web-based application
 - Create a basic web pages integrating database
- **CSC 235**
 - User and group management
 - Understanding Octal - rwx & permission setting and changes; chmod; umask
- **CSC 230**
 - Developing models in Spring MVC
 - Developing Controllers, Views in MVC
 - React design principles

Professional Development

- Classes:
 - LinkedIn and your Virtual presence
 - AWS guest speaker

Week 7

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 AM	CSC 160: Computing Technologies (Python/Intro duction to Programing)	CSC 230: Introduction to Web Development (HTML5, CSS3 and JavaScript)	CSC 160: Computing Technologies (Python/Intro duction to Programing)	CSC 230: Introduction to Web Development (HTML5, CSS3 and JavaScript)	Unstructured Time
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Learning Outcomes

- **CSC 160**
 - Using Git: understand version control systems– Distributed VCS, Branch, Merge and Diff
 - Set up GitHub; Fork and Pull requests for simple group project
- **CSC 235**
 - Bash scripting syntax; write simple scripts
 - Write basic scripts, change permissions and execute. Use for loop to list files in a directory
- **CSC 230**
 - Authentications
 - Rest Controller Overview - Get, Post, Delete, Put,
 - Spring security

Professional Development

- Classes:
 - Gather marketplace information
 - Hiring managers and recruiters
 - Elevator pitches

Week 8

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 AM	CSC 160: Computing Technologies (Python/Intro duction to Programing)	CSC 230: Introduction to Web Development (HTML5, CSS3 and JavaScript)	CSC 160: Computing Technologies (Python/Intro duction to Programing)	CSC 230: Introduction to Web Development (HTML5, CSS3 and JavaScript)	Unstructured Time
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1:00 PM	CSC 235: Introduction to Linux (Open-Source Dev)	Professional Development	CSC 235: Introduction to Linux (Open-Source Dev)	Professional Development	Unstructured Time
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Learning Outcomes

- **CSC 160**
 - PHP integration with HTML / sending information to a database
 - Present project, demonstrate program utilizing concepts learned. Compile and run program - do a walk through of program and integrated tools
- **CSC 235**
 - Installing utilities and extensions in Linux
 - Using tree, date, and other built-in tools useful for system admin.
 - Set up install and set up local test servers such as Vagrant
- **CSC 230**
 - Understand Unit Testing
 - ReactJS testing framework & libraries
 - Group project presentation & documentation, demonstrating of Full-stack components

Professional Development

- Classes:
 - Financial health & Realtor special guest
 - Transitioning into a new position

Transition from session 08 to 09

Notes:

- Students must pass Session 08 to move on to Session 09
- Mid-semester report, tracking students grades and certifications earned
- Setup interview schedule for students who demonstrate ability to go to FTE roles

Week 9

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 AM	CSC 205: Cloud Application Development	CSC 457: Developing Cloud Solutions (in AWS)	CSC 205: Cloud Application Development	CSC 457: Developing Cloud Solutions (in AWS)	Unstructured Time
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1:00 PM	CSC 295: Introduction to Algorithms & Data Structures	Professional Development	CSC 295: Introduction to Algorithms & Data Structures	Professional Development	Unstructured Time
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Learning Outcomes

- **CSC 205**
 - Understand expectations of the course
 - Overview of SDL and stakeholders
 - Introduction to AWS API driven applications
- **CSC 295**
 - Understand expectations of the course & resources
 - Understand the concept of data structure
 - Comprehend the techniques of algorithm analysis, such as the best case, worst case, and average case scenario
 - Understand how to apply algorithm analysis techniques to various algorithms
- **CSC 457**
 - Understand expectations of the course
 - Overview AWS cloud global infrastructure
 - Understand working definitions of AWS cloud

Professional Development

- Classes:
 - Exam preparation & testing
 - Student Interview Practice
 - Job Trackers
 - One on One interviews

Week 10

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 AM	CSC 205: Cloud Application Development	CSC 457: Developing Cloud Solutions (in AWS)	CSC 205: Cloud Application Development	CSC 457: Developing Cloud Solutions (in AWS)	Unstructured Time
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1:00 PM	CSC 295: Introduction to Algorithms & Data Structures	Professional Development	CSC 295: Introduction to Algorithms & Data Structures	Professional Development	Unstructured Time
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Learning Outcomes

- **CSC 205**
 - Understand AGILE software engineering, SCRUM
 - Introduction to requirements analysis, features, scenarios and stories
- **CSC 295**
 - Comprehend the working process of sequential search and binary search
 - Apply sequential search and binary search to find the target element in Java
- **CSC 457**
 - Understand microarchitecture and microservices
 - Understand AWS cloud storage

Professional Development

- Classes:
 - Exam preparation & testing
 - Student Interview Practice
 - Job Trackers
 - One on One interviews

Week 11

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 AM	CSC 205: Cloud Application Development	CSC 457: Developing Cloud Solutions (in AWS)	CSC 205: Cloud Application Development	CSC 457: Developing Cloud Solutions (in AWS)	Unstructured Time
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1:00 PM	CSC 295: Introduction to Algorithms & Data Structures	Professional Development	CSC 295: Introduction to Algorithms & Data Structures	Professional Development	Unstructured Time
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Learning Outcomes

- **CSC 205**
 - Requirements analysis (interviews/surveys)
 - Develop CRC models (or UML)
- **CSC 295**
 - Comprehend the working process of bubble sort, selection sort, insertion sort, merge sort, quicksort and radix
 - Implement bubble sort, selection sort, insertion sort, merge sort, and quicksort in Java
- **CSC 457**
 - Describe benefits of Elastic Block Store, Simple Storage Services and the Elastic File System
 - Apply concepts to identify benefits of Relational Database Service and DynamoDB

Professional Development

- Classes:
 - Exam preparation & testing
 - Student Interview Practice
 - Job Trackers
 - One on One interviews

Week 12

Time	Monday	Tuesday	Wednesday	Thursday	Friday
9:00 AM	CSC 205: Cloud Application Development	CSC 457: Developing Cloud Solutions (in AWS)	CSC 205: Cloud Application Development	CSC 457: Developing Cloud Solutions (in AWS)	Unstructured Time
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1:00 PM	CSC 295: Introduction to Algorithms & Data Structures	Professional Development	CSC 295: Introduction to Algorithms & Data Structures	Professional Development	Unstructured Time
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Learning Outcomes

- **CSC 205**
 - Wireframe project
 - Scope software & hardware requirements
 - Understand RESTful service
- **CSC 295**
 - Understand lists, stack, and queues
 - Implement lists, stack, and queues in Java
- **CSC 457**
 - Understand the advantages and disadvantages of multi-instance databases
 - Mini project, implementing a database & business requirements

Professional Development

- Classes:
 - Exam preparation & testing
 - Student Interview Practice
 - Job Trackers
 - AWS Interviews
 - One on One interviews

Week 13

Time	Monday	Tuesday	Wednesday	Thursday	Friday	
8:30 AM	CSC 205: Cloud Application Development	CSC 457: Developing Cloud Solutions (in AWS)	CSC 205: Cloud Application Development	CSC 457: Developing Cloud Solutions (in AWS)	Unstructured Time	
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Learning Outcomes

- **CSC 205**
 - Understand security vulnerabilities/data protection
 - Understand IEEE/ACM ethics guidelines
- **CSC 295**
 - Understand the working process of merge sort, heap sort, and quick sort using recursion
 - Implement these sorts in Java
- **CSC 457**
 - Understand Identity & Access Management (IAM)
 - Understand securing the root account
 - IAM Policies

Professional Development

- Classes:
 - Exam preparation & testing
 - Student Interview Practice
 - Job Trackers
 - AWS Interviews
 - One on One interviews

Week 14

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 AM	CSC 205: Cloud Application Development	CSC 457: Developing Cloud Solutions (in AWS)	CSC 205: Cloud Application Development	CSC 457: Developing Cloud Solutions (in AWS)	Unstructured Time
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Learning Outcomes

- **CSC 205**
 - Design and develop a prototype
 - Understand test driven development
- **CSC 295**
 - Understand binary trees and the working process of building a binary tree
 - Implement binary trees and binary search trees in Java
- **CSC 457**
 - Implement monitoring and logging solutions
 - Learn about event-based and message-based solutions

Professional Development

- **Classes:**
 - Exam preparation & testing
 - Student Interview Practice
 - Job Trackers
 - AWS Interviews
 - One on One interviews

Week 15

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 AM	CSC 205: Cloud Application Development	CSC 457: Developing Cloud Solutions (in AWS)	CSC 205: Cloud Application Development	CSC 457: Developing Cloud Solutions (in AWS)	Unstructured Time
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1:00 PM	CSC 295: Introduction to Algorithms & Data Structures	Professional Development	CSC 295: Introduction to Algorithms & Data Structures	Professional Development	Unstructured Time
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Learning Outcomes

- **CSC 205**
 - Connect to APIs, external libraries
 - Develop prototype (writing/implementing code)
 - Testing: functional, test automation, black box
- **CSC 295**
 - Understand the concept of graphs, directed, undirected, weighted and shortest path
 - Understand how to represent graphs
 - Implement graphs and graph algorithms in Java
- **CSC 457**
 - Understand ML and data science in AWS cloud services.
 - Identify specific industry problems that are supported by cloud services

Professional Development

- **Classes:**
 - Exam preparation & testing
 - Student Interview Practice
 - Job Trackers
 - AWS Interviews
 - One on One interviews

Week 16



Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 AM	CSC 205: Cloud Application Development	CSC 457: Developing Cloud Solutions (in AWS)	CSC 205: Cloud Application Development	CSC 457: Developing Cloud Solutions (in AWS)	Unstructured Time
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Learning Outcomes

- **CSC 205**
 - Security testing and peer code reviews & code management
 - Technical report & present product
- **CSC 295**
 - Overview of ML algorithms used in data science
 - Introduction to supervised learning, unsupervised learning and reinforcement learning algorithms
- **CSC 457**
 - Present group project based on identified AWS services and technical requirements
 - Present documentation outlining technical requirements from an AWS application including networking, security services and the global infrastructure

Professional Development

- **Classes:**
 - Exam preparation & testing
 - Student Interview Practice
 - Job Trackers
 - AWS Interviews
 - One on One interviews

Questions





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W A S H I N G T O N
VETS2TECH