ELECTRONICS/TELECOMMUNICATIONS TECHNOLOGY

TECHNICAL LIMITED ENROLLMENT

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Electronic and telecommunications technicians are in vital demand in a world experiencing a high technology revolution. These industries will continue to need more and more skilled workers.

According to the U.S. Department of Labor, Bureau of Labor Statistics, these are among the fastest growing occupations requiring a college education, but less than a baccalaureate degree. This is good news for graduates of this program, because they should experience excellent job opportunities and job security for years to come.

Virtually every industry has an electronic aspect, with systems designed to meet each industry's particular needs. Students attain entry-level skills required to enter the diversified electronics industry. Most graduates gain employment in the electronic manufacturing or telecommunications industry. Some examples of the manufacturing industry include companies that build, sell, and service avionic equipment, a variety of electronic control equipment, and silicon wafers and memory chips. The telecommunications industry dealing with conventional telephone and data transmission services is a rapidly growing industry with a multitude of opportunities for employment now and in the foreseeable future. The department maintains contact in the electronic and telecommunications industries and assists with placement.

This program prepares students with a good basic electronic background as well as specialization in radio communications, telecommunications and digital electronics. The program is intense and directly applicable to the job market. This program includes both classroom instruction and work in a well-equipped modern laboratory.

Graduates earn a program diploma or an Associate in Applied Science degree, depending on the option selected.

See page 51-52 for program diploma and degree requirements.

Enrollment: A class of 39 students will be enrolled in late August. Refer to the Admission section of this catalog beginning on page 10 for application procedures and requirements. Also refer to the limited enrollment program information on page 13.

Required placement scores:

ACT Math - 16 or higher
ACT Reading - 18 or higher
COMPASS Math - (algebra) 41 or higher COMPASS Reading - 80 or higher

Background in these areas helpful:

- High school algebra
- Basic computer literacy
- Physics
- Good reading skills

ELECTRONICS/TELECOMMUNICATIONS TECHNOLOGY DIPLOMA PROGRAM

FRESHMAN YEAR

FALL SEMESTER	CREDITS
Direct Current Analysis (ELEC 100)	4
Direct Current Analysis Lab (ELEC 100)	1
Solid State Devices I (ELEC 118)	4
Solid State Devices I Lab (ELEC 118L)	1
Digital Electronics I (ELEC 114)	3
Digital Electronics I Lab (ELEC 114L)	1
Math 102 or higher	3
Total credits	17

SPRING SEMESTER	CREDITS
Active Devices (ELEC 130)	4
Active Devices Lab (ELEC 130L)	1
AC Analysis (ELEC 120)	4
AC Analysis Lab (ELEC 120L)	1
Digital Electronics II (ELEC 115)	3
Digital Electronics II Lab (ELEC 115L)	1
Total credits	15

SOPHOMORE YEAR

FALL SEMESTER	CREDITS
Digital Electronics III (ELEC 216)	4
Digital Electronics III Lab (ELEC 216L)	1
Electronic Communications I (ELEC 222)	4
Electronic Communications I Lab (ELEC 222L)	1
Telecommunications I (ELEC 232)	4
Telecommunications I Lab (ELEC 232L)	1
Communications Elective	3
Total credits	18

SPRING SEMESTER	CREDITS
Digital Electronics IV (ELEC 218)	3
Digital Electronics IV Lab (ELEC 218L)	1
Electronic Communications II (ELEC 224)	4
Electronic Communications II Lab (ELEC 224L)	1
Telecommunications II (ELEC 234)	4
Telecommunications II Lab (ELEC 234L)	1
Humanities/Social Science Elective	3
Total credits	17

See page 52 for general education requirements for a diploma program.

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FRESHMAN YEAR

FALL SEMESTER	CREDITS
Direct Current Analysis (ELEC 100)	4
Direct Current Analysis Lab (ELEC 100L)	1
Solid State Devices I (ELEC 118)	4
Solid State Devices I Lab (ELEC 118L)	1
Digital Electronics I (ELEC 114)	3
Digital Electronics I Lab (ELEC 114L)	1
Math 102 or higher	3
Total Credits	17

SPRING SEMESTER	CREDITS
Active Devices (ELEC 130)	4
Active Devices Lab (ELEC 130L)	1
AC Analysis (ELEC 120)	4
AC Analysis Lab (ELEC 120L)	1
Digital Electronics II (ELEC 115)	3
Digital Electronics II Lab (ELEC 115L)	1
Communications Elective	3
Total Credits	17

SOPHOMORE YEAR

FALL SEMESTER	CREDITS
Digital Electronics III (ELEC 216)	4
Digital Electronics III Lab (ELEC 216L)	1
Electronic Communications I (ELEC 222)	4
Electronic Communications I Lab (ELEC 222L)	1
Telecommunications I (ELEC 232)	4
Telecommunications I Lab (ELEC 232L)	1
Communications Elective	3
Total Credits	18

SPRING SEMESTER	CREDITS
Digital Electronics IV (ELEC 218)	3
Digital Electronics IV Lab (ELEC 218L)	1
Electronic Communications II (ELEC 224)	4
Electronic Communications II Lab (ELEC 224L)	1
Telecommunications II (ELEC 234)	4
Telecommunications II Lab (ELEC 234L)	1
Humanities/Social Science Elective	3
Business/Math/Science/Technology Elective	3
Total Credits	20

See page 51 for general education requirements for Associate in Applied Science degree.

ELECTRONICS/TELECOMMUNICATIONS TECHNOLOGY (ELEC)

ELEC 100 Direct Current Analysis **Fall** **4 credits**

The study of the concepts of current, voltage and resistance through problem solving and schematic drawings as they apply to DC circuits analysis. Concurrent registration in, or previous successful completion of, the associated lab is required.

ELEC 100L Direct Current Analysis Lab **Fall** **1 credit**

The lab portion of the course is a lab/lecture, which provides hands-on verification of the theory presented in class. Concurrent registration in, or previous successful completion of the associated lecture is required.

ELEC 114 Digital Electronics I **Fall** **3 credits**

The study of number systems, logic gates, Boolean algebra,
combination logic circuits. Concurrent registration in, or previous successful completion of, the associated lab is required

ELEC 114L Digital Electronics I Lab **Fall** **1 credit**

The lab portion of the course is a lab/lecture, which provides hands-on verification of the theory presented in class. Concurrent registration in, or previous successful completion of the associated lecture is required.

ELEC 115 Digital Electronics II **Spring** **3 credit**

Prerequisites: ELEC 100, 100L, 114, 114L, 118, and 118L or equivalent and approval of instructor. The study of arithmetic circuits, code converters, multiplexers, demultiplexers, multivibrators, and an introduction to programmable logic controllers. Concurrent registration in, or previous successful completion of, the associated lab is required.

ELEC 115L Digital Electronics II Lab **Spring** **1 credit**

The lab portion of the course is a lab/lecture, which provide hands-on verification of the theory presented in class. Concurrent registration in, or previous successful completion of the associated lecture is required.

ELEC 118 Solid State Devices I **Fall** **4 credits**

The study of semiconductor physics, fundamentals of semiconductors, power supplies, transistors, characteristics of biasing circuits, amplifier properties, and FET characteristics and applications. Concurrent registration in, or previous successful completion of, the associated lab is required.

ELEC 118L Solid State Devices I Lab **Fall** **1 credit**

The lab portion of the course is a lab/lecture, which provides hands-on verification of the theory presented in class. Concurrent registration in, or previous successful completion of the associated lecture is required.

ELEC 120 AC Analysis **Spring** **4 credits**

Prerequisites: ELEC 100, 100L, 114, 114L, 118, and 118L or equivalent and approval of instructor. The study of dB, complex numbers, RC, RI, and RLC circuits, resonance, and passive and active filters. Concurrent registration in, or previous successful completion of, the associated lab is required.

ELEC 120L AC Analysis Lab **Spring** **1 credit**

The lab portion of the course is a lab/lecture, which provides hands-on verification of the theory, presented in class. Concurrent registration in, or previous successful completion of the associated lecture is required.

ELEC 130 Active Devices **Spring** **4 credits**

Prerequisites: ELEC 100, 100L, 114, 114L, 118, and 118L or equivalent and approval of instructor. The study of various electronic devices and circuitry including; Thyristors, Operational Amplifiers, and Regulated Power supplies. Concurrent registration in, or previous successful completion of, the associated lab is required.

ELEC 130L Active Devices Lab **Spring** **1 credit**

The lab portion of the course a lab/lecture, which provides hands-on verification of the theory, presented in class. Concurrent registration in, or previous successful completion of the associated lecture is required.

ELEC 216 Digital Electronics III **Fall** **4 credits**

Prerequisite: Completion of first year Electronics/Telecommunications Technology program, or equivalent and instructors approval. An extension of Digital II ELEC 115, a study of advanced integrated circuits. Topics covered are registers, processors, memory and a study of microcontrollers. Concurrent registration in, or previous successful completion of, the associated lab is required.

ELEC 216L Digital Electronics III Lab **Fall** **1 credit**

The lab portion of the course is a lab/lecture, which provides hands-on verification of the theory presented in class. Concurrent registration in, or previous successful completion of the associated lecture is required.

ELEC 218 Digital Electronics IV **Spring** **4 credits**

Prerequisite: ELEC 216 and ELEC 216L. An extension of Digital III ELEC 216. Students will become familiar with the architecture, programming, application and troubleshooting of micro-controller circuits. A to D and D to A converters are covered. Basic data acquisition theory and practices are also discussed. Concurrent registration in, or previous successful completion of, the associated lab is required.

ELEC 218L Digital Electronics IV Lab **Spring** **1 credit**

The lab portion of the course is a lab/lecture, which provides hands-on verification of the theory presented in class. Concurrent registration in, or previous

successful completion of the associated lecture is required.

ELEC 222 Electronic Communications I — Fall — 4 credits

Prerequisite: Completion of first year Electronics/Telecommunications Technology program, or equivalent and instructors approval. Review of reactive and resonant circuits. Circuits used to generate and detect amplitude modulation. Power, current and voltage relationships in an AM wave. Phase relationship between carrier and sidebands. Circuits used to generate and detect frequency modulation. Power, current and voltage relationships in an FM wave. Phase relationship between carrier and sidebands. Concurrent registration in, or previous successful completion of, the associated lab is required

ELEC 222L Electronic Communications I Lab — Fall — 1 credit

Corequisite: ELEC 222 or equivalent and instructors approval. The lab portion of the course is a lab/lecture, which provides hands-on verification of the theory presented in class. Concurrent registration in, or previous successful completion of the associated lecture is required.

ELEC 224 Electronic Communications II — Spring — 4 credits

Prerequisite: ELEC 222 and ELEC 222L or equivalent and instructors approval. Topics covered are digital communications, basic local area networks, cellular telephone, transmission lines, antennas and fiber optics. Concurrent registration in, or previous successful completion of, the associated lab is required

ELEC 224L Electronic Communications II Lab — Spring — 1 credit

Prerequisite: ELEC 222 and ELEC 222L. Corequisite: ELEC 224 or instructor's approval. The lab portion of the course is a lab/lecture, which provides hands-on verification of the theory presented in class. Concurrent registration in, or previous successful completion of the associated lecture is required or instructors approval.

ELEC 232 Telecommunications I — Fall — 4 credits

Prerequisite: First year electronics program or instructor's approval. This course is involved with the introduction of a basic telephone local loop and the tests that are performed on it. The local loop being a basic series DC circuit allows students not only an introduction into the access circuit but allows for a good review of basic CD circuits in a real world application. Students will use specialized test equipment to perform measurements of voltage, current, resistance, capacitance, noise and circuit length. Students will also be introduced to cable location and ground fault location. An outdoor practice field is used for the students hands-on tasks. Additional topics covered are the Public Switched Telephone Network, customer premise equipment, analog and digital transmission. Concurrent registration in, or previous successful completion of the associated lab is required.

ELEC 232L Telecommunications Lab I — Fall — 1 credit

Prerequisite: Completion of first year Electronics/Telecommunications Technology program, or equivalent and instructor's approval. Corequisite: 232 or instructor's approval, or equivalent and instructor's approval. The lab portion of the course is a lecture/lab that provides hands-on verification of the theory and concepts presented in the lecture class. Activities include underground cable location, cable ground fault location, determining the length of a line using a subscriber loop test set using the capacitance method and using a time domain reflectometer. Line and cable color code are also covered. Concurrent registration in or previous successful completion of the associate lecture is required or instructor's approval.

ELEC 234 Telecommunications II — Spring — 4 credit

Prerequisite: ELEC 232 and ELEC 232L or instructor's approval. This course is involved with the introductory study of newer technologies other that the plain old telephone service. Topics covered are T1 and the T carrier, packet switching, fiber distributed data interface, frame relay, asynchronous transfer mode, signal system 7 and video conferencing. Concurrent registration in or previous successful completion of the associate lab is required or instructor's approval.

ELEC 234L Telecommunications Lab II — Spring — 1 credit

Prerequisite: ELEC 232 and ELEC 232L or instructor's approval. Corequisite: ELEC 234. The lab portion of the course is a lecture/lab that provides hands-on practice opportunities for the students in the following areas. Connectorizing and testing of category 5 cable. Connectorizing and testing of hot melt fiber optic connectors. Mechanical splicing and testing of fiber optic cable. Students will also become familiar with the operation and use of the following test equipment. Subscriber loop analyzer including a time domain reflectometer, cable locator and faultfinder, calibrated light source and power meter. The students will also work on a simulated telephone system that is comprised of two PBXs' that are trunked together. Students will perform systems checks and troubleshooting. Concurrent registration in or previous successful completion of the associate lecture is required or instructor's approval.

ELEC 294 Independent Study — 1-3 credits

Independent or directed study of special topics in electronics telecommunications technology. Department chairperson approval is required.

ELEC 299 Special Topics — 1-3 credits

Variable instructional topics in the field of electronics/telecommunications technology. Repeatable as long as content varies. Consent of department chairperson.

ELEC 195-295 Service Learning — 1-3 credits

Maximum of six semester hours. Service learning may be accomplished by one of three methods: Joining a club that has a public service component, doing volunteer work at a non-profit organization, or taking a course that links public service with its curriculum.

ELEC 197-297 Cooperative Education/Internship — 1-3 credits

Repeatable up to six semester hours. Students get on-the job experience under qualified supervision in electronics/telecommunications technology occupations. Work hours are arranged by the employer, adviser, and student. Student progress is checked by oral and written reports from the employer. Student adviser conferences are held to discuss progress and/or problems. All co-op experiences are graded on a satisfactory/unsatisfactory basis. Consent of department chairperson.