



**MASSA School**

**Networking**



# Networking Essentials

## Course Overview

Networking Essentials teaches networking based on environments students may encounter in daily life, including small office and home office networking. This course provides an engaging, self-paced learning experience using Packet Tracer simulation, interactive activities, and learning with your own devices at home.

## Benefits

Develop a foundational understanding of the high-level network architecture and how a network operates.

## Prepare for Careers

- ✓ For developers, cybersecurity, business analysts, or other professionals: gain essential networking knowledge
- ✓ For students: a launching point for many career pathways, from cybersecurity to software to business and more

## Course Details

**Target Audience:** High school, secondary and 2-year college vocational students, college and university students studying IT and non-IT fields, career changers

**Estimated Time to Completion:** 70 hours

**Prerequisites:** None

**Course Delivery:** Self-Paced, Instructor-led

### Learning Component Highlights:

- ✓ 20 modules and 19 practice labs
- ✓ 24 Cisco Packet Tracer activities
- ✓ 130+ interactive activities, videos, & quizzes
- ✓ 5 module exams
- ✓ 1 final exam and 1 skills assessment (Instructor-led only)

**Course Recognitions:** Certificate of Completion, Digital Badge (Instructor-led only)

### Recommended Next Course:

CCNA: Introduction to Networks (ITN), Cybersecurity Essentials, or DevNet Associate



## Requirements & Resources

- **ASC Alignment Required:** No
- **Instructor Training Required:** Optional
- **Physical Equipment Required:** No (uses Packet Tracer and devices you already have at home)
- **Voucher Availability:** Not Applicable

# CCNA: Introduction to Networking (ITN)

## Course Overview

The first course in the CCNA curriculum introduces the architectures, models, protocols, and networking elements that connect users, devices, applications and data through the Internet and across modern computer networks - including IP addressing and Ethernet fundamentals.

## Benefits

Learn to build simple local area networks (LAN) that integrate IP addressing schemes, foundational network security, and perform basic configurations for routers and switches.

## Prepare for Careers

- ✓ Develop skills for entry-level networking jobs
- ✓ Prepare for CCNA certification exam
- ✓ Fulfill prerequisites to pursue more specialized networking skills

## Course Details

**Target Audience:** Secondary vocational students, 2-year and 4-year college students in Networking or Engineering programs

**Estimated Time to Completion:** 70 hours

**Prerequisites:** None

**Course Delivery:** Instructor-led

### Learning Component Highlights:

- ✓ 17 modules and 24 practice labs
- ✓ 31 Cisco Packet Tracer activities
- ✓ 120+ interactive activities, videos, & quizzes
- ✓ 1 final exam

**Course Recognitions:** Certificate of Completion, Letter of Merit, Digital Badge

### Recommended Next Course:

CCNA: Switching, Routing, and Wireless Essentials (SRWE)



## Requirements & Resources

- **ASC Alignment Required:** Yes
- **Instructor Training Required:** Yes
- **Physical Equipment Required:** Yes\*
- **Discount Availability:** Not Applicable

\*Includes Distance Learning option with Packet Tracer if lab equipment is not available

# CCNA: Switching, Routing, and Wireless Essentials (SRWE)

## Course Overview

The second course in the CCNA curriculum focuses on switching technologies and router operations that support small-to-medium business networks and includes wireless local area networks (WLAN) and security concepts.

## Benefits

Students learn key switching and routing concepts. They can perform basic network configuration and troubleshooting, identify and mitigate local area network (LAN) security threats, and configure and secure a basic WLAN.

## Prepare for Careers

- ✓ Develop skills for entry-level networking jobs
- ✓ Prepare for CCNA certification exam
- ✓ Fulfill prerequisites to pursue more specialized networking skills

## Course Details

**Target Audience:** Secondary vocational students, 2-year and 4-year college students in Networking or Engineering programs

**Estimated Time to Completion:** 70 hours

**Prerequisites:** None

**Course Delivery:** Instructor-led

### Learning Component Highlights:

- ✓ 16 modules and 14 practice labs
- ✓ 31 Cisco Packet Tracer activities
- ✓ 70+ interactive activities, videos, & quizzes
- ✓ 1 final exam

**Course Recognitions:** Certificate of Completion, Letter of Merit, Digital Badge

**Recommended Next Course:**  
CCNA: Enterprise Networking, Security, and Automation (ENSA)



## Requirements & Resources

- **ASC Alignment Required:** Yes
- **Instructor Training Required:** Yes
- **Physical Equipment Required:** Yes\*
- **Discount Availability:** Not Applicable

\*Includes Distance Learning option with Packet Tracer if lab equipment is not available

# CCNA: Enterprise Networking, Security, and Automation (ENSA)

## Course Overview

The final course in the CCNA series covers the architecture, security, and operation of an enterprise network, along with introducing the new ways in which network engineers interact with programmable infrastructure.

## Benefits

Gain skills to configure and troubleshoot enterprise networks, learn to identify and protect against cybersecurity threats, and discover key concepts of software-defined networking, including controller-based architectures and application programming interfaces (APIs).

## Prepare for Careers

- ✓ Develop skills for entry-level networking jobs
- ✓ Prepare for CCNA certification exam
- ✓ Fulfill prerequisites to pursue more specialized networking skills

## Course Details

**Target Audience:** Secondary vocational students, 2-year and 4-year college students in Networking or Engineering programs

**Estimated Time to Completion:** 70 hours

**Prerequisites:** None

**Course Delivery:** Instructor-led

### Learning Component Highlights:

- ✓ 14 modules and 12 practice labs
- ✓ 29 Cisco Packet Tracer activities
- ✓ 100+ interactive activities, videos, & quizzes
- ✓ 1 practice certification exam

**Course Recognitions:** Certificate of Completion, Letter of Merit, Digital Badge

**Recommended Next Course:**  
CCNP Enterprise: Core Networking (ENCOR)



## Requirements & Resources

- **ASC Alignment Required:** Yes
- **Instructor Training Required:** Yes
- **Physical Equipment Required:** Yes\*
- **Discount Availability:** Yes

\*Includes Distance Learning option with Packet Tracer if lab equipment is not available

# CCNP Enterprise: Core Networking (ENCOR)

## Course Overview

This first course in the 2-course CCNP Enterprise series covers switching, routing, wireless, and related security topics, along with the technologies that support software-defined, programmable networks.

## Benefits

Gain practical, hands-on experience and skills needed to configure, operate and troubleshoot large scale enterprise networks.

## Prepare for Careers

- ✓ Develop skills for professional-level networking roles
- ✓ Prepare for the Cisco Enterprise Network Core Technologies exam ([350-401 ENCOR](#)) to earn an Enterprise Core Specialist certification
- ✓ Completion of both CCNP Enterprise courses prepares for CCNP Enterprise certification

## Course Details

**Target Audience:** Secondary vocational students, 2-year and 4-year college students in Networking or Engineering programs

**Estimated Time to Completion:** 70 hours

**Recommended Preparation:** CCNA or equivalent

**Course Delivery:** Instructor-led

### Learning Component Highlights:

- ✓ 29 chapters and 41 practice labs
- ✓ 24 Cisco Packet Tracer activities (optional)
- ✓ 35+ interactive activities, videos, & quizzes
- ✓ 1 practice certification exam

**Course Recognitions:** Certificate of Completion, Letter of Merit, Digital Badge

**Recommended Next Course:** CCNP Enterprise: Advance Routing (ENARSI)



**Networking**

## Requirements & Resources

- **ASC Alignment Required:** Yes
- **Instructor Training Required:** Yes
- **Physical Equipment Required:** Yes
- **Discount Availability:** Not Applicable

# CCNP Enterprise: Advanced Routing (ENARSI)

## Course Overview

This second of the 2-course CCNP Enterprise series focuses on implementation and troubleshooting of advanced routing and redistribution for OSPF, EIGRP and BGP along with VPN technologies, infrastructure security and management tools used in Enterprise networks.

## Benefits

Gain practical, hands-on experience and skills needed to configure, operate and troubleshoot large scale enterprise networks.

## Prepare for Careers

- ✓ Develop skills for professional-level networking roles
- ✓ Prepare for Cisco Enterprise Advanced Routing & Services exam ([300-410 ENARSI](#)) to earn a CCNP Specialist certification
- ✓ Completion of both CCNP Enterprise courses prepares for CCNP Enterprise certification

## Course Details

**Target Audience:** Secondary vocational students, 2-year and 4-year college students in Networking or Engineering programs

**Estimated Time to Completion:** 70 hours

**Recommended Preparation:** ENCOR or equivalent

**Course Delivery:** Instructor-led

### Learning Component Highlights:

- ✓ 23 chapters and 40 practice labs
- ✓ 20 Cisco Packet Tracer activities (optional)
- ✓ 25+ videos & quizzes, 2 Skills Assessments
- ✓ 1 practice certification exam

**Course Recognitions:** Certificate of Completion, Letter of Merit, Digital Badge

**Recommended Next Course:** Broaden your skills with DevNet Associate, CyberOps Associate, Python, or Emerging Technologies Workshops



**Networking**

## Requirements & Resources

- **ASC Alignment Required:** Yes
- **Instructor Training Required:** Yes
- **Physical Equipment Required:** Yes
- **Discount Availability:** Not Applicable

# Operating Systems & Information Technology



## Get Connected

### Course Overview

Get Connected students are introduced to the Internet and experiment with various social networking sites. Talking characters and devices make this course a user-friendly environment for an audience new to Information Technology (IT).

### Benefits

The digital world is upon us both personally and professionally. Gain essential skills like basic computer skills, such as how to use a computer, connect devices, and access search, email, and social media.

### Explore Opportunities in Technology

- ✓ Develop your digital basics
- ✓ Start exploring the many career possibilities these skills can open up for you

### Course Details

**Target Audience:** Secondary and general audience new to IT

**Estimated Time to Completion:** 30 hours

**Prerequisites:** None


**Course Delivery:** Instructor-led or Self-paced

#### Learning Component Highlights:

- ✓ 5 chapters
- ✓ Illustrations and narrations guide students through topics
- ✓ Interactive activities, videos, & quizzes

**Course Recognitions:** Certificate of Completion

**Recommended Next Course:**  
IT Essentials



### Requirements & Resources

- **ASC Alignment Required:** No
- **Instructor Training Required:** No
- **Physical Equipment Required:** No
- **Discount Availability:** Not Applicable

# IT Essentials

## Course Overview

IT Essentials covers fundamental computer and career skills for entry-level IT jobs. Students apply skills and procedures to install, configure, and troubleshoot computers, mobile devices, and software.

## Benefits

Learn the fundamentals of connecting computers to networks. Plus, you'll enjoy working with Cisco Networking Academy's advanced simulation tools with hands-on labs to hone your troubleshooting skills and immediately practice what you learn!

## Prepare for Careers

- ✓ Develop skills for entry-level technical support roles
- ✓ Prepare for CompTIA A+ certification exam
- ✓ Build your foundation for CCNA-level courses

## Course Details

**Target Audience:** Secondary and 2-year college vocational students

**Estimated Time to Completion:** 70 hours

**Prerequisites:** None


**Course Delivery:** Instructor-led

### Learning Component Highlights:

- ✓ 14 chapters and 99 practice labs
- ✓ Cisco Packet Tracer, virtual laptop, and virtual desktop learning tools
- ✓ 29+ interactive activities
- ✓ 18+ assessments throughout the course
- ✓ 1 final and 2 practice certification exams

**Course Recognitions:** Certificate of Completion, Digital Badge, Letter of Merit

**Recommended Next Course:**  
CCNA: Introduction to Networking (ITN)



**IT OS & IT**

### Requirements & Resources

- **ASC Alignment Required:** Yes
- **Instructor Training Required:** Yes
- **Physical Equipment Required:** Yes
- **Discount Availability:** Not Applicable

# NDG Linux Unhatched

## Course Overview

This course covers introductory back-end operating system knowledge by teaching basic installation and configuration of Linux and introducing the Linux command line.

## Benefits

Learners ease into acquiring Linux knowledge without having to commit to more than 8 total hours of self-paced learning, guided step-by-step with a series of hands-on virtual machine activities.

## Explore Opportunities in Technology

- ✓ Wade into the shallow end of Linux and see whether it's for you or not
- ✓ Develop your digital basics
- ✓ Start exploring the many career possibilities these skills can open up for you

## Course Details

**Target Audience:** Secondary and general audience new to IT

**Estimated Time to Completion:** 6-8 hours

**Prerequisites:** None


**Course Delivery:** Self-paced

### Learning Component Highlights:

- ✓ 1 module
- ✓ 20 pages
- ✓ Built-in Linux machine with activities
- ✓ 1 assessment

**Course Recognitions:** Letter of Completion

**Recommended Next Course:**  
NDG Linux Essentials



**IT OS & IT**

### Requirements & Resources

- **ASC Alignment Required:** No
- **Instructor Training Required:** No
- **Physical Equipment Required:** No
- **Discount Availability:** Not Applicable

# NDG Linux Essentials

## Course Overview

This course teaches fundamentals of the Linux operating system, command line, and open source programming concepts.

## Benefits

Nearly every IT job requires some Linux knowledge. Gain hands-on practice with Linux commands through the Linux virtual machine embedded in the course.

## Prepare for Careers

- ✓ Develop fundamental operating system skills for entry-level IT jobs
- ✓ Prepare for LPI certificate exam
- ✓ Fulfill prerequisites to pursue more specialized IT and networking skills

## Course Details

**Target Audience:** Secondary and 2-year college students

**Estimated Time to Completion:** 70 hours

**Prerequisites:** None

**Course Delivery:** Instructor-led or Self-paced

### Learning Component Highlights:

- ✓ 16 chapters and 13 practice labs
- ✓ Built-in virtual machine to experiment with Linux commands
- ✓ Learner-directed activities
- ✓ Chapter, midterm, and final exams

**Course Recognitions:** Letter of Completion

**Recommended Next Course:**  
NDG Linux I



## Requirements & Resources

- **ASC Alignment Required:** No
- **Instructor Training Required:** No
- **Physical Equipment Required:** No
- **Discount Availability:** Yes

# NDG Linux I and II

## Course Overview

A 2-course series for aspiring Linux system administrators. Covers performing maintenance tasks on the command line, installing and configuring a computer running Linux, and configuring basic networking, using virtual machines running Linux.

## Benefits

More rigorous and comprehensive than NDG Linux Essentials, this course develops your Linux mastery. Gain hands-on practice with Linux commands through the Linux virtual machine embedded in the course.

## Prepare for Careers

- ✓ Develop skills for careers in cloud computing, cybersecurity, information systems, networking, programming, software development, big data, and more
- ✓ Prepare for LPIC-1 certification exams

## Course Details

**Target Audience:** 2-year and 4-year college students

**Estimated Time to Completion:** 140 hours

**Recommended Preparation:** NDG Linux Essentials or equivalent

**Course Delivery:** Instructor-led or Self-paced

### Learning Component Highlights:

- ✓ Built-in virtual machine to experiment with Linux commands
- ✓ Practice labs and activities
- ✓ Chapter, midterm, and final exams

**Course Recognitions:** Letter of Completion

**Recommended Next Course:**  
DevNet Associate



## Requirements & Resources

- **ASC Alignment Required:** No
- **Instructor Training Required:** No
- **Physical Equipment Required:** No
- **Discount Availability:** Yes
- **Cost:** Free for self-paced classes. Cost for instructor-led classes is determined by the institution.

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# Programming



## PCAP: Programming Essentials in Python

### Course Overview

Designed as easy to understand and beginner-friendly course focusing on various data collections, manipulation tools, logic and bit operations and creating basic REST APIs.

### Benefits

Learn to design, write, debug, and run programs encoded in the Python language. No prior programming knowledge is required. The course begins with the very basics guiding you step by step until you become adept at solving more complex problems.

### Prepare for Careers

- ✓ Develop fundamental programming skills
- ✓ Prepare for PCEP and PCAP certification exam
- ✓ Build your foundation to pursue more specialized networking and software development skills

### Course Details

**Target Audience:** Secondary, 2-year and 4-year college students

**Estimated Time to Completion:** 75 hours

**Prerequisites:** None

**Course Delivery:** Instructor-led or Self-paced

#### Learning Component Highlights:

- ✓ 8 modules of interactive instructional content
- ✓ 30+ practice labs
- ✓ Built-in online tool for labs and practice
- ✓ Quizzes, tests, and final exam

**Course Recognitions:** Statement of Achievement

**Recommended Next Course:** DevNet Associate



### Requirements & Resources

- **ASC Alignment Required:** No
- **Instructor Training Required:** No
- **Physical Equipment Required:** No
- **Discount Availability:** Yes

# CLA: Programming Essentials in C

## Course Overview

This beginner course introduces the the universal concepts of computer programming using the C language, and teaches the syntax, semantics, and data types of the C language.

## Benefits

Build transferable skills. When you learn C, you develop overarching fundamentals for all programming languages. Practice your skills through hands-on labs and write your own programs!

## Prepare for Careers

- ✓ Develop skills for entry-level programming roles
- ✓ Prepare for CLA certification exam
- ✓ Fulfill prerequisites to pursue more advanced programming skills

## Course Details

**Target Audience:** Secondary, 2-year and 4-year college students

**Estimated Time to Completion:** 70 hours

**Prerequisites:** None

**Course Delivery:** Instructor-led


### Learning Component Highlights:

- ✓ 9 modules of interactive instructional content
- ✓ 80+ practice labs
- ✓ Chapter and final exams

**Course Recognitions:** Certificate of Completion

### Recommended Next Course:

Internet of Things (IoT) Fundamentals, CCNA, NDG Linux Essentials



Programming

### Requirements & Resources

- **ASC Alignment Required:** No
- **Instructor Training Required:** No
- **Physical Equipment Required:** No
- **Discount Availability:** Yes

# CLP: Advanced Programming in C

## Course Overview

This advanced course teaches intermediate to advanced coding such as C handling variable number of parameters (<stdarg.h>), low level IO (<unistd.h>), memory and strings (<string.h> et al.), processes and threads, floats and ints (<math.h>, <fenv.h>, <inttypes.h> et al), and network sockets.

## Benefits

Extend your programming knowledge and proficiency. Learn to think harder and deeper about programming concepts.

## Prepare for Careers

- ✓ Develop skills for entry-level programming roles
- ✓ Prepare for CLP certification exam
- ✓ Set yourself up to succeed in jobs related to software development, network engineering, and system administration

## Course Details

**Target Audience:** 2-year and 4-year college and university students

**Estimated Time to Completion:** 70 hours

**Prerequisites:** CLA: Programming Essentials in C course, CLA certification, or equivalent

**Course Delivery:** Instructor-led

### Learning Component Highlights:

- ✓ 8 modules of interactive instructional content
- ✓ 18 practice labs
- ✓ Quizzes, chapter and final exams

**Course Recognitions:** Certificate of Completion

### Recommended Next Course:

Internet of Things (IoT) Fundamentals, NDG Linux I



Programming

### Requirements & Resources

- **ASC Alignment Required:** No
- **Instructor Training Required:** No
- **Physical Equipment Required:** No
- **Discount Availability:** Yes

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# CPA: Programming Essentials in C++

## Course Overview

This beginner course introduces the basics of programming in the C++ language and the fundamental notions and techniques used in object-oriented programming.

## Benefits

Build transferable skills. When you learn C, you develop overarching fundamentals for all programming languages. Practice your skills through hands-on labs and write your own programs!

## Prepare for Careers

- ✓ Develop skills for entry-level programming roles
- ✓ Prepare for CPA certification exam
- ✓ Fulfill prerequisites to pursue more advanced programming skills

## Course Details

**Target Audience:** Secondary, 2-year and 4-year college students

**Estimated Time to Completion:** 70 hours

**Prerequisites:** None

**Course Delivery:** Instructor-led

### Learning Component Highlights:

- ✓ 8 modules of interactive instructional content
- ✓ 100+ practice labs
- ✓ Chapter and final exams

**Course Recognitions:** Certificate of Completion

### Recommended Next Course:

Internet of Things (IoT) Fundamentals, NDG Linux Essentials, DevNet Associate



Programming

## Requirements & Resources

- **ASC Alignment Required:** No
- **Instructor Training Required:** No
- **Physical Equipment Required:** No
- **Discount Availability:** Yes

# CPP: Advanced Programming in C++

## Course Overview

This advanced course teaches intermediate to advanced coding such as C++ template mechanism, understanding and using property template classes and methods, and the C++ STL library including solving common programming problems and the IO part.

## Benefits

Extend your programming knowledge and proficiency. Learn to think harder and deeper about programming concepts.

## Prepare for Careers

- ✓ Develop skills for entry-level programming roles
- ✓ Prepare for CPP certification exam
- ✓ Set yourself up to succeed in jobs related to software development, network engineering, and system administration

## Course Details

**Target Audience:** 2-year and 4-year college and university students

**Estimated Time to Completion:** 70 hours

**Prerequisites:** CPA: Programming Essentials in C++ course, CPA certification, or equivalent

**Course Delivery:** Instructor-led


### Learning Component Highlights:

- ✓ 9 modules of interactive instructional content
- ✓ 65 practice labs
- ✓ Chapter and final exams

**Course Recognitions:** Certificate of Completion

### Recommended Next Course:

CCNP Enterprise, NDG Linux I



Programming

## Requirements & Resources

- **ASC Alignment Required:** No
- **Instructor Training Required:** No
- **Physical Equipment Required:** No
- **Discount Availability:** Not Applicable

# Programmable Infrastructure

## Internet of Things



### Introduction to Internet of Things (IoT)

#### Course Overview

An introduction to the Internet of Things and how it enables Digital Transformation along with emerging technologies such as data analytics, artificial intelligence, and cybersecurity.

The course also highlights the importance of Intent-Based Networking using a software-driven approach and machine learning to be able to connect and secure tens of billions of new devices with ease.

#### Benefits

Gain a comprehensive view of how emerging technologies are shaping the digital business.

#### Explore Opportunities in Technology

- ✓ Develop your digital basics
- ✓ Explore the career opportunities in this new emerging technologies landscape

#### Course Details

**Target Audience:** Secondary, vocational, 2-year college, and general audience

**Estimated Time to Completion:** 20 hours

**Prerequisites:** None

**Course Delivery:** Instructor-led or Self-paced

#### Learning Component Highlights:

- ✓ 6 chapters
- ✓ 17 practice labs (plus 4 optional labs)
- ✓ 7 Cisco Packet Tracer activities
- ✓ 40+ interactive activities, videos, & quizzes
- ✓ 1 final exam

**Course Recognitions:** Certificate of Completion, Digital Badge

#### Recommended Insertion Points:

A great start for any learning path, and way to introduce the digital transformation before or during any Career course

#### Requirements & Resources

- **ASC Alignment Required:** No
- **Instructor Training Required:** No
- **Physical Equipment Required:** No  
(Optional labs require additional hardware)
- **Discount Availability:** Not Applicable

# IoT Fundamentals: Connecting Things

## Course Overview

This highly hands-on course introduces how to securely interconnect sensors, actuators, microcontrollers, single-board computers, and cloud services over Internet Protocol (IP) networks to create an end-to-end IoT system.

## Benefits

Develop the interdisciplinary skillset required to prototype an IoT solution for a specific business case with a strong focus on the security considerations for emerging technologies.

## Prepare for Careers

- ✓ Develop an entrepreneurial and design-thinking foundation for IoT job families that exist today and in the future
- ✓ Practice integrating hardware, software, data analytics, and security concepts
- ✓ Build your foundation to pursue more specialized networking, software development, and IoT skills

## Course Details

**Target Audience:** Secondary, vocational, 2-year and 4-year college, 4-year university students

**Estimated Time to Completion:** 40-50 hours

**Prerequisites:** Basic programming, networking, and electronics

**Course Delivery:** Instructor-led

### Learning Component Highlights:

- ✓ 6 chapters and 35 practice labs
- ✓ 9 Cisco Packet Tracer activities
- ✓ 32+ interactive activities, videos, & quizzes
- ✓ 1 final exam

**Course Recognitions:** Certificate of Completion

### Recommended Next Course:

IoT Fundamentals: Big Data & Analytics or Hackathon Playbook (Design Thinking)



**Requirements & Resources**

- **ASC Alignment Required:** Yes
- **Instructor Training Required:** Optional (Self-paced training option available)
- **Physical Equipment Required:** Yes
- **Discount Availability:** Not Applicable

# IoT Fundamentals: Big Data & Analytics

## Course Overview

This highly hands-on course introduces how to use Python data libraries to create a pipeline to acquire, transform and visualize data collected from IoT sensors and machines.

## Benefits

The transformative element of any IoT system is the data that can be collected from it. The ability to extract data and using data analytics techniques to gain insights are skills highly-valued by employers.

## Prepare for Careers

- ✓ Develop entrepreneurial and design-thinking skills for IoT job families that exist today and in the future
- ✓ Practice integrating hardware, software, data analytics, and security concepts
- ✓ Build your foundation to pursue more specialized networking, software development, and IoT skills

## Course Details

**Target Audience:** 2-year and 4-year college, 4-year university students

**Estimated Time to Completion:** 40-50 hours

**Prerequisites:** IoT Fundamentals: Connecting Things

**Course Delivery:** Instructor-led

### Learning Component Highlights:

- ✓ 6 chapters and 11 practice labs
- ✓ 18 Jupyter Notebooks (with Python code)
- ✓ 35+ interactive activities, videos, & quizzes
- ✓ 1 final exam

**Course Recognitions:** Certificate of Completion

### Recommended Next Course:

IoT Fundamentals: Hackathon Playbook



**Requirements & Resources**

- **ASC Alignment Required:** Yes
- **Instructor Training Required:** Optional (Self-paced training option available)
- **Physical Equipment Required:** Yes
- **Discount Availability:** Not Applicable

# Hackathon Playbook (Design Thinking)

## Course Overview

The Hackathon Playbook is a comprehensive framework of tools and templates to prepare and run a Hackathon as a result of best practices and lessons-learned collected from the global execution of IoT Hackathons within Networking Academy and by other organizers.

## Benefits

Practice design thinking through a hands-on project. Deepen your multidisciplinary IoT and data skills by defining, designing, prototyping, and presenting an IoT solution to a panel of industry experts and peers.

## Prepare for Careers

- ✓ Build a design thinking mindset
- ✓ Gain resume-worthy experience working on a real prototype
- ✓ Get feedback and mentorship from industry experts

## Course Details

**Target Audience:** Secondary, vocational, 2-year and 4-year college, 4-Year university students

**Estimated Time to Completion:** 20-30 hours

**Prerequisites:** IoT Fundamentals: Connecting Things and/or Big Data and Analytics

**Course Delivery:** Instructor-led

**Learning Component Highlights:**  
✓ Hands-on project

**Course Recognitions:** Certificate of Completion

**Recommended Next Course:**  
Any Networking Academy Career course, or an industry IoT training program



### Requirements & Resources

- **ASC Alignment Required:** Yes
- **Instructor Training Required:** Yes (Self-paced training option available)
- **Physical Equipment Required:** Yes
- **Discount Availability:** Not Applicable

# Programmable Infrastructure

## Infrastructure Automation



# DevNet Associate

## Course Overview

This course introduces the methodologies and tools of modern software development, applied to the IT and Network operations. It covers a 360° view of the domain including microservices, testing, containers and DevOps, as well as securely automating infrastructures with Application Programming Interfaces (APIs).

## Benefits

Gain practical, relevant, hands-on lab experience, including programming in Python, using GIT and common data formats (JSON, XML and YAML), deploying applications as containers, using Continuous Integration/Continuous Deployment (CI/CD) pipelines, and automating infrastructure using code.

## Prepare for Careers

- ✓ Develop skills for entry-level software development and infrastructure automation jobs
- ✓ Prepare for DevNet Associate certification exam

## Course Details

**Target Audience:** Secondary vocational students, 2-year and 4-year college students and participants of coding bootcamps

**Estimated Time to Completion:** 70 hours

**Recommended Preparation:**  
Object-oriented coding skills, equivalent to:  
PCAP: Programming Essentials in Python  
Fundamental skills of networking, equivalent to:  
CCNA: Introduction to Networks

**Course Delivery:** Instructor-led

**Learning Component Highlights:**  
✓ 8 modules and 23 practice labs  
✓ 5 Cisco Packet Tracer activities  
✓ 6 videos, 8 quizzes, 8 module exams  
✓ 1 final exam, 1 practice certification exam

**Course Recognitions:** Certificate of Completion, Letter of Merit, Digital Badge

**Recommended Next Course:** CCNA, CCNP Enterprise, or CyberOps Associate



Infrastructure Automation

### Requirements & Resources

- **ASC Alignment Required:** Yes
- **Instructor Training Required:** Yes
- **Physical Equipment Required:** No (Uses Virtual Machines on the student's computer)
- **Discount Availability:** Yes

# Workshop: Experimenting with REST APIs using Webex Teams

## Course Overview

This workshop introduces the basic competencies needed to create applications and automate tasks using REST APIs, the most popular architecture for software integration in IT.

## Benefits

Learn the value of the REST APIs architecture, practice Python programming skills, and perform basic software integration and automation using real-world APIs on an enterprise collaboration platform (Webex Teams).

## Prepare for Careers

- ✓ Emerging Technologies Workshops are short, hands-on experiences to quickly develop new skills for today's job market
- ✓ Participate in relevant professional communities of practice (Cisco DevNet, GitHub, and Stack Overflow)

## Course Details

**Target Audience:** Vocational, 2-year and 4-year College, 4-Year University students

**Estimated Time to Completion:** 8 hours

**Prerequisites:** Basic programming

**Course Delivery:** Instructor-led

**Learning Component Highlights:**  
✓ 2 chapters and 9 practice labs  
✓ 13 interactive activities  
✓ 1 final exam

**Course Recognitions:** Certificate of Completion

**Recommended Insertion Points:**  
PCAP: Programming Essentials in Python,  
IoT Fundamentals: Connecting Things

**Other Insertion Points:**  
IT Essentials, CCNA: Introduction to Networks



Infrastructure Automation

### Requirements & Resources

- **ASC Alignment Required:** Yes
- **Instructor Training Required:** No (Self-paced training option available)
- **Physical Equipment Required:** Internet access to Cisco DevNet Labs and APIs (Free)
- **Discount Availability:** Not Applicable

# Workshop: Model-Driven Programmability

## Course Overview

This workshop introduces students to device level programmability. By defining standardized device models and APIs, network device configuration and management tasks can be automated, making it easier to manage network devices at scale.

## Benefits

Learn key model-driven programmability concepts: YANG to model networking devices, RESTCONF and NETCONF for device-level APIs, and Python scripting to programmatically retrieve and update device configurations.

## Prepare for Careers

- ✓ Emerging Technologies Workshops are short, hands-on experiences to quickly develop new skills for today's job market
- ✓ Participate in relevant professional communities of practice (Cisco DevNet, GitHub, and Stack Overflow)

## Course Details

**Target Audience:** Vocational, 2-year and 4-year College, 4-year university students

**Estimated Time to Completion:** 8 hours

**Prerequisites:** Basic programming, CCNA: Switching, Routing, and Wireless Essentials (SRWE) or equivalent

**Course Delivery:** Instructor-led

**Learning Component Highlights:**

- ✓ 2 chapters and 10 practice labs
- ✓ 10 interactive activities
- ✓ 1 final exam

**Course Recognitions:** Certificate of Completion, Digital Badge

**Recommended Insertion Points:**

- After CCNA: SRWE
- With Network Security or CCNP Enterprise: Core Networking (ENCOR)



Infrastructure Automation

### Requirements & Resources

- **ASC Alignment Required:** Yes
- **Instructor Training Required:** No (Self-paced training option available)
- **Physical Equipment Required:** Internet access to Cisco DevNet Labs and APIs (Free)
- **Discount Availability:** Not Applicable

# Cybersecurity



# Introduction to Cybersecurity

## Course Overview

This course explores cyber trends, threats, and staying safe in cyberspace, and protecting personal and company data.

## Benefits

Today's interconnected world makes everyone more susceptible to cyber-attacks. Learn how to protect your personal data and privacy online and in social media, and why more and more IT jobs require cybersecurity awareness and understanding.

## Explore Opportunities in Technology

- ✓ Explore the world of cybersecurity and how it relates to YOU
- ✓ Develop your cybersecurity basics for a secure and safe digital life
- ✓ Start exploring the many career possibilities these skills can open up for you

## Course Details

**Target Audience:** Secondary and 2-Year college students, general audience

**Estimated Time to Completion:** 15 hours

**Prerequisites:** None

**Course Delivery:** Instructor-led or Self-paced

### Learning Component Highlights:

- ✓ 5 modules and 7 practice labs
- ✓ Interactive activities & quizzes
- ✓ 1 final exam

**Course Recognitions:** Certificate of Completion, Digital Badge

**Recommended Next Course:** Cybersecurity Essentials



## Requirements & Resources

- **ASC Alignment Required:** No
- **Instructor Training Required:** No
- **Physical Equipment Required:** No
- **Discount Availability:** Not Applicable

# Cybersecurity Essentials

## Course Overview

This course covers essential knowledge for all cybersecurity domains including information security, systems security, network security, ethics and laws, and defense and mitigation techniques used in protecting businesses

## Benefits

The demand for security professionals continues to grow. Develop a foundational understanding of cybercrime, security principles, technologies, and procedures used to defend networks.

## Explore Opportunities in Technology

- ✓ Build your cybersecurity foundation
- ✓ Take the next step in exploring the many career possibilities in cybersecurity
- ✓ See if you want to pursue job roles in networking or cybersecurity

## Course Details

**Target Audience:** Secondary and 2-year college vocational students

**Estimated Time to Completion:** 30 hours

**Prerequisites:** Introduction to Cybersecurity

**Course Delivery:** Instructor-led or Self-paced

### Learning Component Highlights:

- ✓ 8 chapters and 12 practice labs
- ✓ 10 Cisco Packet Tracer activities
- ✓ 40+ interactive activities & quizzes
- ✓ 1 final exam

**Course Recognitions:** Certificate of Completion, Digital Badge

**Recommended Next Course:** CyberOps Associate



## Requirements & Resources

- **ASC Alignment Required:** No
- **Instructor Training Required:** No
- **Physical Equipment Required:** No
- **Discount Availability:** Not Applicable

# CyberOps Associate

## Course Overview

This course introduces the core security concepts and skills needed to monitor, detect, analyze, and respond to cybercrime, cyberespionage, insider threats, advanced persistent threats, regulatory requirements, and other cybersecurity issues facing organizations.

## Benefits

Gain practical, hands-on skills needed to maintain and ensure security operational readiness of secure networked systems.

## Prepare for Careers

- ✓ Develop skills for entry-level security operations center (SOC) jobs
- ✓ Prepare for CyberOps Associate certification
- ✓ Pursue a career in cybersecurity operations, a rapidly-growing, exciting new area that spans all industries

## Course Details

**Target Audience:** Students enrolled in technology degree programs at higher education institutions; IT professionals who wants to pursue a career in Security Operations

**Estimated Time to Completion:** 70 hours

**Recommended Preparation:** Introduction to Cybersecurity, Cybersecurity Essentials


**Course Delivery:** Instructor-led

### Learning Component Highlights:

- ✓ 28 chapters and 46+ practice labs
- ✓ 6 Cisco Packet Tracer activities
- ✓ 113 interactive activities, videos, & quizzes
- ✓ 1 practice certification exam

**Course Recognitions:** Certificate of Completion, Letter of Merit, Digital Badge

**Recommended Next Course:** Network Security, IoT Security



## Requirements & Resources

- **ASC Alignment Required:** Yes
- **Instructor Training Required:** Yes
- **Physical Equipment Required:** No (Uses Virtual Machines on the student's computer)
- **Discount Availability:** Yes

# Network Security

## Course Overview

This course introduces the core security concepts and skills needed to configure and troubleshoot computer networks and help ensure the integrity of devices and data.

## Benefits

Gain practical, hands-on skills to design, implement, and manage network security systems and ensure their integrity.

## Prepare for Careers

- ✓ Build expertise in network security and data protection
- ✓ Develop skills for entry-level network security specialist roles
- ✓ Gain industry in-demand skills aligned with the National Institute for Standards and Technology (NIST) Cybersecurity Framework

## Course Details

**Target Audience:** 2-year and 4-year college students in Networking or Engineering programs

**Estimated Time to Completion:** 70 hours

**Recommended Preparation:** Basic understanding of computer networks (CCNA: Introduction to Networks and CCNA: Switching, Routing, and Wireless Essentials, or equivalent)

**Course Delivery:** Instructor-led

### Learning Component Highlights:

- ✓ 22 modules and 25 practice labs
- ✓ 22 Cisco Packet Tracer activities
- ✓ 87+ interactive activities, videos, and quizzes
- ✓ 1 final exam

**Course Recognitions:** Certificate of Completion, Letter of Merit, Digital Badge

**Recommended Next Course:** CyberOps Associate, IoT Security



## Requirements & Resources

- **ASC Alignment Required:** Yes
- **Instructor Training Required:** Yes
- **Physical Equipment Required:** Yes
- **Discount Availability:** Not Applicable

# IoT Security

## Course Overview

The explosive growth of connected IoT devices also increases the exposure to security threats. Learn to perform vulnerability and risk assessments, and research and recommend risk mitigation strategies for common security threats in IoT systems.

## Benefits

Learn practical tools for evaluating security vulnerabilities, perform threat modeling, and recommend threat mitigation measures. Gain hands-on, transferable skills relevant across IoT and other network architectures.

## Prepare for Careers

- ✓ Develop skills for entry-level roles in the rapidly growing IoT and security domains
- ✓ Increase awareness of emerging technologies in the IoT Security space, such as Blockchain

## Course Details

**Target Audience:** Vocational, 2-year and 4-year College, 4-Year University students

**Estimated Time to Completion:** 50 hours

### Prerequisites:

- IoT Fundamentals: Connecting Things
- Networking Essentials and Cybersecurity Essentials (or equivalent)

**Course Delivery:** Instructor-led

### Learning Component Highlights:

- ✓ 6 chapters and 24 practice labs
- ✓ 5 Cisco Packet Tracer activities
- ✓ 50+ interactive activities, videos, & quizzes
- ✓ 1 hands-on capstone activity
- ✓ 1 IoT Security game with 10 missions
- ✓ 1 final exam

**Course Recognitions:** Certificate of Completion

### Recommended Next Course:

Network Security or CyberOps Associate



 Cybersecurity

## Requirements & Resources

- **ASC Alignment Required:** Yes
- **Instructor Training Required:** Optional
- **Physical Equipment Required:** Yes
- **Discount Availability:** Yes

# Additional Courses



# Entrepreneurship

## Course Overview

This course teaches business and financial skills, behaviors, and attitudes, to help students develop an entrepreneurial mindset. Students learn by completing a series of interactive case studies that present realistic scenarios.

## Benefits

Supplement your technical expertise with with entrepreneurial thinking, business development, and financial management skills.

## Explore Opportunities in Technology

- ✓ Explore how to think like an entrepreneur
- ✓ Expand your mindset and employability with skills complementary to IT expertise
- ✓ Start exploring the many career possibilities these skills can open up for you

## Course Details

**Target Audience:** General audience

**Estimated Time to Completion:** 15 hours

**Recommended Preparation:**  
CCNA: Introduction to Networks

**Course Delivery:** Instructor-led or Self-paced

**Learning Component Highlights:**  
✓ 7 modules with interactive, online case studies

**Course Recognitions:** Certificate of Completion

**Recommended Next Course:**  
Hackathon Playbook (Design Thinking)

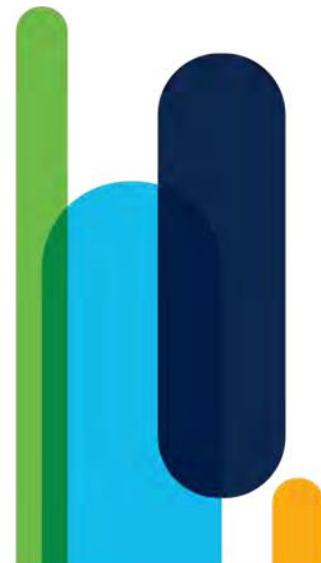


## Requirements & Resources

- **ASC Alignment Required:** No
- **Instructor Training Required:** No
- **Physical Equipment Required:** No
- **Discount Availability:** Not Applicable

# Practice

Hands-on tools & interactive experiences  
to build skills, not just knowledge



# Hands-On Practice

A key pillar of Networking Academy



Motivate your students with exciting experiences that make learning very real



Accelerate and optimize each student's path to career-ready skills



Build student confidence: "I can do this!"



Developed by learning scientists & subject-matter experts



# A Suite of Lab Environments

Options ranging from simulation to physical hardware



**Simulation with Packet Tracer**



**Virtualized Equipment**



**Virtual Machines**



**Prototyping Lab**



**Remote Equipment**



**Physical Hardware**

# Packet Tracer

## Overview

Cisco Packet Tracer is a powerful simulation and visualization learning environment. Practice building simple and complex networks across a variety of devices and extend beyond routers and switches.

## Benefits

Teach complex concepts without complex hardware. Leverage the versatility of simulation for lectures, labs, games, homework, assessments, competitions, and distance learning.

## Build Skills for Success

- ✓ Quickly try, experiment, learn, repeat
- ✓ Practice teamwork, critical thinking and creative problem solving skills
- ✓ Integration with online assessment engine prepares students for hands-on assessments

## Details

### Use it to:

- Create and configure your own networks
- Practice cabling your devices in the rack with Physical Mode
- See how packets travel through your network with Simulation Mode
- Program your own IoT smart solution
- And more!

### How to Access:

Enroll in Introduction to Packet Tracer course to download desktop version

### Courses that use Packet Tracer include:

- Networking Essentials
- Cybersecurity Essentials
- IT Essentials
- CCNA
- CyberOps Associate
- DevNet Associate
- CCNP Enterprise
- Introduction to Internet of Things (IoT)
- IoT Fundamentals: Connecting Things
- IoT Security
- Network Security



**Practice**

**Requirements & Resources**

- **Cost:** Free

# Introduction to Packet Tracer

## Course Overview

The Introduction to Packet Tracer series is designed for new users of Packet Tracer for self-study and familiarization with the tool used in many Networking Academy courses. Packet Tracer courses are available for the desktop and for mobile (Android and iOS).

## Benefits

The Introduction to Packet Tracer series introduces tips and best practices to help instructors and students use Cisco Packet Tracer as an effective and engaging learning and assessment tool.

## Explore Opportunities in Technology

- ✓ Learn the power of simulation tools to build and investigate networks in software
- ✓ Get familiar using Cisco Packet Tracer, a key learning tool you will use in NetAcad courses

## Course Details

**Target Audience:** General audience

**Estimated Time to Completion:** 10 hours

**Prerequisites:** None

**Course Delivery:** Instructor-led or Self-paced

### Learning Component Highlights:

- ✓ 8 chapters with instructional videos
- ✓ 13 Cisco Packet Tracer activities
- ✓ Sample files
- ✓ 2 quizzes

**Course Recognitions:** Certificate of Completion, Digital Badge

**Recommended Next Course:** Networking Essentials



**Networking**

**Requirements & Resources**

- **ASC Alignment Required:** No
- **Instructor Training Required:** No
- **Physical Equipment Required:** No
- **Discount Availability:** Not Applicable

# Virtual Machines (VM)

## Overview

Virtual machines are virtual environments that emulate a computer system. These self-contained virtual environments let students explore systems to the breaking point without causing actual damage.

## Benefits

Experiment and explore in a low-risk environment. Deliberately test security threats and malware in a safe environment.

## Build Skills for Success

- ✓ Hands-on cybersecurity practice
- ✓ Students become familiar with virtual machines to prepare for on-the-job skills

## Details

### Use it to:

- Teach virtual machine technology
- Simulate real-world cybersecurity threat scenarios
- Create opportunities for ethical hacking, security monitoring, analysis, and resolution

### How to Access:

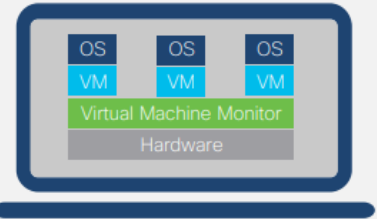
Free software download from Oracle VirtualBox  
<https://www.oracle.com/virtualization/technologies/vm/downloads/virtualbox-downloads.html>

### Courses that use Virtual Machines include:

- CCNA
- CyberOps Associate
- Emerging Technologies Workshop: Model-Driven Programmability
- DevNet Associate



## Practice



## Requirements & Resources

- **Cost:** Free

# Prototyping Lab (PL App)

## Overview

Dive into the world of sensors and connected things. The Prototyping Lab Kit uses a Raspberry Pi and Arduino setup to create an end-to-end IoT system on a lab table.

## Benefits

Lab setup is easy with low-cost hardware and app download. Use real devices & code to collect, analyze, and present data from the physical world.

## Build Skills for Success

- ✓ Spark entrepreneurial and systems thinking
- ✓ Students gain hands-on experience with an entire IoT system
- ✓ Build programming skills with Blockly visual programming or coding in Python

## Details

### Use it to:

- Acquire physical data with Arduino
- Collect and analyze data on Raspberry Pi
- Visualize data with Jupyter Notebook
- Connect to cloud applications with REST APIs

### How to Access:

Prototyping Lab is comprised of the Prototyping Lab Kit (hardware) and Prototyping Lab App (software).

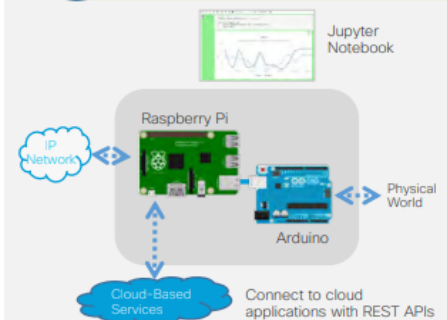
Find the hardware list and software download links on the Resources page:  
<https://www.netacad.com/portal/resources/course-resources/cisco-prototyping-lab-resources>

### Courses that use Prototyping Lab include:

- IoT Fundamentals: Connecting Things
- IoT Fundamentals: Big Data & Analytics
- Hackathon Playbook (Design Thinking)
- IoT Security



## Practice



## Requirements & Resources

- **Cost:** Yes (for hardware); Free software download

# Remote Equipment: NDG NETLAB+

## Overview

Connect to real hardware through the web. Available through Networking Academy partnerships:

NDG NETLAB+ provides cloud-based, remote access to networking equipment and PCs.

## Benefits

Reduce your setup time for complex labs with on-demand remote access to lab equipment when you need it.

## Build Skills for Success

- ✓ Provide practice opportunities for students to complete labs from anywhere
- ✓ Supplement your lab offerings when physical hardware is not available at your institution

## Details

### Use it to:

- Access remote IT equipment through a web browser
- Reduce your lab setup time

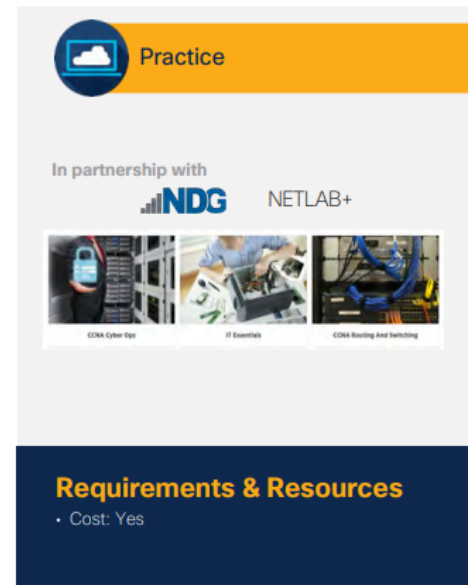
### How to Access:

Learn more at the NDG NETLAB+ page for Networking Academy.

<https://www.netdevgroup.com/content/cnap/>


### Courses that use Remote Equipment include:

- CCNA
- CCNP Enterprise
- IT Essentials
- CyberOps Associate
- Network Security



**Practice**

In partnership with **NDG** NETLAB+



CCNA Cyber Ops IT Essentials CCNA Routing and Switching

**Requirements & Resources**

- Cost: Yes

# Remote Equipment: DevNet Sandbox

## Overview

Connect to real hardware through the web. Available through Networking Academy partnerships:

Cisco DevNet Sandbox offers packaged labs for software development, testing APIs, training, hackathons, and more.

## Benefits

Reduce your setup time for complex labs with on-demand remote access to lab equipment when you need it.

## Build Skills for Success

- ✓ Students get experience running their code against live network infrastructure
- ✓ Practice working in a sandbox environment just like on-the-job software developers

## Details

### Use it to:

- Interact with live network infrastructure and programmable devices using real-world Application Programming Interfaces (APIs)

### How to Access:

Learn more at the Cisco DevNet Sandbox page

<https://developer.cisco.com/site/sandbox/>

### Courses that use Remote Equipment include:

- Workshop: Experimenting with REST APIs
- Workshop: Model-Driven Programmability
- DevNet Associate



**Practice**

**DEVNET** DevNet Sandbox



**Requirements & Resources**

- Cost: Free

# Physical Hardware

## Overview

Bring the real world inside the classroom so students can practice physical, sensory skills. Seeing and exploring with real equipment makes the abstract more tangible.

## Benefits

Excite learners to consider career pathways in networking technology, and increase retention through tactile learning.

## Build Skills for Success

- ✓ Provide hands-on practice with the same devices found in the work environment
- ✓ Students gain real experience even before on-the-job training
- ✓ Build transferable, career-ready skills

## Details

### How to Access:

1. Contact a local Cisco Reseller Partner for pricing and order fulfillment. Use [Partner Finder](#) to find one near you.
2. Consider working with an Academy Support Center (ASC) who can help you choose the best way to secure equipment needed for your location. They may offer loaner equipment or used equipment options

### Courses that use Physical Hardware include:

- Networking Essentials
- IT Essentials
- CCNA
- CCNP Enterprise
- Network Security
- IoT Security



## Requirements & Resources

- **Cost:** Yes

## Discounts

Equipment discounts are available for Networking Academy institutions. Available for Cisco equipment needed for Networking Academy courses and labs when purchased through a Cisco Reseller Partner.