

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
1.0 Introduction						
1.0.1 - First Time in This Course						
1.0.2 - Student Resources						
1.0.3 - Course Overview						
1.0.4 - Why Should I Take this Module?						
1.0.5 - What Will I Learn to Do in this Module?						
1.1 - Your Lab Environment						
1.1.1 - Set Up Your Lab Environment						
1.1.2 - Lab - Install the Virtual Lab Environment						
1.2 - Linux						
1.2.1 - Linux for DevNet	K0140; K0224; K0397; K0537; K0608;	HS-ETS1-3; HS-ETS1-3;	ITEA.11.; ITEA.12.;	IT-NET 1.2; IT-NET 3 9;	3B-NI-04; 3A-AP-13; 3A-AP-18; 3A-AP-19; 3A-AP-22; 3B-AP-17; 3B-AP-19;	
1.2.2 - Lab - Linux Review	K0140; K0224; K0397; K0537; K0608;	HS-ETS1-3; HS-ETS1-3;	ITEA.11.; ITEA.12.;	IT-NET 1.2; IT-NET 3 9;	3B-NI-04; 3A-AP-13; 3A-AP-18; 3A-AP-19; 3A-AP-22; 3B-AP-17; 3B-AP-19;	
1.2.3 - Quiz - Linux Review	K0140; K0224; K0397; K0537; K0608;	HS-ETS1-3; HS-ETS1-3;	ITEA.11.; ITEA.12.;	IT-NET 1.2; IT-NET 3 9;	3B-NI-04; 3A-AP-13; 3A-AP-18; 3A-AP-19; 3A-AP-22; 3B-AP-17; 3B-AP-19;	
1.2.4 - How did you do on the Linux Review Lab?	K0140; K0224; K0397; K0537; K0608;	HS-ETS1-3; HS-ETS1-3;	ITEA.11.; ITEA.12.;	IT-NET 1.2; IT-NET 3 9;	3B-NI-04; 3A-AP-13; 3A-AP-18; 3A-AP-19; 3A-AP-22; 3B-AP-17; 3B-AP-19;	

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
1.3 - Python						
1.3.1 - The Power of Code	K0140; K0236; S0130; S0266;	HS-ETS1-3.; HS-ETS1-3.;	ITEA.11.; ITEA.12.;	IT-NET 1.2; IT-NET 3 9;	3B-NI-04; 3A-AP-13; 3A-AP-18; 3A-AP-19; 3A-AP-22; 3B-AP-17; 3B-AP-19;	
1.3.2 - Python Programming	K0140; K0236; S0130; S0266;	HS-ETS1-3.; HS-ETS1-3.;	ITEA.11.; ITEA.12.;	IT-NET 1.2; IT-NET 3 9;	3B-NI-04; 3A-AP-13; 3A-AP-18; 3A-AP-19; 3A-AP-22; 3B-AP-17; 3B-AP-19;	
1.3.3 - Lab - Python Programming Review	K0140; K0236; S0130; S0266;	HS-ETS1-3.; HS-ETS1-3.;	ITEA.11.; ITEA.12.;	IT-NET 1.2; IT-NET 3 9;	3B-NI-04; 3A-AP-13; 3A-AP-18; 3A-AP-19; 3A-AP-22; 3B-AP-17; 3B-AP-19;	
1.3.4 - Quiz - Python Review	K0140; K0236; S0130; S0266;	HS-ETS1-3.; HS-ETS1-3.;	ITEA.11.; ITEA.12.;	IT-NET 1.2; IT-NET 3 9;	3B-NI-04; 3A-AP-13; 3A-AP-18; 3A-AP-19; 3A-AP-22; 3B-AP-17; 3B-AP-19;	
1.3.5 - How did you do on the Python Programming Review Lab?	K0140; K0236; S0130; S0266;	HS-ETS1-3.; HS-ETS1-3.;	ITEA.11.; ITEA.12.;	IT-NET 1.2; IT-NET 3 9;	3B-NI-04; 3A-AP-13; 3A-AP-18; 3A-AP-19; 3A-AP-22; 3B-AP-17; 3B-AP-19;	
1.4 - Course Introduction Summary						
1.4.1 - What did I learn in this module?						
2.0 - Introduction						
2.0.1 - Why should I take this module?						
2.0.2 - What will I learn to do in this module?						

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
2.1 - DevNet Overview						
2.1.1 - What is DevNet?	K0140; K0224; K0397; K0537; K0608;	HS-ETS1-3; HS-ETS1-3;	ITEA.11.; ITEA.12.;	IT-NET 1.2; IT-NET 3 9;	3B-NI-04; 3A-AP-13; 3A-AP-18; 3A-AP-19; 3A-AP-22; 3B-AP-17; 3B-AP-19;	
2.2 - Exploring DevNet Online Resources						
2.2.1 - Getting Started with DevNet Resources	K0140; K0224; K0397; K0537; K0608;	HS-ETS1-3; HS-ETS1-3;	ITEA.11.; ITEA.12.;	IT-NET 1.2; IT-NET 3 9;	3B-NI-04; 3A-AP-13; 3A-AP-18; 3A-AP-19; 3A-AP-22; 3B-AP-17; 3B-AP-19;	
2.2.2 - DevNet Learning Labs	K0140; K0224; K0397; K0537; K0608;	HS-ETS1-3; HS-ETS1-3;	ITEA.11.; ITEA.12.;	IT-NET 1.2; IT-NET 3 9;	3B-NI-04; 3A-AP-13; 3A-AP-18; 3A-AP-19; 3A-AP-22; 3B-AP-17; 3B-AP-19;	
2.2.3 - DevNet Sandbox	K0140; K0224; K0397; K0537; K0608;	HS-ETS1-3; HS-ETS1-3;	ITEA.11.; ITEA.12.;	IT-NET 1.2; IT-NET 3 9;	3B-NI-04; 3A-AP-13; 3A-AP-18; 3A-AP-19; 3A-AP-22; 3B-AP-17; 3B-AP-19;	
2.2.4 - DevNet Exchanges	K0140; K0224; K0397; K0537; K0608;	HS-ETS1-3; HS-ETS1-3;	ITEA.11.; ITEA.12.;	IT-NET 1.2; IT-NET 3 9;	3B-NI-04; 3A-AP-13; 3A-AP-18; 3A-AP-19; 3A-AP-22; 3B-AP-17; 3B-AP-19;	
2.2.5 - Find a Use Case in Automation Exchange	K0140; K0224; K0397; K0537; K0608;	HS-ETS1-3; HS-ETS1-3;	ITEA.11.; ITEA.12.;	IT-NET 1.2; IT-NET 3 9;	3B-NI-04; 3A-AP-13; 3A-AP-18; 3A-AP-19; 3A-AP-22; 3B-AP-17; 3B-AP-19;	

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
2.2.6 - DevNet Developer Support	K0140; K0224; K0397; K0537; K0608;	HS-ETS1-3.; HS-ETS1-3.;	ITEA.11.; ITEA.12.;	IT-NET 1.2; IT-NET 3 9;	3B-NI-04; 3A-AP-13; 3A-AP-18; 3A-AP-19; 3A-AP-22; 3B-AP-17; 3B-AP-19;	
2.2.7 - Lab - Explore DevNet Resources	K0140; K0224; K0397; K0537; K0608;	HS-ETS1-3.; HS-ETS1-3.;	ITEA.11.; ITEA.12.;	IT-NET 1.2; IT-NET 3 9;	3B-NI-04; 3A-AP-13; 3A-AP-18; 3A-AP-19; 3A-AP-22; 3B-AP-17; 3B-AP-19;	
2.3 - DevNet Developer Environment Summary						
2.3.1 - What did I learn in this module?						
2.3.2 - Module 2: The DevNet Developer Environment Quiz						
2.3.3 - Want more?						
2.3.4 - DEVASC Project - Introduction						
2.3.5 - Project Activity 1: Team Formation						
3.0 - Introduction						
3.0.1 - Why should I take this module?						
3.0.2 - What will I learn to do in this module?						
3.1 - Software Development						
3.1.1 - Introduction	K0039; K0081;	HS-ETS1.;	ITEA.8.; ITEA.11.;	IT-NET 2 1;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.4 Compare software development methods (agile, lean, and waterfall)
3.1.2 - Software Development Life Cycle (SDLC)	K0039; K0081;	HS-ETS1.;	ITEA.8.; ITEA.11.;	IT-NET 2 1;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.4 Compare software development methods (agile, lean, and waterfall)

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
3.1.3 - Requirements and Analysis Phase	K0039; K0081;	HS-ETS1.;	ITEA.8.; ITEA.11.;	IT-NET 2 1;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.4 Compare software development methods (agile, lean, and waterfall)
3.1.4 - Design and Implementation Phases	K0039; K0081;	HS-ETS1.;	ITEA.8.; ITEA.11.;	IT-NET 2 1;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.4 Compare software development methods (agile, lean, and waterfall)
3.1.5 - Testing, Deployment, and Maintenance Phases	K0039; K0081; K0396;	HS-ETS1.;	ITEA.8.; ITEA.11.;	IT-NET 2 1;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.4 Compare software development methods (agile, lean, and waterfall)
3.1.6 - Software Development Methodologies	K0039; K0081;	HS-ETS1.;	ITEA.8.; ITEA.11.;	IT-NET 2 1;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.4 Compare software development methods (agile, lean, and waterfall)
3.1.7 - Waterfall Software Development	K0039; K0081;	HS-ETS1.;	ITEA.8.; ITEA.11.;	IT-NET 2 1;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.4 Compare software development methods (agile, lean, and waterfall)
3.1.8 - Agile Software Development	K0039; K0081;	HS-ETS1.;	ITEA.8.; ITEA.11.;	IT-NET 2 1;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.4 Compare software development methods (agile, lean, and waterfall)
3.1.9 - Agile Methods	K0039; K0081;	HS-ETS1.;	ITEA.8.; ITEA.11.;	IT-NET 2 1;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.4 Compare software development methods (agile, lean, and waterfall)
3.1.10 - Lean Software Development	K0039; K0081;	HS-ETS1.;	ITEA.8.; ITEA.11.;	IT-NET 2 1;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.4 Compare software development methods (agile, lean, and waterfall)
3.1.11 - Lean Software Development (Cont.)	K0039; K0081;	HS-ETS1.;	ITEA.8.; ITEA.11.;	IT-NET 2 1;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.4 Compare software development methods (agile, lean, and waterfall)
3.1.12 - Lab - Explore Python Development Tools	K0039; K0081;	HS-ETS1.;	ITEA.8.; ITEA.11.;	IT-NET 2 1;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.4 Compare software development methods (agile, lean, and waterfall)
3.2 - Software Design Patterns						

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
3.2.1 - Introduction	K0080; K0559;	HS-ETS1.;	ITEA.2.;; ITEA.8.;	IT-NET 2 1;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.6 Identify the advantages of common design patterns (MVC and Observer)
3.2.2 - The Original Design Patterns	K0080; K0559; K0291;	HS-ETS1.;	ITEA.2.;; ITEA.8.;	IT-NET 2 1;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.6 Identify the advantages of common design patterns (MVC and Observer)
3.2.3 - Observer Design Pattern	K0080; K0559; K0291;	HS-ETS1.;	ITEA.2.;; ITEA.8.;	IT-NET 2 1;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.6 Identify the advantages of common design patterns (MVC and Observer)
3.2.4 - Model-View-Controller (MVC)	K0080; K0559; K0291;	HS-ETS1.;	ITEA.2.;; ITEA.8.;	IT-NET 2 1;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.6 Identify the advantages of common design patterns (MVC and Observer)
3.3 - Version Control Systems						
3.3.1 - Types of Version Control Systems	K0622;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.7 Explain the advantages of version control
3.3.2 - Git	K0622;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.8 Utilize common version control operations with Git
3.3.3 - Local vs. Remote Repositories	K0622;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.8 Utilize common version control operations with Git
3.3.4 - What is Branching?	K0622;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.8 Utilize common version control operations with Git
3.3.5 - GitHub and Other Providers	K0622;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.8 Utilize common version control operations with Git
3.3.6 - Git Commands	K0622;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.8 Utilize common version control operations with Git
3.3.7 - Adding and Removing Files	K0622;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.8 Utilize common version control operations with Git
3.3.8 - Updating Repositories	K0622;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.8 Utilize common version control operations with Git

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
3.3.9 - Branching Features	K0622;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.8 Utilize common version control operations with Git 1.8.e Branch
3.3.10 - .diff Files	K0622;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.8 Utilize common version control operations with Git 1.8.g diff 5.12 Interpret a unified diff
3.3.11 - Lab - Software Version Control with Git	K0622;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-17; 3B-AP-20; 3B-AP-23;	1.8 Utilize common version control operations with Git
3.4 - Coding Basics						
3.4.1 - Methods, Functions, Modules, and Classes	S0060;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-24;	1.5 Explain the benefits of organizing code into methods / functions, classes, and modules
3.4.2 - Clean Code	S0060;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-24;	1.5 Explain the benefits of organizing code into methods / functions, classes, and modules
3.4.3 - Methods and Functions	S0060;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-24;	1.5 Explain the benefits of organizing code into methods / functions, classes, and modules
3.4.4 - Modules	S0060;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-24;	1.5 Explain the benefits of organizing code into methods / functions, classes, and modules
3.4.5 - Classes	S0060;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-24;	1.5 Explain the benefits of organizing code into methods / functions, classes, and modules
3.4.6 - Lab - Explore Python Classes	S0060;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-24;	1.5 Explain the benefits of organizing code into methods / functions, classes, and modules
3.5 - Code Review and Testing						
3.5.1 - What is a Code Review and Why Should You Do This?	A0044;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-24;	1.3 Describe the concepts of test-driven development 5.13 Describe the principles and benefits of a code review process

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
3.5.2 - Types of Code Reviews	A0044;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-24;	1.3 Describe the concepts of test-driven development 5.13 Describe the principles and benefits of a code review process
3.5.3 - Testing	A0044;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-24;	1.3 Describe the concepts of test-driven development
3.5.4 - Unit Testing	A0044;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-24;	1.3 Describe the concepts of test-driven development 4.5 Construct a Python unit test
3.5.5 - Integration Testing	A0044;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-24;	1.3 Describe the concepts of test-driven development
3.5.6 - Test-Driven Development (TDD)	A0044;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-24;	1.3 Describe the concepts of test-driven development
3.5.7 - Lab - Create a Python Unit Test	A0044;	HS-ETS1.;	ITEA.11.;	IT 02;	3B-AP-24;	1.3 Describe the concepts of test-driven development
3.6 - Understanding Data Formats						
3.6.1 - Data Formats	K0014;	HS-ETS1.;	ITEA.9.;	IT 06;	3A-DA-10; 3A-DA-11; 3A-DA-12; 3A-AP-13;	1.1 Compare data formats (XML, JSON, and YAML) 1.2 Describe parsing of common data format (XML, JSON, and YAML) to Python data structures
3.6.2 - XML	K0014;	HS-ETS1.;	ITEA.9.;	IT 06;	3A-DA-10; 3A-DA-11; 3A-DA-12; 3A-AP-13;	1.1 Compare data formats (XML, JSON, and YAML) 1.2 Describe parsing of common data format (XML, JSON, and YAML) to Python data structures
3.6.3 - JSON	K0014; K0202;	HS-ETS1.;	ITEA.9.;	IT 06;	3A-DA-10; 3A-DA-11; 3A-DA-12; 3A-AP-13;	1.1 Compare data formats (XML, JSON, and YAML) 1.2 Describe parsing of common data format (XML, JSON, and YAML) to Python data structures

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
3.6.4 - YAML	K0014;	HS-ETS1.;	ITEA.9.;	IT 06;	3A-DA-10; 3A-DA-11; 3A-DA-12; 3A-AP-13;	1.1 Compare data formats (XML, JSON, and YAML) 1.2 Describe parsing of common data format (XML, JSON, and YAML) to Python data structures
3.6.5 - Parsing and Serializing	K0014;	HS-ETS1.;	ITEA.9.;	IT 06;	3A-DA-10; 3A-DA-11; 3A-DA-12; 3A-AP-13;	1.2 Describe parsing of common data format (XML, JSON, and YAML) to Python data structures
3.6.6 - Lab - Parse Different Data Types with Python	K0014;	HS-ETS1.;	ITEA.9.;	IT 06;	3A-DA-10; 3A-DA-11; 3A-DA-12; 3A-AP-13;	1.2 Describe parsing of common data format (XML, JSON, and YAML) to Python data structures
3.7 - Software Development and Design Summary						
3.7.1 - What Did I Learn in this Module?						
3.7.2 - Module 3: Software Development and Design Quiz						
3.7.3 - Project Activity 2: Agile Team Formation						
4.0 - Introduction						
4.0.1 - Why should I take this module?						
4.0.2 - What will I learn to do in this module?						
4.1 - Introducing APIs						
4.1.1 - What is an API?	K0197; A0041;	HS-ETS1.;	ITEA.2.;; ITEA.9.;; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	
4.1.2 - Why use APIs?	K0197; A0041;	HS-ETS1.;	ITEA.2.;; ITEA.9.;; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	
4.1.3 - Why are APIs so popular?	K0197; A0041;	HS-ETS1.;	ITEA.2.;; ITEA.9.;; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	
4.2 - API Design Styles						

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
4.2.1 - Types of design styles	K0197; A0041;	HS-ETS1.;	ITEA.2.;; ITEA.9.;; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.8 Compare common API styles (REST, RPC, synchronous, and asynchronous)
4.2.2 - Synchronous APIs	K0197; A0041;	HS-ETS1.;	ITEA.2.;; ITEA.9.;; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.8 Compare common API styles (REST, RPC, synchronous, and asynchronous)
4.2.3 - Asynchronous APIs	K0197; A0041;	HS-ETS1.;	ITEA.2.;; ITEA.9.;; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.8 Compare common API styles (REST, RPC, synchronous, and asynchronous)
4.3 - API Architectural Styles						
4.3.1 - Common Architectural Styles	K0197; A0041;	HS-ETS1.;	ITEA.2.;; ITEA.9.;; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.8 Compare common API styles (REST, RPC, synchronous, and asynchronous)
4.3.2 - RPC	K0197; A0041;	HS-ETS1.;	ITEA.2.;; ITEA.9.;; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.8 Compare common API styles (REST, RPC, synchronous, and asynchronous)
4.3.3 - SOAP	K0197; A0041;	HS-ETS1.;	ITEA.2.;; ITEA.9.;; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.8 Compare common API styles (REST, RPC, synchronous, and asynchronous)
4.3.4 - REST	K0197; A0041;	HS-ETS1.;	ITEA.2.;; ITEA.9.;; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.3 Identify the constraints when consuming APIs 2.8 Compare common API styles (REST, RPC, synchronous, and asynchronous) 6.9 Explain the impacts of network constraints on applications
4.4 - Introduction to REST APIs						

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
4.4.1 - REST Web Service APIs	K0197; A0041;	HS-ETS1.;	ITEA.2.;; ITEA.9.;; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.1 Construct a REST API request to accomplish a task given API documentation 2.4 Explain common HTTP response codes associated with REST APIs 2.5 Troubleshoot a problem given the HTTP response code, request and API documentation 2.6 Identify the parts of an HTTP response (response code, headers, body)
4.4.2 - REST API Requests	K0197; A0041;	HS-ETS1.;	ITEA.2.;; ITEA.9.;; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.1 Construct a REST API request to accomplish a task given API documentation
4.4.3 - REST API Responses	K0197; A0041;	HS-ETS1.;	ITEA.2.;; ITEA.9.;; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.1 Construct a REST API request to accomplish a task given API documentation 2.4 Explain common HTTP response codes associated with REST APIs 2.5 Troubleshoot a problem given the HTTP response code, request and API documentation 2.6 Identify the parts of an HTTP response (response code, headers, body)

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
4.4.4 - Using Sequence Diagrams with REST API	K0197; A0041;	HS-ETS1.;	ITEA.2.; ITEA.9.; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.1 Construct a REST API request to accomplish a task given API documentation 2.4 Explain common HTTP response codes associated with REST APIs 2.5 Troubleshoot a problem given the HTTP response code, request and API documentation 2.6 Identify the parts of an HTTP response (response code, headers, body) 5.14 Interpret sequence diagram that includes API calls
4.5 - Authenticating to a REST API						
4.5.1 - REST API Authentication	K0197; A0041;	HS-ETS1.;	ITEA.2.; ITEA.9.; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.1 Construct a REST API request to accomplish a task given API documentation
4.5.2 - Authentication vs Authorization	K0197; A0041;	HS-ETS1.;	ITEA.2.; ITEA.9.; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.1 Construct a REST API request to accomplish a task given API documentation
4.5.3 - Authentication Mechanisms	K0197; A0041;	HS-ETS1.;	ITEA.2.; ITEA.9.; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.1 Construct a REST API request to accomplish a task given API documentation 2.7 Utilize common API authentication mechanisms: basic, custom token, and API keys
4.5.4 - Authorization Mechanisms	K0197; A0041;	HS-ETS1.;	ITEA.2.; ITEA.9.; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.1 Construct a REST API request to accomplish a task given API documentation
4.5.5 - Lab - Explore REST APIs with API Simulator and Postman	K0197; A0041;	HS-ETS1.;	ITEA.2.; ITEA.9.; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.1 Construct a REST API request to accomplish a task given API documentation

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
4.6 - API Rate Limits						
4.6.1 - What are Rate Limits?	K0197; A0041;	HS-ETS1.;	ITEA.2.; ITEA.9.; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	
4.6.2 - Rate Limit Algorithms	K0197; A0041;	HS-ETS1.;	ITEA.2.; ITEA.9.; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	
4.6.3 - Knowing the Rate Limit	K0197; A0041;	HS-ETS1.;	ITEA.2.; ITEA.9.; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	
4.6.4 - Exceeding the Rate Limit	K0197; A0041;	HS-ETS1.;	ITEA.2.; ITEA.9.; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	
4.7 - Working with Webhooks						
4.7.1 - What is a Webhook?	K0197; A0041;	HS-ETS1.;	ITEA.2.; ITEA.9.; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.2 Describe common usage patterns related to webhooks
4.7.2 - Consuming a Webhook	K0197; A0041;	HS-ETS1.;	ITEA.2.; ITEA.9.; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.2 Describe common usage patterns related to webhooks
4.8 - Troubleshooting API Calls						
4.8.1 - Troubleshooting REST API Requests	K0197; A0041;	HS-ETS1.;	ITEA.2.; ITEA.9.; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.5 Troubleshoot a problem given the HTTP response code, request and API documentation

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
4.8.2 - No Response and HTTP Status Code from the API server	K0197; A0041;	HS-ETS1.;	ITEA.2.; ITEA.9.; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.1 Construct a REST API request to accomplish a task given API documentation 2.4 Explain common HTTP response codes associated with REST APIs 2.5 Troubleshoot a problem given the HTTP response code, request and API documentation 2.6 Identify the parts of an HTTP response (response code, headers, body) 2.9 Construct a Python script that calls a REST API using the requests library
4.8.3 - Interpreting Status Codes	K0197; A0041;	HS-ETS1.;	ITEA.2.; ITEA.9.; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.1 Construct a REST API request to accomplish a task given API documentation 2.4 Explain common HTTP response codes associated with REST APIs 2.5 Troubleshoot a problem given the HTTP response code, request and API documentation 2.6 Identify the parts of an HTTP response (response code, headers, body)

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
4.8.4 - 2xx and 4xx Status Codes	K0197; A0041;	HS-ETS1.;	ITEA.2.; ITEA.9.; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.1 Construct a REST API request to accomplish a task given API documentation 2.4 Explain common HTTP response codes associated with REST APIs 2.5 Troubleshoot a problem given the HTTP response code, request and API documentation 2.6 Identify the parts of an HTTP response (response code, headers, body)
4.8.5 - 5xx Status Codes	K0197; A0041;	HS-ETS1.;	ITEA.2.; ITEA.9.; ITEA.11.;	IT 06;	3B-AP-19; 3B-AP-24;	2.1 Construct a REST API request to accomplish a task given API documentation 2.4 Explain common HTTP response codes associated with REST APIs 2.5 Troubleshoot a problem given the HTTP response code, request and API documentation 2.6 Identify the parts of an HTTP response (response code, headers, body)
4.9 - Understanding and Using APIs Summary						
4.9.1 - What Did I Learn in this Module?						
4.9.2 - Lab – Integrating a REST API with Python						
4.9.3 - Module 4: Understanding and Using APIs Quiz						
4.9.4 - Project Activity 3: Social Coding						

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
5.0 - Introduction						
5.0.1 - Why should I take this module?						
5.0.2 - What will I learn to do in this module?						
5.1 - Introduction to Network Fundamentals						
5.1.1 - Overview	K0001; K0010;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT- NET 3;	3A-NI-04;	
5.1.2 - What Is a Network?	K0001; K0010;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT- NET 3;	3A-NI-04;	6.5 Describe the function of management, data, and control planes in a network device
5.1.3 - Binary Positional Notation	K0254;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT- NET 3;	3A-NI-04;	
5.2 - Network Interface Layer						
5.2.1 - Understanding the Network Interface Layer	K0029; K0050;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT- NET 3;	3A-NI-04;	6.1 Describe the purpose and usage of MAC addresses and VLANs
5.2.2 - Ethernet	K0417;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT- NET 3;	3A-NI-04;	6.1 Describe the purpose and usage of MAC addresses and VLANs
5.2.3 - MAC Addresses	K0471; K0491;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT- NET 3;	3A-NI-04;	6.1 Describe the purpose and usage of MAC addresses and VLANs
5.2.4 - Switching	K0011; K0296;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT- NET 3;	3A-NI-04;	6.1 Describe the purpose and usage of MAC addresses and VLANs
5.2.5 - Virtual LANs (VLANs)	K0029; K0050;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT- NET 3;	3A-NI-04;	6.1 Describe the purpose and usage of MAC addresses and VLANs
5.3 - Internetwork Layer						
5.3.1 - Understanding the Internetwork Layer	K0061; K0470; K0471;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT- NET 3;	3A-NI-04;	6.2 Describe the purpose and usage of IP addresses, routes, subnet mask / prefix, and gateways
5.3.2 - IPv4 Addresses	K0061; K0470; K0471;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT- NET 3;	3A-NI-04;	6.2 Describe the purpose and usage of IP addresses, routes, subnet mask / prefix, and gateways

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
5.3.3 - IPv6 Addresses	K0061; K0470; K0471;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT- NET 3;	3A-NI-04;	6.2 Describe the purpose and usage of IP addresses, routes, subnet mask / prefix, and gateways
5.3.4 - IPv6 Unicast Addresses	K0061; K0470; K0471;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT- NET 3;	3A-NI-04;	6.2 Describe the purpose and usage of IP addresses, routes, subnet mask / prefix, and gateways
5.3.5 - Routers and Routing	K0061; K0470; K0471;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT- NET 3;	3A-NI-04;	6.2 Describe the purpose and usage of IP addresses, routes, subnet mask / prefix, and gateways
5.4 - Network Devices						
5.4.1 - Ethernet Switches	K0057; K0393; K0516;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT- NET 3;	3A-NI-04;	6.3 Describe the function of common networking components (such as switches, routers, firewalls, and load balancers)
5.4.2 - Routers	K0057; K0393; K0516;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT- NET 3;	3A-NI-04;	6.3 Describe the function of common networking components (such as switches, routers, firewalls, and load balancers)
5.4.3 - Firewalls	K0057; K0393; K0516;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT- NET 3;	3A-NI-04;	6.3 Describe the function of common networking components (such as switches, routers, firewalls, and load balancers)
5.4.4 - Load Balancers	K0057; K0393; K0516;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT- NET 3;	3A-NI-04;	6.3 Describe the function of common networking components (such as switches, routers, firewalls, and load balancers)
5.4.5 - Network Diagrams	K0057; K0393; K0516;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT- NET 3;	3A-NI-04;	6.3 Describe the function of common networking components (such as switches, routers, firewalls, and load balancers)

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
5.4.6 - Packet Tracer – Explore a Simple Network	K0057; K0393; K0516;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT-NET 3;	3A-NI-04;	6.3 Describe the function of common networking components (such as switches, routers, firewalls, and load balancers)
5.5 - Networking Protocols						
5.5.1 - Networking Protocols	K0001; K0010; K0034; K0174; K0332;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT-NET 3;	3A-NI-04;	6.6 Describe the functionality of these IP Services: DHCP, DNS, NAT, SNMP, NTP 6.7 Recognize common protocol port values (such as, SSH, Telnet, HTTP, HTTPS, and NETCONF)
5.5.2 - DHCP	K0001; K0010; K0034; K0174; K0332;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT-NET 3;	3A-NI-04;	6.6 Describe the functionality of these IP Services: DHCP, DNS, NAT, SNMP, NTP
5.5.3 - DNS	K0001; K0010; K0034; K0174; K0332;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT-NET 3;	3A-NI-04;	6.6 Describe the functionality of these IP Services: DHCP, DNS, NAT, SNMP, NTP
5.5.4 - SNMP	K0001; K0010; K0034; K0174; K0332;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT-NET 3;	3A-NI-04;	6.6 Describe the functionality of these IP Services: DHCP, DNS, NAT, SNMP, NTP
5.5.5 - NTP	K0001; K0010; K0034; K0174; K0332;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT-NET 3;	3A-NI-04;	6.6 Describe the functionality of these IP Services: DHCP, DNS, NAT, SNMP, NTP
5.5.6 - NAT	K0001; K0010; K0034; K0174; K0332;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT-NET 3;	3A-NI-04;	6.6 Describe the functionality of these IP Services: DHCP, DNS, NAT, SNMP, NTP

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
5.5.7 - Packet Tracer – Explore Network Protocols	K0001; K0010; K0034; K0174; K0332;	HS-ETS1.	ITEA.1.; ITEA.2.;	IT-NET 2; IT-NET 3;	3A-NI-04;	6.6 Describe the functionality of these IP Services: DHCP, DNS, NAT, SNMP, NTP
5.6 - Troubleshooting Application Connectivity Issues						
5.6.1 - Troubleshooting Common Network Connectivity Issues	S0041;	HS-ETS1.	ITEA.10.	IT-NET 2; IT-NET 3;	3A-NI-04;	6.8 Identify cause of application connectivity issues (NAT problem, Transport Port blocked, proxy, and VPN)
5.6.2 - Networking Tools - Using ifconfig	S0041;	HS-ETS1.	ITEA.10.	IT-NET 2; IT-NET 3;	3A-NI-04;	6.8 Identify cause of application connectivity issues (NAT problem, Transport Port blocked, proxy, and VPN)
5.6.3 - Using ping	S0041;	HS-ETS1.	ITEA.10.	IT-NET 2; IT-NET 3;	3A-NI-04;	6.8 Identify cause of application connectivity issues (NAT problem, Transport Port blocked, proxy, and VPN)
5.6.4 - Using traceroute	S0041;	HS-ETS1.	ITEA.10.	IT-NET 2; IT-NET 3;	3A-NI-04;	6.8 Identify cause of application connectivity issues (NAT problem, Transport Port blocked, proxy, and VPN)
5.6.5 - Using nslookup	S0041;	HS-ETS1.	ITEA.10.	IT-NET 2; IT-NET 3;	3A-NI-04;	6.8 Identify cause of application connectivity issues (NAT problem, Transport Port blocked, proxy, and VPN)
5.6.6 - Packet Tracer – Troubleshoot Common Network Problems	S0041;	HS-ETS1.	ITEA.10.	IT-NET 2; IT-NET 3;	3A-NI-04;	6.8 Identify cause of application connectivity issues (NAT problem, Transport Port blocked, proxy, and VPN)
5.6.7 - Lab - Network Troubleshooting Tools	S0041;	HS-ETS1.	ITEA.10.	IT-NET 2; IT-NET 3;	3A-NI-04;	6.8 Identify cause of application connectivity issues (NAT problem, Transport Port blocked, proxy, and VPN)
5.7 - Networking Fundamentals Summary						
5.7.1 - What Did I Learn in this Module?						
5.7.2 - Module 5: Network Fundamentals Quiz						

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
6.0 - Introduction to Application Deployment and Security						
6.0.1 - Why should I take this module?						
6.0.2 - What will I learn to do in this module?						
6.1 - Understanding Deployment Choices with Different Models						
6.1.1 - Introduction to Deployment Choices	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.2 Identify attributes of different application deployment models (private cloud, public cloud, hybrid cloud, and edge) 4.3 Identify the attributes of these application deployment types 4.3.a Virtual machines 4.3.b Bare metal 4.3.c Containers
6.1.2 - Deployment Environments	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.2 Identify attributes of different application deployment models (private cloud, public cloud, hybrid cloud, and edge) 4.3 Identify the attributes of these application deployment types 4.3.a Virtual machines 4.3.b Bare metal 4.3.c Containers

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
6.1.3 - Deployment Models	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.2 Identify attributes of different application deployment models (private cloud, public cloud, hybrid cloud, and edge) 4.3 Identify the attributes of these application deployment types 4.3.a Virtual machines 4.3.b Bare metal 4.3.c Containers
6.1.4 - Types of Infrastructure	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.2 Identify attributes of different application deployment models (private cloud, public cloud, hybrid cloud, and edge) 4.3 Identify the attributes of these application deployment types 4.3.a Virtual machines 4.3.b Bare metal 4.3.c Containers
6.1.5 - On-Premises	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.2 Identify attributes of different application deployment models (private cloud, public cloud, hybrid cloud, and edge) 4.3 Identify the attributes of these application deployment types 4.3.a Virtual machines 4.3.b Bare metal 4.3.c Containers

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
6.1.6 - Private Cloud	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.2 Identify attributes of different application deployment models (private cloud, public cloud, hybrid cloud, and edge) 4.3 Identify the attributes of these application deployment types 4.3.a Virtual machines 4.3.b Bare metal 4.3.c Containers
6.1.7 - Public Cloud	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.2 Identify attributes of different application deployment models (private cloud, public cloud, hybrid cloud, and edge) 4.3 Identify the attributes of these application deployment types 4.3.a Virtual machines 4.3.b Bare metal 4.3.c Containers
6.1.8 - Hybrid Cloud	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.2 Identify attributes of different application deployment models (private cloud, public cloud, hybrid cloud, and edge) 4.3 Identify the attributes of these application deployment types 4.3.a Virtual machines 4.3.b Bare metal 4.3.c Containers

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
6.1.9 - Edge Cloud	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.2 Identify attributes of different application deployment models (private cloud, public cloud, hybrid cloud, and edge) 4.3 Identify the attributes of these application deployment types 4.3.a Virtual machines 4.3.b Bare metal 4.3.c Containers
6.2 - Creating and Deploying a Sample Application						
6.2.1 - What is Docker?	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.6 Interpret contents of a Dockerfile 4.7 Utilize Docker images in local developer environment
6.2.2 - What is a Dockerfile?	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.6 Interpret contents of a Dockerfile 4.7 Utilize Docker images in local developer environment 4.11 Utilize Bash commands (file management, directory navigation, and environmental variables)
6.2.3 - Anatomy of a Dockerfile	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.6 Interpret contents of a Dockerfile 4.7 Utilize Docker images in local developer environment
6.2.4 - Start a Docker Container Locally	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.6 Interpret contents of a Dockerfile 4.7 Utilize Docker images in local developer environment
6.2.5 - Save a Docker Image to a Registry	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.6 Interpret contents of a Dockerfile 4.7 Utilize Docker images in local developer environment

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
6.2.6 - Create a Development Environment	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.6 Interpret contents of a Dockerfile 4.7 Utilize Docker images in local developer environment 4.11 Utilize Bash commands (file management, directory navigation, and environmental variables)
6.2.7 - Lab – Build a Sample Web App in a Docker Container	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.6 Interpret contents of a Dockerfile 4.7 Utilize Docker images in local developer environment 4.11 Utilize Bash commands (file management, directory navigation, and environmental variables)
6.3 - Continuous Integration/Continuous Deployment (CI/CD)						
6.3.1 - Introduction to CI/CD	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.4 Describe components for a CI/CD pipeline in application deployments 5.4 Describe the components and benefits of CI/CD pipeline in infrastructure automation
6.3.2 - Continuous Integration	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.4 Describe components for a CI/CD pipeline in application deployments 5.4 Describe the components and benefits of CI/CD pipeline in infrastructure automation
6.3.3 - CI/CD Benefits	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.4 Describe components for a CI/CD pipeline in application deployments 5.4 Describe the components and benefits of CI/CD pipeline in infrastructure automation

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
6.3.4 - Example Build Job for Jenkins	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.4 Describe components for a CI/CD pipeline in application deployments 5.4 Describe the components and benefits of CI/CD pipeline in infrastructure automation
6.3.5 - Example Pipeline in Jenkins	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.4 Describe components for a CI/CD pipeline in application deployments 5.4 Describe the components and benefits of CI/CD pipeline in infrastructure automation
6.3.6 - Lab – Build a CI/CD Pipeline Using Jenkins	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.4 Describe components for a CI/CD pipeline in application deployments 5.4 Describe the components and benefits of CI/CD pipeline in infrastructure automation
6.3.7 - Project Activity 4: Automated Software Testing and Deployment	K0134; K0178; A0047;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.4 Describe components for a CI/CD pipeline in application deployments 5.4 Describe the components and benefits of CI/CD pipeline in infrastructure automation
6.4 - Networks for Application Development and Security						
6.4.1 - Introduction	K0009; K0011; K0202; K0296;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.9 Explain how firewall, DNS, load balancers, and reverse proxy in application deployment
6.4.2 - Firewall	K0009; K0011; K0202; K0296;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.9 Explain how firewall, DNS, load balancers, and reverse proxy in application deployment
6.4.3 - Load Balancer	K0009; K0011; K0202; K0296;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.9 Explain how firewall, DNS, load balancers, and reverse proxy in application deployment

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
6.4.4 - DNS	K0009; K0011; K0202; K0296;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.9 Explain how firewall, DNS, load balancers, and reverse proxy in application deployment
6.4.5 - Reverse Proxy	K0009; K0011; K0202; K0296;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.9 Explain how firewall, DNS, load balancers, and reverse proxy in application deployment
6.5 - Securing Applications						
6.5.1 - Securing the Data	K0009; K0011; K0202; K0296;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.8 Identify application security issues related to secret protection, encryption (storage and transport), and data handling
6.5.2 - What is SQL Injection?	K0009; K0011; K0070; K0202; K0296;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.10 Describe top OWASP threats (such as XSS, SQL injections, and CSRF)
6.5.3 - How to Detect and Prevent SQL Injection	K0009; K0011; K0070; K0202; K0296;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.10 Describe top OWASP threats (such as XSS, SQL injections, and CSRF)
6.5.4 - Secure the Application	K0009; K0011; K0202; K0296;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.10 Describe top OWASP threats (such as XSS, SQL injections, and CSRF)
6.5.5 - Cross-Site Scripting (XSS)	K0009; K0011; K0202; K0296;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.10 Describe top OWASP threats (such as XSS, SQL injections, and CSRF)
6.5.6 - Cross-Site Request Forgery (CSRF)	K0009; K0011; K0202; K0296;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.10 Describe top OWASP threats (such as XSS, SQL injections, and CSRF)
6.5.7 - The OWASP Top Ten	K0009; K0011; K0202; K0296;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.10 Describe top OWASP threats (such as XSS, SQL injections, and CSRF)

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
6.5.8 - Evolution of Password Systems	K0009; K0011; K0202; K0296;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	
6.5.9 - Password Cracking	K0009; K0011; K0202; K0296;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	4.12 Identify the principles of DevOps practices
6.5.10 - Lab – Explore the Evolution of Password Methods	K0009; K0011; K0202; K0296;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 1.4; IT-NET 3.5; IT-NET 4;	3A-CS-02; 3A-AP-17; 3A-AP-19; 3B-AP-15;	
6.6 - Summary: Application Deployment and Security						
6.6.1 - What Did I Learn in this Module?						
6.6.2 - Module 6: Application Deployment and Security Quiz						
7.0 - Introduction to Infrastructure and Automation						
7.0.1 - Why should I take this module?						
7.0.2 - What will I learn to do in this module?						
7.0.3 - Lab – Install the CSR1000v VM						
7.1 - Automating Infrastructure with Cisco						
7.1.1 - Introduction to Automating Infrastructure	K0010; K0086; K0170; K0617; A0050;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 4.1; IT-NET 5.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.5 Describe principles of infrastructure as code

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
7.1.2 - Cisco Automation Solutions	K0010; K0086; K0170; K0617; A0050;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 4.1; IT-NET 5.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.4 Describe the components and benefits of CI/CD pipeline in infrastructure automation 5.5 Describe principles of infrastructure as code
7.1.3 - Why Do We Need Automation?	K0010; K0086; K0170; K0617; A0050;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 4.1; IT-NET 5.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.5 Describe principles of infrastructure as code
7.1.4 - Why Do We Need Full-Stack Automation?	K0010; K0086; K0170; K0617; A0050;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 4.1; IT-NET 5.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.5 Describe principles of infrastructure as code
7.1.5 - Software-Defined Infrastructure: A Case for Automation	K0010; K0086; K0170; K0617; A0050;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 4.1; IT-NET 5.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.5 Describe principles of infrastructure as code
7.1.6 - Distributed and Dynamic Applications: Another Case for Automation	K0010; K0086; K0170; K0617; A0050;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 4.1; IT-NET 5.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.5 Describe principles of infrastructure as code
7.1.7 - Automating Infrastructure Summary	K0010; K0086; K0170; K0617; A0050;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT-NET 4.1; IT-NET 5.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.5 Describe principles of infrastructure as code
7.2 - DevOps and SRE						
7.2.1 - Introduction to DevOps and SRE	K0086; K0617; A0050;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	
7.2.2 - DevOps Divide	K0086; K0617; A0050;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.5 Describe principles of infrastructure as code

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
7.2.3 - Evolution of DevOps	K0086; K0617; A0050;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.4 Describe the components and benefits of CI/CD pipeline in infrastructure automation 5.5 Describe principles of infrastructure as code
7.2.4 - Core Principles of DevOps	K0086; K0617; A0050;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	
7.2.5 - DevOps and SRE Summary	K0086; K0617; A0050;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.5 Describe principles of infrastructure as code
7.3 - Basic Automation Scripting						
7.3.1 - Introduction to Basic Automation Scripting	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	4.11 Utilize Bash commands (file management, directory navigation, and environmental variables) 5.9 Identify the workflow being automated by a bash script (such as file management, app install, user management, directory navigation)
7.3.2 - Basic Tools for Automation Scripting	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	4.11 Utilize Bash commands (file management, directory navigation, and environmental variables) 5.9 Identify the workflow being automated by a bash script (such as file management, app install, user management, directory navigation)
7.3.3 - Procedural Automation	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	4.11 Utilize Bash commands (file management, directory navigation, and environmental variables) 5.9 Identify the workflow being automated by a bash script (such as file management, app install, user management, directory navigation)

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
7.3.4 - Executing Scripts Locally and Remotely	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	4.11 Utilize Bash commands (file management, directory navigation, and environmental variables) 5.9 Identify the workflow being automated by a bash script (such as file management, app install, user management, directory navigation)
7.3.5 - Cloud Automation	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	4.11 Utilize Bash commands (file management, directory navigation, and environmental variables) 5.9 Identify the workflow being automated by a bash script (such as file management, app install, user management, directory navigation)
7.3.6 - Cloud CLIs and SDKs	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	4.11 Utilize Bash commands (file management, directory navigation, and environmental variables)
7.3.7 - Summary of Basic Automation Scripting	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	4.11 Utilize Bash commands (file management, directory navigation, and environmental variables)
7.4 - Automation Tools						
7.4.1 - Introduction to Automation Tools	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	
7.4.2 - What Do Automation Tools Do for Us?	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	4.11 Utilize Bash commands (file management, directory navigation, and environmental variables) 5.9 Identify the workflow being automated by a bash script (such as file management, app install, user management, directory navigation)

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
7.4.3 - Critical Concepts	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	4.11 Utilize Bash commands (file management, directory navigation, and environmental variables) 5.5 Describe principles of infrastructure as code 5.9 Identify the workflow being automated by a bash script (such as file management, app install, user management, directory navigation)
7.4.4 - Popular Automation Tools	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.5 Describe principles of infrastructure as code 5.6 Describe the capabilities of automation tools such as Ansible, Puppet, Chef, and Cisco NSO
7.4.5 - Ansible	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	4.11 Utilize Bash commands (file management, directory navigation, and environmental variables) 5.4 Describe the components and benefits of CI/CD pipeline in infrastructure automation 5.5 Describe principles of infrastructure as code 5.6 Describe the capabilities of automation tools such as Ansible, Puppet, Chef, and Cisco NSO 5.8 Identify the workflow being automated by an Ansible playbook (management packages, user management related to services, basic service configuration, and start/stop) 5.9 Identify the workflow being automated by a bash script (such as file management, app install, user management, directory navigation)

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
7.4.6 - Ansible Example	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.4 Describe the components and benefits of CI/CD pipeline in infrastructure automation 5.6 Describe the capabilities of automation tools such as Ansible, Puppet, Chef, and Cisco NSO 5.8 Identify the workflow being automated by an Ansible playbook (management packages, user management related to services, basic service configuration, and start/stop)
7.4.7 - Lab – Use Ansible to BackUp and Configure a Device	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.6 Describe the capabilities of automation tools such as Ansible, Puppet, Chef, and Cisco NSO
7.4.8 - Lab – Use Ansible to Automate Installing a Web Server	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.6 Describe the capabilities of automation tools such as Ansible, Puppet, Chef, and Cisco NSO 5.8 Identify the workflow being automated by an Ansible playbook (management packages, user management related to services, basic service configuration, and start/stop)
7.4.9 - Puppet	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.5 Describe principles of infrastructure as code 5.6 Describe the capabilities of automation tools such as Ansible, Puppet, Chef, and Cisco NSO
7.4.10 - Puppet Example	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.5 Describe principles of infrastructure as code 5.6 Describe the capabilities of automation tools such as Ansible, Puppet, Chef, and Cisco NSO

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
7.4.11 - Chef	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.5 Describe principles of infrastructure as code 5.6 Describe the capabilities of automation tools such as Ansible, Puppet, Chef, and Cisco NSO
7.4.12 - Chef Example – Install and Use Chef	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	4.11 Utilize Bash commands (file management, directory navigation, and environmental variables) 5.5 Describe principles of infrastructure as code 5.6 Describe the capabilities of automation tools such as Ansible, Puppet, Chef, and Cisco NSO 5.9 Identify the workflow being automated by a bash script (such as file management, app install, user management, directory navigation)
7.4.13 - Chef Example – Prepare to Use Knife	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.6 Describe the capabilities of automation tools such as Ansible, Puppet, Chef, and Cisco NSO
7.4.14 - Chef Example – Putting it all Together	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.6 Describe the capabilities of automation tools such as Ansible, Puppet, Chef, and Cisco NSO
7.4.15 - Summary of Automation Tools	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.6 Describe the capabilities of automation tools such as Ansible, Puppet, Chef, and Cisco NSO
7.5 - Infrastructure as Code						
7.5.1 - Why Store Infrastructure as Code?	A0050; S0257;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	
7.6 - Automating Testing						

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
7.6.1 - Automated Test and Validation	K0617;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.2 Compare controller-level to device-level management 5.4 Describe the components and benefits of CI/CD pipeline in infrastructure automation
7.6.2 - pyATS Example	K0617;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.3 Describe the use and roles of network simulation and test tools (such as VIRT and pyATS)
7.6.3 - Lab – Automated Testing Using pyATS and Genie	K0617;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	
7.7 - Network Simulation						
7.7.1 - Network Simulation and VIRT	K0617;	HS-ETS1.	ITEA.1.; ITEA.2.; ITEA.17.;	IT 06.1;	3A-IC-29; 3A-AP-21; 3B-AP-19;	5.3 Describe the use and roles of network simulation and test tools (such as VIRT and pyATS)
7.8 - Infrastructure and Automation Summary						
7.8.1 - What Did I Learn in this Module?						
7.8.2 - Module 7: Introduction to Automating, Developing, and Deploying Applications with Cisco Quiz						
8.0 - Introduction to Cisco Platforms and Development						
8.0.1 - Why should I take this module?						
8.0.2 - What will I learn to do in this module?						
8.1 - Introduction to Cisco Platforms						
8.1.1 - Understanding the Cisco API Platform	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B-AP-19; 3B-AP-24;	3.2 Describe the capabilities of Cisco network management platforms and APIs (Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, and NSO)
8.2 - Cisco SDKs						

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
8.2.1 - What is an SDK?		HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.1 Construct a Python script that uses a Cisco SDK given SDK documentation
8.3 - Understanding Network Programmability and Device Models						
8.3.1 - What is Model-Driven Programmability?	K0180;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.8 Apply concepts of model driven programmability (YANG, RESTCONF, and NETCONF) in a Cisco environment 5.1 Describe the value of model driven programmability for infrastructure automation
8.3.2 - What is YANG?	K0180;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.8 Apply concepts of model driven programmability (YANG, RESTCONF, and NETCONF) in a Cisco environment 5.1 Describe the value of model driven programmability for infrastructure automation 5.11 Interpret basic YANG models
8.3.3 - What is NETCONF?	K0180;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.6 Describe the device level APIs and dynamic interfaces for IOS XE and NX-OS 3.8 Apply concepts of model driven programmability (YANG, RESTCONF, and NETCONF) in a Cisco environment 5.1 Describe the value of model driven programmability for infrastructure automation 5.2 Compare controller-level to device- level management 5.10 Interpret the results of a RESTCONF or NETCONF query

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
8.3.4 - What is RESTCONF?	K0180;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.6 Describe the device level APIs and dynamic interfaces for IOS XE and NX-OS 3.8 Apply concepts of model driven programmability (YANG, RESTCONF, and NETCONF) in a Cisco environment 5.1 Describe the value of model driven programmability for infrastructure automation 5.10 Interpret the results of a RESTCONF or NETCONF query
8.3.5 - Lab – Explore YANG Models	K0180;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.6 Describe the device level APIs and dynamic interfaces for IOS XE and NX-OS 3.8 Apply concepts of model driven programmability (YANG, RESTCONF, and NETCONF) in a Cisco environment 5.11 Interpret basic YANG models
8.3.6 - Lab – Use NETCONF to Access an IOS XE Device	K0180;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.6 Describe the device level APIs and dynamic interfaces for IOS XE and NX-OS 3.8 Apply concepts of model driven programmability (YANG, RESTCONF, and NETCONF) in a Cisco environment 5.10 Interpret the results of a RESTCONF or NETCONF query

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
8.3.7 - Lab – Use RESTCONF to Access an IOS XE Device	K0180;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B-AP-19; 3B-AP-24;	3.6 Describe the device level APIs and dynamic interfaces for IOS XE and NX-OS 3.8 Apply concepts of model driven programmability (YANG, RESTCONF, and NETCONF) in a Cisco environment 5.10 Interpret the results of a RESTCONF or NETCONF query
8.4 - Cisco Network Management						
8.4.1 - Network Management Platforms	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B-AP-19; 3B-AP-24;	3.2 Describe the capabilities of Cisco network management platforms and APIs (Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, and NSO) 5.7 Identify the workflow being automated by a Python script that uses Cisco APIs including ACI, Meraki, Cisco DNA Center, or RESTCONF
8.4.2 - Cisco IOS XE	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B-AP-19; 3B-AP-24;	3.2 Describe the capabilities of Cisco network management platforms and APIs (Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, and NSO) 5.1 Describe the value of model driven programmability for infrastructure automation 5.7 Identify the workflow being automated by a Python script that uses Cisco APIs including ACI, Meraki, Cisco DNA Center, or RESTCONF

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
8.4.3 - Cisco DNA Center	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.2 Describe the capabilities of Cisco network management platforms and APIs (Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, and NSO) 3.9.a Obtain a list of network devices by using Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, or NSO 3.9.c Obtain a list of clients / hosts seen on a network using Meraki or Cisco DNA Center 5.7 Identify the workflow being automated by a Python script that uses Cisco APIs including ACI, Meraki, Cisco DNA Center, or RESTCONF
8.4.4 - Cisco DNA Center – Intent API	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.2 Describe the capabilities of Cisco network management platforms and APIs (Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, and NSO) 3.9.a Obtain a list of network devices by using Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, or NSO 5.7 Identify the workflow being automated by a Python script that uses Cisco APIs including ACI, Meraki, Cisco DNA Center, or RESTCONF

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
8.4.5 - Cisco DNA Center – Create (POST) - Update (PUT)	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.2 Describe the capabilities of Cisco network management platforms and APIs (Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, and NSO) 3.9.a Obtain a list of network devices by using Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, or NSO 5.7 Identify the workflow being automated by a Python script that uses Cisco APIs including ACI, Meraki, Cisco DNA Center, or RESTCONF
8.4.6 - Video – Access Cisco DNA Center Using REST APIs in Python	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.2 Describe the capabilities of Cisco network management platforms and APIs (Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, and NSO) 3.9.a Obtain a list of network devices by using Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, or NSO 5.7 Identify the workflow being automated by a Python script that uses Cisco APIs including ACI, Meraki, Cisco DNA Center, or RESTCONF
8.4.7 - Cisco ACI	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.2 Describe the capabilities of Cisco network management platforms and APIs (Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, and NSO) 3.9.a Obtain a list of network devices by using Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, or NSO 5.2 Compare controller-level to device-level management

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
8.4.8 - Cisco ACI – Ansible Modules	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.2 Describe the capabilities of Cisco network management platforms and APIs (Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, and NSO) 3.9.a Obtain a list of network devices by using Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, or NSO 5.7 Identify the workflow being automated by a Python script that uses Cisco APIs including ACI, Meraki, Cisco DNA Center, or RESTCONF 5.8 Identify the workflow being automated by an Ansible playbook (management packages, user management related to services, basic service configuration, and start/stop)
8.4.9 - Cisco ACI URL Format	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.2 Describe the capabilities of Cisco network management platforms and APIs (Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, and NSO) 3.9.a Obtain a list of network devices by using Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, or NSO 5.7 Identify the workflow being automated by a Python script that uses Cisco APIs including ACI, Meraki, Cisco DNA Center, or RESTCONF

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
8.4.10 - Cisco ACI Cobra	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.2 Describe the capabilities of Cisco network management platforms and APIs (Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, and NSO) 3.9.a Obtain a list of network devices by using Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, or NSO 5.7 Identify the workflow being automated by a Python script that uses Cisco APIs including ACI, Meraki, Cisco DNA Center, or RESTCONF
8.4.11 - Video – Access a Cisco APIC Using REST APIs in Python	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.2 Describe the capabilities of Cisco network management platforms and APIs (Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, and NSO) 3.9.a Obtain a list of network devices by using Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, or NSO 5.7 Identify the workflow being automated by a Python script that uses Cisco APIs including ACI, Meraki, Cisco DNA Center, or RESTCONF
8.4.12 - Cisco Meraki	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.2 Describe the capabilities of Cisco network management platforms and APIs (Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, and NSO) 3.9.a Obtain a list of network devices by using Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, or NSO 5.7 Identify the workflow being automated by a Python script that uses Cisco APIs including ACI, Meraki, Cisco DNA Center, or RESTCONF

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
8.4.13 - Cisco Meraki Location Scanning API	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.2 Describe the capabilities of Cisco network management platforms and APIs (Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, and NSO) 3.9.a Obtain a list of network devices by using Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, or NSO 5.6 Describe the capabilities of automation tools such as Ansible, Puppet, Chef, and Cisco NSO 5.7 Identify the workflow being automated by a Python script that uses Cisco APIs including ACI, Meraki, Cisco DNA Center, or RESTCONF
8.4.14 - Video – Access Meraki Dashboard Using REST APIs in Python	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.2 Describe the capabilities of Cisco network management platforms and APIs (Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, and NSO) 3.9.a Obtain a list of network devices by using Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, or NSO 5.7 Identify the workflow being automated by a Python script that uses Cisco APIs including ACI, Meraki, Cisco DNA Center, or RESTCONF

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
8.4.15 - Cisco NX-OS Platform	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.2 Describe the capabilities of Cisco network management platforms and APIs (Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, and NSO) 3.9.a Obtain a list of network devices by using Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, or NSO 4.11 Utilize Bash commands (file management, directory navigation, and environmental variables) 5.1 Describe the value of model driven programmability for infrastructure automation 5.7 Identify the workflow being automated by a Python script that uses Cisco APIs including ACI, Meraki, Cisco DNA Center, or RESTCONF
8.4.16 - Cisco NSO	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.2 Describe the capabilities of Cisco network management platforms and APIs (Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, and NSO) 3.9.a Obtain a list of network devices by using Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, or NSO 5.1 Describe the value of model driven programmability for infrastructure automation 5.6 Describe the capabilities of automation tools such as Ansible, Puppet, Chef, and Cisco NSO 5.7 Identify the workflow being automated by a Python script that uses Cisco APIs including ACI, Meraki, Cisco DNA Center, or RESTCONF

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
8.4.17 - Cisco NSO Services	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.2 Describe the capabilities of Cisco network management platforms and APIs (Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, and NSO) 3.9.a Obtain a list of network devices by using Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, or NSO 3.9.c Obtain a list of clients / hosts seen on a network using Meraki or Cisco DNA Center 5.6 Describe the capabilities of automation tools such as Ansible, Puppet, Chef, and Cisco NSO 5.7 Identify the workflow being automated by a Python script that uses Cisco APIs including ACI, Meraki, Cisco DNA Center, or RESTCONF
8.4.18 - Video – Access Cisco NSO Using REST APIs in Python	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.2 Describe the capabilities of Cisco network management platforms and APIs (Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, and NSO) 3.9.a Obtain a list of network devices by using Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, or NSO 5.6 Describe the capabilities of automation tools such as Ansible, Puppet, Chef, and Cisco NSO 5.7 Identify the workflow being automated by a Python script that uses Cisco APIs including ACI, Meraki, Cisco DNA Center, or RESTCONF

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
8.4.19 - Cisco SD-WAN	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.2 Describe the capabilities of Cisco network management platforms and APIs (Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, and NSO) 3.9.a Obtain a list of network devices by using Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, or NSO 5.7 Identify the workflow being automated by a Python script that uses Cisco APIs including ACI, Meraki, Cisco DNA Center, or RESTCONF
8.4.20 - Video – Access Cisco SD-WAN Using REST APIs in Python	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.2 Describe the capabilities of Cisco network management platforms and APIs (Meraki, Cisco DNA Center, ACI, Cisco SD-WAN, and NSO) 5.7 Identify the workflow being automated by a Python script that uses Cisco APIs including ACI, Meraki, Cisco DNA Center, or RESTCONF
8.5 - Cisco Compute Management						
8.5.1 - Cisco Compute Solutions	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.3 Describe the capabilities of Cisco compute management platforms and APIs (UCS Manager, UCS Director, and Intersight)
8.5.2 - Cisco UCS Manager	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.3 Describe the capabilities of Cisco compute management platforms and APIs (UCS Manager, UCS Director, and Intersight)
8.5.3 - Cisco UCS Manager Servers	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.3 Describe the capabilities of Cisco compute management platforms and APIs (UCS Manager, UCS Director, and Intersight)

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
8.5.4 - Cisco UCS Managed Objects	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.3 Describe the capabilities of Cisco compute management platforms and APIs (UCS Manager, UCS Director, and Intersight)
8.5.5 - Cisco UCS Manager Documentation	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.3 Describe the capabilities of Cisco compute management platforms and APIs (UCS Manager, UCS Director, and Intersight)
8.5.6 - Cisco UCS Power Tool	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.3 Describe the capabilities of Cisco compute management platforms and APIs (UCS Manager, UCS Director, and Intersight) 5.8 Identify the workflow being automated by an Ansible playbook (management packages, user management related to services, basic service configuration, and start/stop)
8.5.7 - Cisco UCS Director	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.3 Describe the capabilities of Cisco compute management platforms and APIs (UCS Manager, UCS Director, and Intersight)
8.5.8 - Cisco UCS Director – REST API	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.3 Describe the capabilities of Cisco compute management platforms and APIs (UCS Manager, UCS Director, and Intersight)

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
8.5.9 - Cisco Intersight	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.3 Describe the capabilities of Cisco compute management platforms and APIs (UCS Manager, UCS Director, and Intersight) 5.8 Identify the workflow being automated by an Ansible playbook (management packages, user management related to services, basic service configuration, and start/stop)
8.6 - Cisco Collaboration Platforms						
8.6.1 - Introduction	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.4 Describe the capabilities of Cisco collaboration platforms and APIs (Webex Teams, Webex devices, Cisco Unified Communication Manager including AXL and UDS interfaces, and Finesse)
8.6.2 - Cisco Unified Communications Manager	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.4 Describe the capabilities of Cisco collaboration platforms and APIs (Webex Teams, Webex devices, Cisco Unified Communication Manager including AXL and UDS interfaces, and Finesse)
8.6.3 - Administrative XML Layer	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.4 Describe the capabilities of Cisco collaboration platforms and APIs (Webex Teams, Webex devices, Cisco Unified Communication Manager including AXL and UDS interfaces, and Finesse) 3.7 Identify the appropriate DevNet resource for a given scenario (Sandbox, Code Exchange, support, forums, Learning Labs, and API documentation)

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
8.6.4 - User Data Services	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.4 Describe the capabilities of Cisco collaboration platforms and APIs (Webex Teams, Webex devices, Cisco Unified Communication Manager including AXL and UDS interfaces, and Finesse)
8.6.5 - Cisco Finesse	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.4 Describe the capabilities of Cisco collaboration platforms and APIs (Webex Teams, Webex devices, Cisco Unified Communication Manager including AXL and UDS interfaces, and Finesse)
8.6.6 - Webex Teams	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.4 Describe the capabilities of Cisco collaboration platforms and APIs (Webex Teams, Webex devices, Cisco Unified Communication Manager including AXL and UDS interfaces, and Finesse) 3.9.b Manage spaces, participants, and messages in Webex Teams
8.6.7 - Lab – Construct a Python Script to Manage Webex Teams	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.4 Describe the capabilities of Cisco collaboration platforms and APIs (Webex Teams, Webex devices, Cisco Unified Communication Manager including AXL and UDS interfaces, and Finesse) 3.9.b Manage spaces, participants, and messages in Webex Teams
8.6.8 - Webex Devices	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.4 Describe the capabilities of Cisco collaboration platforms and APIs (Webex Teams, Webex devices, Cisco Unified Communication Manager including AXL and UDS interfaces, and Finesse) 3.9.b Manage spaces, participants, and messages in Webex Teams

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
8.6.9 - Project Activity 5: Network Programmability and Automation	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.4 Describe the capabilities of Cisco collaboration platforms and APIs (Webex Teams, Webex devices, Cisco Unified Communication Manager including AXL and UDS interfaces, and Finesse) 3.9.b Manage spaces, participants, and messages in Webex Teams
8.7 - Cisco Security Platforms						
8.7.1 - Introduction	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.5 Describe the capabilities of Cisco security platforms and APIs (Firepower, Umbrella, AMP, ISE, and ThreatGrid)
8.7.2 - Cisco Advanced Malware Protection (AMP)	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.5 Describe the capabilities of Cisco security platforms and APIs (Firepower, Umbrella, AMP, ISE, and ThreatGrid)
8.7.3 - Cisco Firepower Products	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.5 Describe the capabilities of Cisco security platforms and APIs (Firepower, Umbrella, AMP, ISE, and ThreatGrid) 3.7 Identify the appropriate DevNet resource for a given scenario (Sandbox, Code Exchange, support, forums, Learning Labs, and API documentation)
8.7.4 - Cisco Identity Services Engine (ISE)	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.5 Describe the capabilities of Cisco security platforms and APIs (Firepower, Umbrella, AMP, ISE, and ThreatGrid)
8.7.5 - Cisco Threat Grid	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.5 Describe the capabilities of Cisco security platforms and APIs (Firepower, Umbrella, AMP, ISE, and ThreatGrid)
8.7.6 - Cisco Umbrella	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	3.5 Describe the capabilities of Cisco security platforms and APIs (Firepower, Umbrella, AMP, ISE, and ThreatGrid)
8.8 - Cisco Platforms and Development Summary						

Page	NICE	NGSS	ITEA	DODEA	CSTA	Exam Objectives
8.8.1 - What Did I Learn in this Module?	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	
8.8.2 - Packet Tracer – Compare using CLI and an SDN Controller to Manage a Network	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	
8.8.3 - Packet Tracer – Implement REST APIs with an SDN Controller	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	
8.8.4 - Module 8: Cisco Platforms and Development Quiz	S0311; A0175;	HS-ETS1;	ITEA.1.; ITEA.2.; ITEA.3.; ITEA.9.;	IT-NET 3; IT 06;	3B-AP-17; 3B- AP-19; 3B-AP- 24;	
8.9 - Prepare for Your Exam and Launch Your Career!						
8.9.1 - Certification Preparation and Discount Vouchers	A0042;					
8.9.2 - Career Resources and Employment Opportunities	A0042;					