

# Electronics

## School of Health, Exercise Science, Athletics and Applied Technology

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### General Description

Electronics is a technological giant among America's businesses and industries. The electronics technician possesses the fundamental knowledge of both the engineer and the craftsperson and thus acts as a liaison between them. Our programs offer opportunities for certification studies in the field. Study in this program consists of building and testing prototype circuits and equipment, modifying electronic apparatus, and interpreting schematic drawings and sketches. Computer electronics is also emphasized with programs focused on microsoft certified systems. Intensive Training and Computer Systems Intensive Certification training. Southwestern College is a member of the International Electronics Technicians Articulation Committee (IETAC).

### Career Options

Below is a sample of the career options available for the electronics/electrical majors. Most of these require an associate degree, some require a bachelor's degree, and a few require a graduate-level degree: electronics mechanic, automated systems technician, manufacturing specialist, computer support technician, electrical/electronics test technician, engineering assistant, telecommunications engineer and technician, network specialist, sales representative, and service technician. Entry-level career opportunities are available in electric utilities, industrial plants, engineering firms, electrical manufacturing, smart home construction and landscaping businesses, telecommunications, biomedical electronics, and radio and television stations.

### Degree/Certificate Options

#### Associate in Science Degree: Career/Technical

	Major Code
Computer Systems Intensive Certification Training	02135
Electronics—Computer Technician	A2907
Electronics—Internetwork Technician	A2911
Electronics—Network Administrator	A2913

#### Certificates of Achievement

Computer Systems Intensive Certification Training—Basic	02242
Computer Systems Intensive Certification Training—Advanced	A2136
Electronics—Computer Technician—Advanced	A2916
Electronics—Internetwork Technician—Advanced	A2918
Electronics—Network Administrator—Advanced	A2919

#### Certificates of Proficiency

Electronics—Computer Technician—Basic	A2908
Electronics—Internetwork Technician—Basic	A2912
Electronics—Network Administrator—Basic	A2914
Mobile Electronics—Basic	02902

Consult with a counselor to develop a Student Education Plan (SEP), which lists the courses necessary to achieve your academic goal.

## ASSOCIATE IN SCIENCE DEGREE

### Computer Systems Intensive Certification Training

Career/Technical (Major Code: 02135)

Reviews basic and advanced computer repair, operating systems, networking basics and server systems operation, and prepares the students to pass the CompTIA certification. A work experience component allows students to apply classroom knowledge to a job internship.

ELEC 147	Computer Repair and Networking	12
ELEC 148	A+, Network+, and Server+ Certification Preparation	12
ELEC 149	Microsoft Certified Desktop Support Technician (MCDST) Certification	6
ELEC 290–293	Electronics Cooperative Work Experience I–IV (2–4)	2–4
<b>Total units</b>		<b>32–34</b>

To earn an associate degree, additional general education and graduation requirements must be completed. See page 49.

### Electronics—Computer Technician

Career/Technical (Major Code: A2907)

Provides intensive training in the theory and practice of the operation and maintenance of computers, computer peripherals, and computer networks. Prepares students for employment as certified, entry-level technicians in the computer industry.

CAD 220	Introduction to CADD/CAM Systems	3
CIS 130	Microcomputer Disk Operating System	1
CIS 139	Windowing Environments	1
ELEC 260	Microcomputer Systems and A+ Certification	4
ELEC 266	Network Management for Technicians	4
ELEC 109/ CIS 119	Office Support and Network Technician (6) OR	6
ELEC/ CIS 10B	Microcomputer Hardware and Software Upgrade (2)	
ELEC/ CIS 14	Office Automation Equipment Repair (2)	
ELEC 15	Data, Voice, and Video Cable Installation (2)	
ELEC 147	Computer Repair and Networking	12
ELEC 290	Electronics Cooperative Work Experience I	2–4
<b>Total units</b>		<b>33–35</b>

To earn an associate degree, additional general education and graduation requirements must be completed. See page 49.

#### Independent National Certification Objectives

Designed to prepare students to take certification exams:

#### A+ Computer Technician

## Electronics—Internetwork Technician

Career/Technical (Major Code: A2911)

Provides intensive training in the theory and practice of the operation and maintenance of internetworking with special emphasis on switches, routers, and other specialized equipment. Prepares students for employment as certified, entry-level technicians in the internetworking industry.

CIS 144A	Routers and Internetwork Fundamentals (Cisco Certification Preparation)	3
CIS 144B	Advanced Routers and LAN Networking	3
CIS 144C	Wide Area Networks Implementation and Support	3
ELEC 15	Data, Voice, and Video Cable Installation	2
ELEC/		
CIS 142	Networking Academy Fundamentals (Cisco Certification Preparation)	3
ELEC 147	Computer Repair and Networking	12
ELEC 260	Microcomputer Systems and A+ Certification	4
ELEC 266	Network Management for Technicians	4
ELEC 290	Electronics Cooperative Work Experience I	2–4
<b>Total units</b>		<b>36–38</b>

*To earn an associate degree, additional general education and graduation requirements must be completed. See page 49.*

### Independent National Certification Objectives

Designed to prepare the students to take certification exams in the following areas:

- \* Cisco Certified Network Associate
- \* A+ Computer Technician
- \* Certified Electronics Technician (CET)
- \* Federal Communication Commission General Radio Operator License (GROL)
- \* Network +
- \* Server +
- \* Microsoft Certified Desktop Support Technician (MCDST)
- \* Microsoft Certified System Administrator (MCSA)
- \* Microsoft Certified System Engineer (MCSE)

## Electronics—Network Administrator

Career/Technical (Major Code: A2913)

Provides intensive training in the theory and practice of the operation and maintenance of computers, computer peripherals, and computer networks. Prepares students for employment as certified entry-level technicians in the computer industry and as entry-level network administrators.

ELEC/		
CIS 10B	Microcomputer Hardware and Software Upgrade	2
ELEC/		
CIS 142	Networking Academy Fundamentals (Cisco Certification Preparation)	3
ELEC 147	Computer Repair and Networking	12
ELEC 260	Microcomputer Systems and A+ Certification	4
ELEC 265	Computer Networking for N+ Certification	4
ELEC 266	Network Management for Technicians	4
ELEC 290–293		
Electronics Cooperative Work Experience I–IV (2-4) 2–4		
<b>Total units</b>		<b>31–33</b>

*To earn an associate degree, additional general education and graduation requirements must be completed. See page 49.*

### Independent National Certification Objectives

Designed to prepare students to take certification exams in the following areas:

- \* A+ Computer Technician
- \* N+ Network Technician



Some courses within this program may require additional coursework that must be completed prior to enrollment in those courses. Please consult the individual course listings for prerequisites and any other limitations on enrollment.

## CERTIFICATES

### Computer Systems Intensive Certification Training—Basic

Certificate of Achievement

Career/Technical (Major Code: 02242)

Introduces students to basic computer repair and networking skills. Prepares students to take the Microsoft Certified Desktop Support Technician (MCDST) certification.

ELEC 147	Computer Repair and Networking	12
ELEC 148	A+, Network+, and Server+ Certification Preparation	12
<b>Total units</b>		<b>24</b>

### Computer Systems Intensive Certification Training—Advanced

Certificate of Achievement

Career/Technical (Major Code: A2136)

Reviews basic and advanced computer repair, operating systems, networking basics and server systems operation and prepares the students to pass the CompTIA certifications.

ELEC 147	Computer Repair and Networking	12
ELEC 148	A+, Network+, and Server+ Certification Preparation	12
ELEC 149	Microsoft Certified Desktop Support Technician (MCDST) Certification	6
ELEC 290–293	Electronics Cooperative Work Experience I–IV (2–4)	2–4
<b>Total units</b>		<b>32–34</b>

### Electronics—Computer Technician—Basic

Certificate of Proficiency

Career/Technical (Major Code: A2908)

Provides intensive training in the operation and maintenance of computers, computer peripherals, and computer networks.

ELEC 109/ CIS 119	Office Support and Network Technician (6) OR	6–8
ELEC/ CIS 10A	Microcomputer Repair and Service (2)	
ELEC/ CIS 10B	Microcomputer Hardware and Software Upgrade (2)	
ELEC/ CIS 14	Office Automation Equipment Repair (2)	
ELEC 15	Data, Voice, and Video Cable Installation (2)	
ELEC 260	Microcomputer Systems and A+ Certification	4
ELEC 266	Network Management for Technicians	4
CIS 139	Windowing Environments	1
<b>Total units</b>		<b>15–17</b>

### Electronics—Computer Technician—Advanced

Certificate of Achievement

Career/Technical (Major Code: A2916)

Provides intensive training in the theory and practice of the operation and maintenance of computers, computer peripherals, and computer networks.

CAD 220	Introduction to CADD/CAM Systems	3
CIS 130	Microcomputer Disk Operating System	1
CIS 139	Windowing Environments	1
ELEC 109/ CIS 119	Office Support and Network Technician (6) OR	6
ELEC/ CIS 10B	Microcomputer Hardware and Software Upgrade (2)	
ELEC/ CIS 14	Office Automation Equipment Repair (2)	
ELEC 15	Data, Voice, and Video Cable Installation (2)	
ELEC 147	Computer Repair and Networking	12
ELEC 260	Microcomputer Systems and A+ Certification	4
ELEC 266	Network Management for Technicians	4
ELEC 290	Electronics Cooperative Work Experience I	2–4
<b>Total units</b>		<b>33–35</b>

### Electronics—Internetwork Technician—Basic

Certificate of Proficiency

Career/Technical (Major Code: A2912)

CIS/ ELEC 142	Networking Academy Fundamentals (Cisco Certification Preparation)	3
CIS 144A	Routers and Internetwork Fundamentals (Cisco Certification Preparation)	3
CIS 144B	Advanced Routers and LAN Networking	3
CIS 144C	Wide Area Networks Implementation and Support	3
ELEC 15	Data, Voice, and Video Cable Installation	2
<b>Total units</b>		<b>14</b>

## Electronics—Internetwork Technician—Advanced

Certificate of Achievement

Career/Technical (Major Code: A2918)

CIS 144A	Routers and Internetwork Fundamentals (Cisco Certification Preparation)	3
CIS 144B	Advanced Routers and LAN Networking	3
CIS 144C	Wide Area Networks Implementation and Support	3
ELEC 15	Data, Voice, and Video Cable Installation	2
ELEC/ CIS142	Networking Academy Fundamentals (Cisco Certification Preparation)	3
ELEC 147	Computer Repair and Networking	12
ELEC 260	Microcomputer Systems and A+ Certification	4
ELEC 266	Network Management for Technicians	4
ELEC 290	Electronics Cooperative Work Experience I	2–4
<b>Total units</b>		<b>36–38</b>

## Electronics—Network Administrator—Basic

Certificate of Proficiency

Career/Technical (Major Code: A2914)

ELEC/ CIS 10A	Microcomputer Repair and Service	2
ELEC/ CIS 10B	Microcomputer Hardware and Software Upgrade	2
ELEC/ CIS 145	Networking Academy Fundamentals (Cisco Certification Preparation)	3
ELEC 260	Microcomputer Systems and A+ Certification	4
ELEC 265	Computer Networking for N+ Certification	4
	OR	
ELEC 266	Network Management for Technicians	4
<b>Total units</b>		<b>15</b>

## Electronics—Network Administrator—Advanced

Certificate of Achievement

Career/Technical (Major Code: A2919)

ELEC/ CIS 10B	Microcomputer Hardware and Software Upgrade	2
ELEC 147	Computer Repair and Networking	12
ELEC 260	Microcomputer Systems and A+ Certification	4
ELEC 265	Computer Networking for N+ Certification	4
ELEC 266	Network Management for Technicians	4
ELEC 290–293		
Electronics Cooperative Work Experience I–IV (2–4)		2–4
<b>Total units</b>		<b>28–30</b>

## Mobile Electronics—Basic

Certificate of Proficiency

Career/Technical (Major Code: 02902)

Provides entry-level training in the installation and troubleshooting of audio, video, and security systems in automobiles. Introduces students to installation and testing of related systems and technology for businesses and homes.

<b>Complete 6 to 10 units from the following:</b>		<b>6–10</b>
ELEC 15	Data, Voice, and Video Cable Installation (2)	
ELEC 20A	Mobile Electronics Certification I (2)	
ELEC 20B	Mobile Electronics Certification II (2)	
	OR	
ELEC 109/ CIS 119	Office Support and Network Technician (6)	
ELEC 20A	Mobile Electronics Certification I (2)	
ELEC 20B	Mobile Electronics Certification II (2)	
<b>Total units</b>		<b>6–10</b>



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