

# Information Technology & Careers

## AWARDS

|  |          |
|--|----------|
| Information Technology Support A.A.S. Degree . . . . .         | 60 cr    |
| Network Technology and Security A.A.S. Degree . . . . .        | 60 cr    |
| Advanced Cybersecurity Infrastructure Certificate . . . . .    | 18-21 cr |
| Advanced Network Technology Certificate . . . . .              | 18-21 cr |
| Enterprise Networking Certificate . . . . .                    | 18 cr    |
| IT HelpDesk and Cybersecurity Operations Certificate . . . . . | 18 cr    |
| IT System Administrator Certificate . . . . .                  | 18 cr    |
| Networking and Cybersecurity Operations Certificate . . . . .  | 18 cr    |

## INFORMATION TECHNOLOGY SUPPORT A.A.S., 60 CREDITS

|  |       |
|--|-------|
| Information Technology Support . . . . . | 44 cr |
| General Education Curriculum . . . . .   | 16 cr |

## PURPOSE

The Information Technology Support program trains workers for employment providing service to computer users, including hardware and software installation and technical assistance. Coursework includes experiences and instruction in communication and problem-solving skills, as well as technical training with hardware, software, operating systems, applications software, security, and computer network operations. Designed to prepare graduates to select, maintain, configure, and oversee installation of business-oriented personal computers, software, and to support and train users. This program provides the student training for a variety of IT industry certifications including the CompTIA A+, Microsoft Windows Server Hybrid Administrator Associate, and Cisco Cyber Operations Associate.

*Important Note: Many of the courses in ITC degree programs have prerequisites which limit the minimum number of technical courses which can be take in any one semester. In order to ensure timely graduation, appropriate course loads, and the correct mix of technical and liberal arts courses students are strongly encouraged to meet with an academic advisor, counselor, and/or faculty member from the ITC department before registering for classes to determine a degree plan.*

## Information Technology Support Curriculum 44 credits

|   |   |
|---|---|
| □ ITC 1000 Computer Careers . . . . .   | 1 |
| □ ITC 1200 Cybersecurity Essentials . . . . .   | 2 |
| □ ITC 2810 Cisco CyberOps Associate . . . . .   | 3 |
| □ ITC 1400 IT Fundamentals . . . . .  | 3 |
| □ ITC 1480 Linux Essentials . . . . .   | 3 |
| □ ITC 2000 PC Hardware and Software (A+) . . . . .  | 3 |
| □ ITC 2100 IT Career Success Skills and Strategies . . . . .  | 2 |
| □ ITC 2189 Information Technology Careers Internship . . . . .  | 3 |
| □ ITC 2410 Windows Client Administration . . . . .  | 3 |
| □ ITC 2420 Managing Modern Desktops . . . . .   | 3 |
| □ ITC 2430 Windows Server Hybrid Core Infrastructure . . . . .  | 3 |
| □ ITC 2440 Configuring Windows Server Hybrid<br>Advanced Services . . . . .                                 | 3 |
| □ ITC 2480 Administering Linux Servers . . . . .  | 3 |
| □ ITC 2516 Introduction to Networks and Switching,<br>Routing, and Wireless Essentials (CCNA 1/2) . . . . . | 6 |
| □ ITC 2900 Information Technology Careers Capstone . . . . .  | 3 |

## General Education Curriculum 16 credits

|   |   |
|---|---|
| □ ENG 1108 Writing and Research Skills . . . . .  | 4 |
| □ COMM 1100 Interpersonal Communication OR<br>COMM 1110 Public Speaking OR<br>COMM 2230 Small Group Communication OR<br>COMM 2240 Intercultural Communication . . . . . | 3 |
| □ MnTC Goal 3 (with lab) course OR MnTC Goal 4 course . . . . .   | 3 |
| □ MnTC Goal 5 course . . . . .  | 3 |
| □ MnTC Goal 6 course . . . . .  | 3 |

**TOTAL CREDITS 60**

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**FULL-TIME RECOMMENDED COURSE OF STUDY**

Note: Not all courses will be available every semester. For a complete list of Minnesota Transfer Curriculum (MnTC) Goal Area course choices, please visit: [inverhills.edu/MnTC](http://inverhills.edu/MnTC)

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**Semester 1 (Fall) 16 credits**

|   |   |
|---|---|
| <i>ITC 1000 Computer Careers</i>              | 1 |
| <i>ITC 1200 Cybersecurity Essentials</i>      | 2 |
| <i>ITC 1400 IT Fundamentals</i>               | 3 |
| <i>ENG 1108 Writing and Research Skills</i>   | 4 |
| <i>Liberal Arts Course (MnTC Goal 3 or 4)</i> | 3 |
| <i>Liberal Arts Course (Communications)</i>   | 3 |

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**Semester 2 (Spring) 15 credits**

|   |   |
|---|---|
| <i>ITC 2000 PC Hardware &amp; Software (A+)</i>           | 3 |
| <i>ITC 1480 Linux Essentials</i>                          | 3 |
| <i>ITC 2410 Windows Client Administration</i>             | 3 |
| <i>ITC 2430 Windows Server Hybrid Core Infrastructure</i> | 3 |
| <i>ITC 2810 Cisco CyberOps Associate</i>                  | 3 |

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**Semester 3 (Fall) 15 credits**

|   |   |
|---|---|
| <i>Liberal Arts Course (MnTC Goal 5)</i>  | 3 |
| <i>ITC 2420 Managing Modern Desktops</i>  | 3 |
| <i>ITC 2480 Administering Linux Servers</i>   | 3 |
| <i>ITC 2516 Introduction to Networks and Switching, Routing, and Wireless Essentials (CCNA 1/2)</i> | 6 |

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**Semester 4 (Spring) 14 credits**

|   |   |
|---|---|
| <i>ITC 2100 IT Career Success Skills and Strategies</i>             | 2 |
| <i>ITC 2440 Configuring Windows Server Hybrid Advanced Services</i> | 3 |
| <i>ITC 2900 Information Technology Careers Capstone</i>             | 3 |
| <i>ITC 2189 Internship</i>  | 3 |
| <i>Liberal Arts Course (MnTC Goal 6)</i>                            | 3 |

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**TOTAL CREDITS 60**

# NETWORK TECHNOLOGY AND SECURITY A.A.S., 60 CREDITS

|                                 |       |
|---------------------------------|-------|
| Network Technology and Security | 44 cr |
| General Education Curriculum    | 16 cr |

## PURPOSE

This program prepares students for rewarding careers in the dynamic field of computer networking and security. The continued growth of the Internet, wide area networks (WANs) and local area networks (LANs) requires people with the broad knowledge and skills needed to design, manage, secure, and troubleshoot sophisticated information storage, retrieval and presentation systems.

## PROGRAM INFORMATION

This program covers the workings of networks and systems from desktop and mobile devices to cloud servers that could be located anywhere in the world. The curriculum has been designed to encompass many of the same competencies that are covered by several recognized IT industry certifications, for example CompTIA's A+; Cisco's CCNA, CCNP, and CyberOps Associate; and Microsoft's Administering Windows Server Hybrid Core Infrastructure, so students will gain the knowledge and skills that are recognized as important for employment in the field.

*Note: Many of the courses in ITC degree programs have prerequisites which limit the minimum number of technical courses which can be take in any one semester. In order to ensure timely graduation, appropriate course loads, and the correct mix of technical and liberal arts courses students are strongly encouraged to meet with an academic advisor, counselor, and/or faculty member from the ITC department before registering for classes to determine a degree plan.*

### Network Technology and Security Curriculum 44credits

|  |   |
|--|---|
| <input type="checkbox"/> ITC 2000 PC Hardware and Software (A+)  | 3 |
| <input type="checkbox"/> ITC 2100 IT Career Success Skills and Strategies  | 2 |
| <input type="checkbox"/> ITC 2189 Information Technology Careers Internship  | 3 |
| <input type="checkbox"/> ITC 2300 Information Technology Services and Applications   | 3 |
| <input type="checkbox"/> ITC 2410 Windows Client Administration  | 3 |
| <input type="checkbox"/> ITC 2430 Windows Server Hybrid Core Infrastructure  | 3 |
| <input type="checkbox"/> ITC 2480 Administering Linux Servers  | 3 |
| <input type="checkbox"/> ITC 2516 Introduction to Networks and Switching, Routing, and Wireless Essentials (CCNA 1/2)                      | 6 |
| <input type="checkbox"/> ITC 2536 Enterprise Networking, Security, Automation, and Intro to Cisco Network Security (CCNA 3/Net Security 1) | 6 |
| <input type="checkbox"/> ITC 2611 Cisco Enterprise Network Core Technologies (CCNP 1)  | 3 |
| <input type="checkbox"/> ITC 2621 Cisco Enterprise Advanced Routing and Services (CCNP 2)  | 3 |
| <input type="checkbox"/> ITC 2810 Cisco CyberOps Associate   | 3 |
| <input type="checkbox"/> ITC 2900 Information Technology Careers Capstone  | 3 |

### General Education Curriculum 16 credits

|  |   |
|--|---|
| <input type="checkbox"/> ENG 1108 Writing and Research Skills  | 4 |
| <input type="checkbox"/> COMM 1100 Interpersonal Communication OR<br>COMM 1110 Public Speaking OR<br>COMM 2230 Small Group Communication OR<br>COMM 2240 Intercultural Communication | 3 |

|  |   |
|--|---|
| <input type="checkbox"/> MnTC Goal 3 (with lab) course OR MnTC Goal 4 course | 3 |
| <input type="checkbox"/> MnTC Goal 5 course                                  | 3 |
| <input type="checkbox"/> MnTC Goal 6 course                                  | 3 |

**TOTAL CREDITS 60**

## FULL-TIME RECOMMENDED COURSE OF STUDY

Note: Not all courses will be available every semester. For a complete list of Minnesota Transfer Curriculum (MnTC) Goal Area course choices, please visit: [inverhills.edu/MnTC](http://inverhills.edu/MnTC)

### Semester 1 (Fall) 16 credits

|  |   |
|--|---|
| ITC 2000 PC Hardware & Software (A+)   | 3 |
| ITC 2516 Introduction to Networks and Switching, Routing, and Wireless Essentials (CCNA 1/2) | 6 |
| ITC 2410 Windows Client Administration   | 3 |
| ENG 1108 Writing and Research Skills   | 4 |

### Semester 2 (Spring) 15 credits

|   |   |
|---|---|
| ITC 2536 Enterprise Networking, Security, Automation, and Intro to Cisco Network Security (CCNA 3/Net Security 1) | 6 |
| ITC 2810 Cisco CyberOps Associate   | 3 |
| ITC 2430 Windows Server Hybrid Core Infrastructure  | 3 |
| Liberal Arts Course (Communications)  | 3 |

### Semester 3 (Fall) 15 credits

|  |   |
|--|---|
| ITC 2611 Cisco Enterprise Network Core Technologies (CCNP 1) | 3 |
| ITC 2300 Information Technology Services and Applications    | 3 |
| ITC 2480 Administering Linux Servers                         | 3 |
| Liberal Arts Course (MnTC Goal 5)                            | 3 |
| Liberal Arts Course (MnTC Goal 3 or 4)                       | 3 |

### Semester 4 (Spring) 14 credits

|  |   |
|--|---|
| ITC 2621 Cisco Enterprise Advanced Routing and Services (CCNP 2) | 3 |
| ITC 2100 IT Career Success Skills and Strategies                 | 2 |
| ITC 2900 Information Technology Careers Capstone                 | 3 |
| ITC 2189 Internship  | 3 |
| Liberal Arts Course (MnTC Goal 6)                                | 3 |

**TOTAL CREDITS 60**

## ADVANCED CYBERSECURITY INFRASTRUCTURE

### CERTIFICATE, 18-21 CREDITS

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#### PURPOSE

This certificate program provides an opportunity for IT professionals who have network security and information assurance responsibilities or experience to learn about advanced cybersecurity concepts and configuration beyond that covered in the Network Technology and Security degree program. Courses cover industry standard topics including security incident management, firewalls, pen testing, VPNs, intrusion detection, and overall security policy and practices. Courses in this certificate help prepare students for the Cisco CyberOps Associate, EC-Council CEH, and other professional security certifications such as CCNP Security, CISSP, GSEC, CISM, or CISA based on the student's career path and interests.

#### Advanced Cybersecurity Infrastructure Certificate 18-21 credits

- ITC 2480 *Administering Linux Servers* . . . . . 3
- ITC 2810 *Cisco CyberOps Associate* . . . . . 3
- ITC 2820 *Information Systems Security Pen Testing* . . . . . 3
- ITC 2830 *Introduction to Cisco Network Security* . . . . . 3

#### OR

- ITC 2536 *Enterprise Networking, Security, Automation, and Intro to Cisco Network Security (CCNA 3/Net Security 1)* . . . 6
- ITC 2840 *Implementing and Operating Cisco Security Core Technologies* . . . . . 3
- ITC 2250 *Special Topics in ITC: Advanced Security Certification Course (CCNP Security Concentration, CISSP, GSEC, etc.)* . . . . . 3

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**TOTAL CREDITS 18-21**

## ADVANCED NETWORK TECHNOLOGY

### CERTIFICATE, 18-21 CREDITS

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#### PURPOSE

This certificate program provides an opportunity for IT professionals who have large enterprise network administration responsibilities or experience to learn about state-of-the-art networking concepts and configuration beyond that covered in the Network Technology and Security degree program. Courses cover network programmability, QoS, advanced BGP, advanced OSPF, advanced EIGRP, overlay networks, VPNs, wireless networking, and multicast. Courses in this certificate help prepare students for the Cisco DevNet Associate, CCNP Enterprise, and additional CCNP Enterprise concentration areas based on the student's career path and interests.

#### Advanced Network Technology Certificate 15 credits

- ITC 2480 *Administering Linux Servers* . . . . . 3
- ITC 2830 *Introduction to Cisco Network Security* . . . . . 3

#### OR

- ITC 2536 *Enterprise Networking, Security, Automation, and Intro*

to Cisco Network Security (CCNA 3/Net Security 1) . . . 6

- ITC 2320 *Cisco DevNet Associate* . . . . . 3
- ITC 2611 *Cisco Enterprise Network Core Technologies (CCNP 1)* . 3
- ITC 2621 *Cisco Enterprise Advanced Routing and Services (CCNP 2)* . . . . . 3
- ITC 2250 *Special Topics in Information Technology & Careers – Advanced Networking Emphasis* . . . . . 3

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**TOTAL CREDITS 18-21**

## ENTERPRISE NETWORKING

### CERTIFICATE, 18 CREDITS

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#### PURPOSE

This certificate provides the knowledge and skills for employment in entry-level positions in the information technology field that support security operations center and technology end-users. Students will learn the essential components and function of hardware and software systems used in modern businesses as well as analysis techniques used in security operations centers. Courses in this certificate help prepare students for the CompTIA IT Fundamentals, CompTIA A+, LPI Linux Essentials, Cisco CyberOps Associate, and Microsoft Windows 10 industry certifications.

#### Enterprise Networking Certificate 18 credits

- ITC 2516 *Introduction to Networks and Switching, Routing, and Wireless Essentials (CCNA 1/2)* . . . . . 6
- ITC 2536 *Enterprise Networking, Security, Automation, and Intro to Cisco Network Security (CCNA 3/Net Security 1)* . . . 6
- ITC 2611 *Cisco Enterprise Network Core Technologies (CCNP 1)* . 3
- ITC 2621 *Cisco Enterprise Advanced Routing and Services (CCNP 2)* . . . . . 3

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**TOTAL CREDITS 18**

## I.T. HELP DESK AND CYBERSECURITY OPERATIONS

### CERTIFICATE, 18 CREDITS

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#### PURPOSE

This certificate provides the knowledge and skills for employment in entry-level positions in the information technology field that support security operations center and technology end-users. Students will learn the essential components and function of hardware and software systems used in modern businesses as well as analysis techniques used in security operations centers. Courses in this certificate help prepare students for the CompTIA IT Fundamentals, CompTIA A+, LPI Linux Essentials, Cisco CyberOps Associate, and Microsoft Windows 10 industry certifications.

#### IP Help Desk and Cybersecurity Certificate 18 credits

- ITC 1000 *Computer Careers* . . . . . 1

|  |   |
|--|---|
| □ ITC 1200 Cybersecurity Essentials . . . . .      | 2 |
| □ ITC 1400 IT Fundamentals . . . . .               | 3 |
| □ ITC 1480 Linux Essentials . . . . .              | 3 |
| □ ITC 2000 PC Hardware and Software (A+) . . . . . | 3 |
| □ ITC 2410 Windows Client Administration . . . . . | 3 |
| □ ITC 2810 Cisco CyberOps Associate . . . . .      | 3 |

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**TOTAL CREDITS 18**

## **IT SYSTEM ADMINISTRATOR CERTIFICATE, 18 CREDITS**

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### **PURPOSE**

This certificate provides IT employees with knowledge and skills needed to administer Linux and Windows clients and servers. Courses in this certificate help prepare students for the Microsoft 365 Certified: Modern Desktop Administrator Associate, Microsoft Certified: Windows Server Hybrid Administrator Associate, and LPI Linux Essentials industry certifications.

### **IT System Administration Certificate 18 credits**

|   |   |
|---|---|
| □ ITC 2410 Windows Client Administration . . . . .                          | 3 |
| □ ITC 2420 Managing Modern Desktops . . . . .                               | 3 |
| □ ITC 2430 Windows Server Hybrid Core Infrastructure . . . . .              | 3 |
| □ ITC 2440 Configuring Windows Server Hybrid<br>Advanced Services . . . . . | 3 |
| □ ITC 1480 Linux Essentials . . . . .                                       | 3 |
| □ ITC 2480 Administering Linux Servers . . . . .                            | 3 |

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**TOTAL CREDITS 18**

## **NETWORKING AND CYBERSECURITY OPERATIONS CERTIFICATE, 18 CREDITS**

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### **PURPOSE**

This certificate provides students with knowledge and skills essential to configuring, securing, and maintaining modern business networks and Internet connections. Centered around preparation for the Cisco Certified Network Associate industry credential this certificate bolsters confidence in small and medium sized business networks with courses about user facing network devices and security operations center skills. Courses in this certificate help prepare students for the CompTIA A+, Cisco Certified Network Associate, and Cisco CyberOps Associate industry certifications.

### **Networking and Cybersecurity Operations Certificate 18 credits**

|  |   |
|--|---|
| □  |   |
| □ ITC 2000 PC Hardware and Software (A+) . . . . .   | 3 |
| □ ITC 2516 Introduction to Networks and Switching, Routing, and<br>Wireless Essentials (CCNA 1/2) . . . . .                      | 6 |
| □ ITC 2536 Enterprise Networking, Security, Automation, and Intro<br>to Cisco Network Security (CCNA 3/Net Security 1) . . . . . | 6 |
| □ ITC 2810 Cisco CyberOps Associate . . . . .  | 3 |

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**TOTAL CREDITS 18**



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