

CYBERSECURITY & NETWORK ENGINEERING TECHNOLOGY

Cybersecurity & Network Engineering Technology with Specializations in:

- Cloud Infrastructure Security
- Cyber Forensics
- 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), Cisco Certified Network Associate-Voice (CCNA-V), 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), Certified Hacking Forensic Investigator (HFI) and AccessDate Certified Examiner (ACE).

Students are strongly encouraged to consult a career program advisor 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 Career Program Advisor 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)**
- **Digital Forensics (32 credits) (CIP # 0511100119)**
- **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 Career Program Advisor or create an education plan by logging into Atlas, 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 or 407-582-1507 or visit valenciacollege.edu/network-engineering/ (<https://valenciacollege.edu/network-engineering/>).

Current Students

Your Career Program Advisor contact information can be found in Atlas. Log into Atlas, click on the Courses tab, and check your Academic Profile information to find a link to your Advisor.

Faculty Program Chair

Joan Alexander: 407-582-1542
jalexander@valenciacollege.edu (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/>).

Program Requirements

Foundation Courses

ENC 1101	FRESHMAN COMPOSITION I ^{++~}	3
CET 2178C	COMPUTER HARDWARE ^{A1}	3
CET 2486C	LOCAL AREA NETWORKS ^{N1}	3
CNT 2417C	CYBERSECURITY OPERATIONS [*]	3
Humanities	See Gen. Ed. Core Requirement [~]	3
Science	See Gen. Ed. Core Requirement [~]	3
Mathematics	See Gen. Ed. Core Requirement ^{++~}	3
Social Science	POS 2041 US GOV or AMH 2020 US HISTORY [~]	3

Intermediate Courses

CET 1610C	CISCO ROUTER TECHNOLOGY ^{*C1}	3
CET 2660C	LINUX NETWORKING AND SECURITY ^{*L1}	3
CET 2830C	INFORMATION SECURITY ^{*S1}	3
CET 2544C	COMPUTER VIRTUALIZATION TECHNOLOGY ^{*V1}	3
CET 2792C	INSTALLING AND CONFIGURING WINDOWS SERVER ^{*M1}	3
CNT 2000C	NETWORK AUTOMATION WITH SCRIPTING LANGUAGES [*]	3
CET 2793C	ADMINISTERING WINDOWS SERVER [*]	3
CTS 2322C	RED HAT ENTERPRISE LINUX ^{*L1}	2
CET 2942	INTERNSHIP IN NETWORKING [*]	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.

(GR) Denotes a Gordon Rule course.

1 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 a Cisco certification examination.

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 Read Hat Linux certification examination.

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 [*]	3
CET 2620C	NETWORK FIREWALLS [*]	3
CET 2890C	ADVANCED CYBERSECURITY OPERATIONS [*]	3
CNT 2426C	CLOUD INFRASTRUCTURE SECURITY [*]	3

Total Credit Hours 12

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

Cyber Forensics 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.
- Conduct Cyber Forensics Investigations.
- Engage effectively in interpersonal, oral, visual, and written communication.

CNT 2414C	CYBERCRIME INVESTIGATION [*]	3
CET 2880C	DIGITAL FORENSICS I [*]	3
CET 2881C	DIGITAL FORENSICS II [*]	3

CNT 2413C	NETWORK FORENSICS & INCIDENT RESPONSE *	3
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Total Credit Hours 12

* 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 *	3
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CET 2890C	ADVANCED CYBERSECURITY OPERATIONS *	3
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CET 2892C	ETHICAL HACKING *	3
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CET 2894C	PROJECTS IN CYBER SECURITY: CAPSTONE COURSE *	3
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Total Credit Hours 12

* 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 Career Program Advisor 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
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CET 2178C	COMPUTER HARDWARE	3
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CNT 2417C	CYBERSECURITY OPERATIONS *	3
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CET 2792C	INSTALLING AND CONFIGURING WINDOWS SERVER *	3
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CET 2660C	LINUX NETWORKING AND SECURITY *	3
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CET 2830C	INFORMATION SECURITY *	3
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CET 2544C	COMPUTER VIRTUALIZATION TECHNOLOGY *	3
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CNT 2426C	CLOUD INFRASTRUCTURE SECURITY *	3
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Total Credit Hours 24

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 proprietary 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
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CET 2486C	LOCAL AREA NETWORKS	3
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CNT 2417C	CYBERSECURITY OPERATIONS *	3
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CET 2660C	LINUX NETWORKING AND SECURITY *	3
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CET 2792C	INSTALLING AND CONFIGURING WINDOWS SERVER *	3
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CET 1610C	CISCO ROUTER TECHNOLOGY *	3
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CET 2830C	INFORMATION SECURITY *	3
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CET 2890C	ADVANCED CYBERSECURITY OPERATIONS *	3
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CET 2892C	ETHICAL HACKING *	3
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CET 2894C	PROJECTS IN CYBER SECURITY: CAPSTONE COURSE *	3
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Total Credit Hours 30

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

Digital Forensics

Technical Certificate

This technical certificate program prepares the students for employment as Digital Forensics Examiner. The program focuses on the process of detecting hacking attacks, extracting evidence to report the crime, and conducting audits to prevent future attacks. The program allows for the application of computers and mobile devices investigation and analysis techniques in the interests of determining potential legal evidence that might be sought in a wide range of computer crime or misuse, including but not limited to theft of trade secrets, theft of or destruction of intellectual property, and fraud.

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
- Respond to systems security related incidents
- Plan digital forensics investigations

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 2544C	COMPUTER VIRTUALIZATION TECHNOLOGY *	3
CET 2830C	INFORMATION SECURITY *	3
CNT 2414C	CYBERCRIME INVESTIGATION *	3
CET 2880C	DIGITAL FORENSICS I *	3
CNT 2413C	NETWORK FORENSICS & INCIDENT RESPONSE *	3
Restricted Electives: (CTS 2322C or CET 2881C)		2
Total Credit Hours		32

* 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 Administrator, Red Hat Linux Engineer, Core Server Engineer, and Red Hat Linux System Administrator.

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 2792C	INSTALLING AND CONFIGURING WINDOWS SERVER *	3
CET 2830C	INFORMATION SECURITY *	3

CET 2544C	COMPUTER VIRTUALIZATION TECHNOLOGY *	3
CET 2660C	LINUX NETWORKING AND SECURITY *	3
CTS 2322C	RED HAT ENTERPRISE LINUX *	2
Restricted Electives: (CET 2942C, CGS 2650, or any CET, CNT prefix courses)		1

Total Credit Hours **24**

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
Total Credit Hours		24

* 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
Total Credit Hours		21

* 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
Total Credit Hours		21

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