

# CYBERSECURITY & NETWORK ENGINEERING TECHNOLOGY

## Cybersecurity & Network Engineering Technology with Specializations in:

- Cloud Infrastructure Security
- Cyber Security

### Associate in Science Degree (CIP# 1511100112)

This program is designed to prepare students for careers in network engineering technology and IP Communications. Graduates will be qualified for technological roles in network design, network infrastructure, network installation, network security and maintenance, inter-network communication and connectivity, network monitoring and administration, and digital forensics and incident response. This hands-on program includes several courses that are essential in preparing individuals for achieving the requirements to take the examinations of various certifications including: A+, Network+, Security+, Cisco Certified Network Associate (CCNA), Microsoft Certified IT Professional (MCITP), Microsoft Certified Solutions Associate (MCSA), Certified Ethical Hacker (CEH), Cisco Certified Network Associate-Security (CCNA-Security), Systems Security Certified Practitioner (SSCP), and Certified Hacking Forensic Investigator (HFI).

Students are strongly encouraged to consult a student success coach in the department office for assistance in determining the best education plan for their career goals.

Although scheduling may not always provide for the following progression of courses, students should use the foundation, intermediate and advanced course sequence as a guide in program planning.

All degree-seeking students must satisfy entry testing requirements and satisfactorily complete all mandatory courses in reading, student success, mathematics, English, and English for Academic Purposes in which the student is placed.

### Alternative Ways to Earn Credit toward this Degree

Graduates of specific programs at Orange Technical College and Osceola Technical College, as well as other institutions may be eligible to receive college credit for courses in this program. You may also be eligible to receive credit toward this degree if you have earned one of the approved Gold Standard industry certifications or Career Pathways credit. To learn more about Valencia's award of credit options, visit <https://valenciacollege.edu/academics/programs/as-degree/alternative-award-of-credit-agreements.php>. Eligible students should contact the Student Success Coach in their academic department for more information about the requirements for the award of credit.

### College Credit Technical Certificates

The Cybersecurity & Network Engineering A.S. degree also offers the following college credit certificate programs. These certificates can put you on the fast-track to reaching your career goals. They are designed to equip you with a specialized skill set for entry-level employment or to upgrade your skills for job advancement. Most can be completed in one year or less, and all of the courses in the certificates are embedded in the A.S. degree. You can earn the certificates as you progress through your A.S. Degree or as a separate, stand-alone credential. Click on the

Certificate tab at the top of the page for more information about the certificates that are offered.

- **Cloud Computing Architecture (24 credits) (CIP # 0511100116)**
- **Cyber Security (30 credits) (CIP # 0511100118)**
- **Linux Enterprise Server Administration (24 credits) (CIP # 0511100122)**
- **Network Infrastructure (21 credits) (CIP # 0511100114)**
- **Network Support (21 credits) (CIP # 0511100121)**
- **Network Administration (24 credits) (CIP # 0511100112)**

### Start Right

Degree-seeking students enrolling at Valencia for the first time will have a limited range of courses from which to choose for their first 18 college-level credits. Within the first 18 college credit hours, you will be required to take ENC1101 (3 credits), and if applicable, SLS 1122 (3 credits) and a mathematics course appropriate to your selected meta-major (3 credits). The remaining courses will be chosen from the General Education Core Courses in humanities (3 credits), science (3 credits), or social science (3 credits), and/or the introductory courses within the A.S. degree programs. For specific courses see the *Foundation Courses* on the "Program Requirements" tab. For course sequencing recommendations, see your Student Success Coach or create an education plan by logging into MyVC, clicking on the LifeMap tab and clicking My Education Plan.

### Potential Careers

- Network and Computer Systems Administrator
- WAN/LAN Manager
- Network Systems Analyst
- Network Technician
- Computer Network Support Specialist
- Information Security Analyst
- Computer Security Specialist
- Data Center Support Specialist

### Salary & Earnings Information

For career information related to this program, please visit **O\*Net OnLine** (<https://www.onetonline.org/>).

## Contacts

### Future Students

To learn more about this program, contact Enrollment Services at [enrollment@valenciacollege.edu](mailto:enrollment@valenciacollege.edu) or 407-582-1507 or visit [valenciacollege.edu/network-engineering/](https://valenciacollege.edu/network-engineering/) (<https://valenciacollege.edu/network-engineering/>).

### Current Students

Your Student Success Coach contact information can be found in MyVC. Log into MyVC, click on the Courses tab, and check your Academic Profile information to find a link to your Coach.

### Faculty Program Chair

Joan Alexander: 407-582-1542  
[jalexander@valenciacollege.edu](mailto:jalexander@valenciacollege.edu) ([wyouusif@valenciacollege.edu](mailto:wyouusif@valenciacollege.edu))

## Internship and Workforce Services

If you need assistance with job resources or in locating an internship, please visit: [valenciacollege.edu/internship](https://valenciacollege.edu/internship/) (<https://valenciacollege.edu/internship/>).

## Program Requirements

### Foundation Courses

ENC 1101	FRESHMAN COMPOSITION I <sup>++~</sup>	3
CET 2178C	COMPUTER HARDWARE <sup>+A1</sup>	3
CET 2486C	LOCAL AREA NETWORKS <sup>+N1C1</sup>	3
CNT 2417C	CYBERSECURITY OPERATIONS <sup>++O1</sup>	3
Humanities	See Gen. Ed. Core Requirement <sup>~</sup>	3
Science	See Gen. Ed. Core Requirement <sup>~</sup>	3
Mathematics	See Gen. Ed. Core Requirement <sup>++~</sup>	3
POS 2041	U.S. GOVERNMENT <sup>++~</sup>	3
or AMH 2010	UNITED STATES HISTORY TO 1877	
or AMH 2020	U.S. HISTORY 1877 TO PRESENT	

### Intermediate Courses

CET 1610C	CISCO ROUTER TECHNOLOGY <sup>++C1</sup>	3
CET 2660C	LINUX NETWORKING AND SECURITY <sup>++L1</sup>	3
CET 2830C	INFORMATION SECURITY <sup>++S1</sup>	3
CET 2544C	COMPUTER VIRTUALIZATION TECHNOLOGY <sup>++V1</sup>	3
CET 2792C	INSTALLING AND CONFIGURING WINDOWS SERVER <sup>++M1</sup>	3
CNT 2000C	NETWORK AUTOMATION WITH SCRIPTING LANGUAGES <sup>++L1</sup>	3
CET 2793C	ADMINISTERING WINDOWS SERVER <sup>++</sup>	3
CTS 2322C	RED HAT ENTERPRISE LINUX <sup>++L1</sup>	2
CET 2942	INTERNSHIP IN NETWORKING <sup>*</sup>	1
or CGS 2650	SOCIAL NETWORKING FOR JOB SEARCH	
Specialization (See below)		12

**Total Credit Hours** **60**

+ This course must be completed with a grade of C or better.

\* This course has a prerequisite; check description in Valencia catalog.

~ This is a general education course.

(GB) notes a Gordon Rule course.

<sup>1</sup> Any course with a subject prefix of CET, CNT, CTS, or COP not already used to satisfy program requirements

A1 This course is part of a sequence which prepares students for a CompTIA A+ certification examination.

N1 This course is part of a sequence which prepares students for a Network + certification examination

S1 This course is part of a sequence which prepares students for a Security + certification examination

C1 This course is part of a sequence which prepares students for the Cisco Certified Network Associate certification (CCNA).

V1 This course is part of a sequence which prepares students for a VMware certification examination.

M1 This course is part of a sequence which prepares students for a Microsoft certification examination.

L1 This course is part of a sequence which prepares students for a Red Hat Linux certification examination.

Z This course prepares students for the Amazon Certified Cloud Practitioner Certification.

P This course prepares the students for the Palo Alto Networks Certified Network Security Administrator (PCNSA).

O1 This course is part of a sequence which prepares students for the Cisco Certified CyberOps Associate Certification.

## Cloud Infrastructure Security Specialization

### Program Outcomes

- Carry out procedures for installing, upgrading, securing, and optimizing operating systems and computer network equipment.
- Identify the causes of networking problems, using diagnostic testing software and equipment.
- Implement infrastructures for secured cloud computing services.
- Engage effectively in interpersonal, oral, visual, and written communication.

CET 2615C	ROUTING & SWITCHING IN THE ENTERPRISE <sup>++C1</sup>	3
CET 2620C	NETWORK FIREWALLS <sup>++</sup>	3
CET 2890C	ADVANCED CYBERSECURITY OPERATIONS <sup>++</sup>	3
CNT 2426C	CLOUD INFRASTRUCTURE SECURITY <sup>++Z</sup>	3
<b>Total Credit Hours</b>		<b>12</b>

\* This course has a prerequisite; check description in Valencia catalog.

## Cyber Security Specialization

### Program Outcomes

- Carry out procedures for installing, upgrading, securing, and optimizing operating systems and computer network equipment.
- Identify the causes of networking problems, using diagnostic testing software and equipment.
- Defend an enterprise-level network against cyber threats and attacks.
- Engage effectively in interpersonal, oral, visual, and written communication.

CNT 2414C	CYBERCRIME INVESTIGATION <sup>++</sup>	3
CET 2890C	ADVANCED CYBERSECURITY OPERATIONS <sup>++O1</sup>	3
CET 2892C	ETHICAL HACKING <sup>++</sup>	3

CET 2894C	PROJECTS IN CYBER SECURITY: CAPSTONE COURSE **	3
<b>Total Credit Hours</b>		<b>12</b>

\* This course has a prerequisite; check description in Valencia catalog.

#### Notes:

All specialized program courses are offered on the West Campus and may not be offered every session; some specialized courses are offered at other locations.

Expand your career opportunities with a Bachelor's Degree in Business and Organizational Leadership (BASBOL) from Valencia. This degree builds on your skills, and prepares you for a supervisory or management role within your respective field. For more information, go to: Bachelor's Degree in Business & Organizational Leadership (<http://catalog.valenciacollege.edu/degrees/bachelorofscience/bas/>). Students who wish to continue their education should consult with a Student Success Coach to determine the best education plan for their career goals.

Students wishing to transfer credits from this program to another institution must accept responsibility for securing approval from the transfer institution for acceptance of this degree.

## Cloud Computing Architecture

### Technical Certificate

This technical certificate program prepares the student for employment as Cloud Computing Engineer, Cloud Systems Architect, Cloud Solutions Architect, and Cloud Infrastructure Architect.

#### Program Outcomes

- Carry out procedures for installing, upgrading, securing, and optimizing operating systems and computer network equipment
- Identify the causes of networking problems, using diagnostic testing software and equipment
- Implement infrastructures for cloud computing services

CET 2486C	LOCAL AREA NETWORKS	3
CET 2178C	COMPUTER HARDWARE	3
CNT 2417C	CYBERSECURITY OPERATIONS *	3
CET 2792C	INSTALLING AND CONFIGURING WINDOWS SERVER *	3
CET 2660C	LINUX NETWORKING AND SECURITY *	3
CET 2830C	INFORMATION SECURITY *	3
CET 2544C	COMPUTER VIRTUALIZATION TECHNOLOGY *	3
CNT 2426C	CLOUD INFRASTRUCTURE SECURITY *	3
<b>Total Credit Hours</b>		<b>24</b>

## Cybersecurity

### Technical Certificate

This technical certificate program prepares the students for employment as Information Security Managers; Network Security Professionals; Security Penetration Testing Professionals; and Systems Security Practitioners. The content includes, but is not limited to, the selection and deployment of various network security appliances such as firewalls, proxy servers, intrusion detection systems, intrusion prevention systems,

and adaptive security appliances. Additionally, the content includes the selection and deployment of various propriety and/or open-source network penetration testing tools.

#### Program Outcomes

- Carry out procedures for installing, upgrading, securing, and optimizing operating systems and computer network equipment
- Identify the causes of networking problems, using diagnostic testing software and equipment
- Audit organizational preparedness capabilities in responding to cyber attacks.
- Defend an enterprise network against Cyber threats and attacks

CET 2178C	COMPUTER HARDWARE	3
CET 2486C	LOCAL AREA NETWORKS	3
CNT 2417C	CYBERSECURITY OPERATIONS *	3
CET 2660C	LINUX NETWORKING AND SECURITY *	3
CET 2792C	INSTALLING AND CONFIGURING WINDOWS SERVER *	3
CET 1610C	CISCO ROUTER TECHNOLOGY *	3
CET 2830C	INFORMATION SECURITY *	3
CET 2890C	ADVANCED CYBERSECURITY OPERATIONS *	3
CET 2892C	ETHICAL HACKING *	3
CET 2894C	PROJECTS IN CYBER SECURITY: CAPSTONE COURSE *	3

**Total Credit Hours** **30**

\* This course has a prerequisite; check description in Valencia catalog.

## Linux Enterprise Server Administration

### Technical Certificate

This technical certificate program prepares students for employment as Linux Server Administrators, Red Hat Linux System Administrators, Red Hat Linux Engineers, and Ansible Automation Architects.

#### Learning Outcomes

- Carry out procedures for installing, upgrading, securing, and optimizing operating systems and computer network equipment
- Identify the causes of networking problems, using diagnostic testing software and equipment
- Manage Linux enterprise servers

CET 2486C	LOCAL AREA NETWORKS	3
CNT 2417C	CYBERSECURITY OPERATIONS *	3
CET 2178C	COMPUTER HARDWARE	3
CET 2544C	COMPUTER VIRTUALIZATION TECHNOLOGY *	3
CET 2792C	INSTALLING AND CONFIGURING WINDOWS SERVER	3
CET 2660C	LINUX NETWORKING AND SECURITY *	3
CTS 2322C	RED HAT ENTERPRISE LINUX *	2
CNT 2000C	NETWORK AUTOMATION WITH SCRIPTING LANGUAGES	3

Restricted Electives: (CET 2942C, CGS 2650, or any CET, CNT prefix courses)	1
<b>Total Credit Hours</b>	<b>24</b>

## Network Administration

### Technical Certificate

This technical certificate program prepares the student for employment as Microsoft Certified Professional (MCP); Microsoft Certified IT Professional (MCITP): Server Administrator; Microsoft Certified Technology Specialist (MCTS); and Microsoft Certified Solutions Associate (MCSA).

### Program Outcomes

- Carry out procedures for installing, upgrading, securing, and optimizing operating systems and computer network equipment
- Identify the causes of networking problems, using diagnostic testing software and equipment
- Setup a Microsoft Windows Network
- Manage a Microsoft Windows Network

CET 2178C	COMPUTER HARDWARE	3
CET 2486C	LOCAL AREA NETWORKS	3
CNT 2417C	CYBERSECURITY OPERATIONS *	3
CET 2544C	COMPUTER VIRTUALIZATION TECHNOLOGY *	3
CET 2660C	LINUX NETWORKING AND SECURITY *	3
CET 2830C	INFORMATION SECURITY *	3
CET 2792C	INSTALLING AND CONFIGURING WINDOWS SERVER *	3
CET 2793C	ADMINISTERING WINDOWS SERVER *	3
<b>Total Credit Hours</b>		<b>24</b>

\* This course has a prerequisite; check description in Valencia catalog.

## Network Infrastructure

### Technical Certificate

This technical certificate program prepares the student for employment as Cisco Certified Entry-Level Network Technician – Routing and Switching; and Cisco Certified Network Associate – Routing and Switching.

### Program Outcomes

- Carry out procedures for installing, upgrading, securing, and optimizing operating systems and computer network equipment
- Identify the causes of networking problems, using diagnostic testing software and equipment
- Deploy Cisco networking devices including Routers and Switches in a network infrastructure
- Implement routing and switching protocols and services

CET 2178C	COMPUTER HARDWARE	3
CET 2486C	LOCAL AREA NETWORKS	3
CNT 2417C	CYBERSECURITY OPERATIONS *	3
CET 2660C	LINUX NETWORKING AND SECURITY *	3
CET 1610C	CISCO ROUTER TECHNOLOGY *	3
CET 2615C	ROUTING & SWITCHING IN THE ENTERPRISE *	3

CET 2620C	NETWORK FIREWALLS *	3
<b>Total Credit Hours</b>		<b>21</b>

\* This course has a prerequisite; check description in Valencia catalog.

## Network Support

### Technical Certificate

This technical certificate program prepares the student for employment as PC Technician; Computer Support Specialist, and Network Support Technician.

### Program Outcomes

- Carry out procedures for installing, upgrading, securing, and optimizing operating systems and computer network equipment
- Identify the causes of networking problems, using diagnostic testing software and equipment

### Foundation Courses

CET 2178C	COMPUTER HARDWARE	3
CET 2486C	LOCAL AREA NETWORKS	3
CNT 2417C	CYBERSECURITY OPERATIONS *	3
CET 1610C	CISCO ROUTER TECHNOLOGY *	3
CET 2660C	LINUX NETWORKING AND SECURITY *	3
CET 2792C	INSTALLING AND CONFIGURING WINDOWS SERVER *	3
CET 2830C	INFORMATION SECURITY *	3
<b>Total Credit Hours</b>		<b>21</b>

\* This course has a prerequisite; check description in Valencia catalog.