

## Program Overview

The Telecommunication Technician program prepares students to enter the dynamic field of telecommunications after one year. Students are trained in five basic areas: 1) telecommunication electronics; 2) cable splicing--coaxial, twisted pair, and fiber optics; 3) print reading; 4) installation of customer equipment; and 5) plant construction practices - aerial and buried cables and equipment. Computer skills, mathematics, and customer relations are also an integral part of the program. Students develop hands-on skills as well as learn the fundamental operations of the industry to begin as an entry-level technician.

Offered at:

Rice Lake



## Special Features

This program is unique in the state.

## Student Profile

As a Telecommunication Technician student, you should be able to:

- Use good judgment
- Follow procedures carefully
- Assume responsibility for your work
- Be adaptable when handling a variety of duties with interruptions
- Pay attention to detail
- Enjoy working outdoors

## Preparation for Admission

The following experiences will help you prepare for this program:

- Algebra
- Geometry
- Electricity
- Electronics
- General Science
- English/Communications

## Program Outcomes

Employers will expect you, as a Telecommunication Technician graduate, to be able to:

- Apply basic telephone/cable television concepts to the installation, service, and repair of equipment.
- Lay out and construct aerial and buried cable systems to include fiber optics, paired, and coaxial cables.
- Apply electrical and electronic concepts including digital theory.
- Safely climb poles and ladders.
- Install subscriber equipment.
- Set up and orient TV Receive Only (TVRO) installations.
- Interpret system maps.
- Troubleshoot systems using electronic test equipment.
- Calculate and measure RF signal levels.
- Interact with customers and the general public in a service-oriented industry.
- Explore new and emerging technologies.

## Career Outlook

After graduating from the Telecommunication Technician program, you will be ready to start your career as a:

- Telecommunications Equipment Installer/Repairer
- Cable Splicer (Fiber Optics, Twisted Pair, and Coaxial)
- Residential/Business Equipment Installer
- Aerial and Buried Cable Construction
- Construction Inspector

## Curriculum

Number	Course Title	Credits
<b>Occupational Specific Courses</b>		
10451120	Construction Practices ▲	3
10451121	Telecommunication Transmission ▲	3
10451130	Telephone Networking	3
10451131	Intro to HFC/Cable TV	3
10451132	Fiber Optics Operations ▲	3
10451133	Multi-Line Phone Systems ▲	2
10451135	HFC Cable TV Operation ▲	3
10451139	Signal Testing ▲	2
10451141	Telecommunication Industry Concerns	2
10605116	Communications Electricity 1	2
10605117	Communications Electricity 2 ▲	<u>2</u>
		28
<b>Occupational Supportive/General Studies Courses</b>		
10451105	Telecommunication Safety	2
32804355	Math 355	<u>3</u>
		5
	<b>PROGRAM REQUIREMENTS</b>	<b>33</b>

▲ This course requires a prerequisite and/or corequisite, and must be completed with a grade of "C-" or better.

# Course Descriptions

## 10451120

### Construction Practices - Credits: 3

This course introduces the student to the safe use and care of construction equipment such as climbing equipment (belt/ climbers), lashing equipment, and vibratory/backhoe. It will familiarize the student with both aerial and buried construction specifications and practices used in the telecommunications industry in the placement of coaxial, twisted pair, and optic cables. PREREQUISITES: 10451130 Telephone Networking, 10451131 Intro to HFC/Cable TV, and 10451132 Fiber Optics Operations.

## 10451121

### Telecommunication Transmission - Credits: 3

This course contains the study of subscriber carrier and "T" carrier systems. Emphasis will be placed on the alignment, testing, and troubleshooting of end-to-end transmission systems. Also introduced in this course are basic AC and DC signaling arrangements. PREREQUISITE: 10605117 Communications Electricity 2.

## 10451130

### Telephone Networking - Credits: 3

This course will introduce the student to the basics of the telephone network portion of the telecommunications industry. It will focus on four (4) primary areas: cable and wire - the design of the cables physically and electronically and how to splice them; print reading - construction drawing, system maps, and circuit diagrams; station installation - installation of customer wiring and equipment and teaching the customer how to properly use the equipment; basic troubleshooting - finding and repairing trouble in materials and equipment.

## 10451131

### Intro to HFC/Cable TV - Credits: 3

This course introduces the student to the basics of the HFC (Hybrid Fiber Coaxial) portion of the telecommunications industry. It will focus on four (4) primary areas: cable and wire - the design of the cables physically and electrically and how to splice them; print reading - construction drawings and system maps/circuit diagrams; station installation - installation of customer materials and equipment and teaching the customers how to properly use the equipment; basic trouble shooting - finding and repairing trouble in materials and equipment.

## 10451132

### Fiber Optics Operations - Credits: 3

This course will introduce the students to industry specifications and practices for understanding fiber optic communication systems. Topics covered include fiber optic design, installation, test and maintenance for multimode and singlemode networks. This class will benefit those with little or no fiber experience. COREQUISITE: 10605116 Communications Electricity 1.

## 10451133

### Multi-Line Phone Systems - Credits: 2

This course focuses on the generic installation and maintenance concerns of multi-line telephone systems. System prints, charts, and manuals are used to familiarize students with the step-by-step procedures of installing and troubleshooting multi-line telephone systems. PREREQUISITES: 10451130 Telephone Networking and 10605117 Communications Electricity 2.

## 10451135

### HFC Cable TV Operation - Credits: 3

Introduces the student to hybrid fiber optic/coaxial cable systems. Basic alignment, testing, and troubleshooting techniques are taught. System performance standards and measurement parameters are also covered. COREQUISITE: 10451139 Signal Testing.

## 10451139

### Signal Testing - Credits: 2

The student is introduced to the processing requirements for various signals used in the HFC system. Bench sweeping, head end equipment alignment and testing as well as spectrum analyzers and waveform analysis are covered. Telephone central office signaling to the subscriber and signaling from the subscriber to the central office are analyzed. How voice and data signals are transmitted to the subscriber and back to the central office are studied. Troubleshooting and fault locating techniques are used to repair and maintain subscriber loop equipment. PREREQUISITES: 10451130 Telephone Networking and 10451131 Intro to HFC/Cable TV.

## 10451141

### Telecommunication Industry Concerns - Credits: 2

This course will introduce the students to the telecommunications industry. It will help them understand the three distinct areas and how they operate independently, as well as together, to provide services to the customer. It will help them understand the need for good customer relations regarding problem solving for the customer and for the industry. It will discuss methods of introducing and teaching customers about new equipment and technologies and how to use them.

## 10605116

### Communications Electricity 1 - Credits: 2

This course is an introduction to the basic concepts, principles, and theories of DC electricity, including the analysis of circuits to learn the relationship of current, voltage, and resistance. Knowledge and use of test equipment will focus on multimeters and digital voltmeters. Critical thinking skills are emphasized to develop competencies in problem solving and troubleshooting using a digital electronics trainer and computer assisted instruction (CAI).

## 10605117

### Communications Electricity 2 - Credits: 2

This course is an introduction to the basic concepts, principles, and theories of AC electricity, including the analysis of circuits to learn the relationship of current, voltage, and resistance. Test equipment usage, including multimeters, digital voltmeters, signal generators, and oscilloscopes are important elements of this course. Critical thinking skills are emphasized to develop competencies in problem solving and troubleshooting using a digital electronics trainer and computer assisted instruction (CAI). COREQUISITE: 10605116 Communications Electricity 1.

## 10451105

### Telecommunication Safety - Credits: 2

This course is intended for students in the telecommunications industry. It will be used to familiarize the student with rule setting organizations such as OSHA, DILHR, and NEC. It will focus on the safe use of equipment such as hand tools, power tools, ladders, and bucket trucks. The course will certify the student in first aid in the Medic First Aid program.

## Graduate Employment Information

(WITC Graduate Survey Responses 2005-2006)

Number of graduates	10	Number employed	9	% employed in WITC district	20%
Number of responses	10	Percent employed	90%	Range of yearly salary	\$23,918-\$44,197
Number available for employment	10	Employed in related field	5	Average yearly salary	\$34,352

*career vision*