

ELECTRONIC ENGINEERING TECHNOLOGY

pcc.edu/programs/electronic-engineering

CAREER AND PROGRAM DESCRIPTION

Electronic Engineering Technology (EET) is concerned with the theory and practice of applied electronics engineering. Emphasis is placed on the practical application of engineering knowledge. To apply electronics engineering knowledge requires a thorough background in mathematics and science. EET graduates possess a combination of theoretical and practical understanding and require minimal on-the-job training to become productive.

Graduates of an Associate of Applied Science Degree program in EET are called electronic engineering technicians and find employment in circuits and systems testing, product development, prototype construction and testing, circuit and systems medication, systems operation and manufacturing. EET graduates are expected to have good communication skills and be capable of creative problem solving, working independently and in teams. They should have extensive knowledge of both the hardware and software of electronic systems.

Employers of EET engineering technicians include research and development laboratories, electronic equipment manufacturers, public utilities, colleges and universities, government agencies, medical laboratories and hospitals, electronic equipment distributors, semiconductor manufacturers and manufacturing and processing industries that use electronic control equipment and others.

Students can complete the EET degree and/or the EET options in Biomedical Engineering Technology, Wireless and Data Communications, Renewable Energy Systems, and Mechatronics/Automation/Robotics Engineering Technology. The EET department also offers one certificate - Electronics Engineering Technology.

DEGREES AND CERTIFICATES OFFERED

ASSOCIATE OF APPLIED SCIENCE DEGREE

Electronic Engineering Technology
 Electronic Engineering Technology: Biomedical Engineering Technology
 Electronic Engineering Technology: Mechatronics/Automation/Robotics Engineering Technology
 Electronic Engineering Technology: Renewable Energy Systems
 Electronic Engineering Technology: Wireless and Data Communications Engineering Technology

LESS THAN ONE-YEAR: CAREER PATHWAY CERTIFICATE

Electronic Engineering Technology

Academic Prerequisites

- Basic computer skills in the Windows operating system, word processing and spreadsheets are required. Prerequisites and requirements vary depending upon the degree or certificate.
- Electronic Engineering Technology AAS Degree
 - a. Placement into WR 115 or higher
 - b. Placement into MTH 95 or higher
- Biomedical Engineering Technology AAS Degree
 - a. Placement into WR 115 or higher
 - b. Placement into MTH 95 or higher
 - c. Completion of any medical terminology course 3 credits or higher.
 - d. Completion of (BI 120) or (BI 121, BI 122) or (BI 231, BI 232, BI 233)

- Mechatronics/Automation/Robotic Engineering Technology AAS degree
 - a. Placement into WR 115 or higher
 - b. Placement into MTH 95 or higher
- Renewable Energy Systems AAS Degree
 - a. Placement into WR 115 or higher
 - b. Placement into MTH 95 or higher
- Wireless and Data Communications Engineering Technology AAS Degree
 - a. Placement into WR 115 or higher
 - b. Placement into MTH 95 or higher
- Electronic Engineering Technology Certificate
 - a. Placement into WR 115 or higher
 - b. Placement into MTH 95 or higher

Academic Requirements

- None

Non-Academic Prerequisites

- Job-upgrade students: students who want to upgrade their job skills must meet individual course prerequisites and complete an advising interview with an EET advisor prior to enrollment. Admission is granted on a space available basis after the needs of the degree/certificate seeking full-time and part-time students are met.

Non-Academic Requirements

- Students can transfer classes from the EET degree into any BSEET. Please check with the department for courses which transfer to Oregon Institute of Technology's BSEET degree.

ASSOCIATE OF APPLIED SCIENCE DEGREE

Electronic Engineering Technology (p. 1)
 Electronic Engineering Technology: Biomedical Engineering Technology (p. 2)
 Electronic Engineering Technology: Mechatronics/Automation/Robotics Engineering Technology (p. 2)
 Electronic Engineering Technology: Renewable Energy Systems (p. 4)
 Electronic Engineering Technology: Wireless and Data Communications Engineering Technology (p. 4)

ELECTRONIC ENGINEERING TECHNOLOGY AAS DEGREE

Minimum 95 credits. Students must also meet Associate Degree Comprehensive Requirements and Associate of Applied Science Requirements. Students must complete a total of four courses of General Education. Some courses specified within the program may be used as General Education. Math/computation competency is met through the math course(s) required in the program of study or completion of MTH 111 (or higher). Students should consult with program advisors for course planning.

COURSE OF STUDY

The coursework listed below is required. The following is an example of a term-by-term breakdown.

First Term		Credits
EET 101A	Electronic Lab and Essential Work Skills	2
EET 111	Electrical Circuit Analysis I	5
EET 121	Digital Systems 1	4
EET 100D	Introduction to Computers and Networking	3
MTH 111 or EET 100A	Precalculus I: Functions (MTH111=MTH111Z) (or higher) ² or Math for Electronic Engineering Technology	4

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Second Term		
EET 101B	Electronic Equipment and Lab Skills	2
EET 112	Electrical Circuit Analysis II	5
EET 122	Digital Systems 2: Computing Systems	5
EET 188	Industrial Safety	2
General Education: 1 course		
Third Term		
EET 113	Electrical Power	5
EET 123	Digital Systems 3: Mixed-Signal Systems	5
EET 178	Computing Environments for Technicians	4
EET 150	Introduction to Soldering	1
Fourth Term		
EET 221	Semiconductor Devices and Circuits	5
EET 242	Microcontroller and Embedded Systems	4
EET 254	Electronic Engineering Technology Seminar	1
General Education: 1 course		
Fifth Term		
EET 252	Electromechanical Systems Fundamentals	2
EET 241	Advanced Microcontrollers and Embedded Systems	4
EET 256A or EET 280A	EET Capstone Project 1 or Cooperative Education: Electronics Engineering Technology	2
EET 263	PLC Fundamentals	2
WR 121	Composition I (WR121=WR121Z)	4
General Education: 1 course		
Sixth Term		
EET 223	RF Communications Circuits	5
EET 256B or EET 280A	EET Capstone Project 2 or Cooperative Education: Electronics Engineering Technology	2
EET 272	Motors and Motor Controls	3
EET 273	Electronic Control Systems	2
General Education: 1 course		
Total Credits		95

¹ OSHA industrial safety training can be substituted

Z This course is part of Oregon Common Course Numbering. The following courses are equivalent:
MTH 111 and MTH 111Z

Recommended General Education (p. 5)

BIOMEDICAL ENGINEERING TECHNOLOGY AAS DEGREE

Minimum 101 credits. Students must also meet Associate Degree Comprehensive Requirements and Associate of Applied Science Requirements. Students must complete a total of four courses of General Education. Some courses specified within the program may be used as General Education. Math/computation competency is met through the math course(s) required in the program of study or completion of MTH 111 (or higher). Students should consult with a program advisor for course planning.

COURSE OF STUDY

The coursework listed below is required. The following is an example of a term-by-term breakdown.

First Term		Credits
EET 101A	Electronic Lab and Essential Work Skills	2
EET 111	Electrical Circuit Analysis I	5
EET 121	Digital Systems 1	4
MTH 111 or EET 100A	Precalculus I: Functions (MTH111=MTH111Z) (or higher) ² or Math for Electronic Engineering Technology	4
EET 100D	Introduction to Computers and Networking	3
Second Term		
EET 101B	Electronic Equipment and Lab Skills	2
EET 112	Electrical Circuit Analysis II	5
EET 122	Digital Systems 2: Computing Systems	5
EET 188	Industrial Safety ¹	2
General Education: 1 course		
Third Term		
EET 113	Electrical Power	5
EET 123	Digital Systems 3: Mixed-Signal Systems	5
EET 178	Computing Environments for Technicians	4
EET 150	Introduction to Soldering	1
Fourth Term		
EET 221	Semiconductor Devices and Circuits	5
EET 242	Microcontroller and Embedded Systems	4
EET 254	Electronic Engineering Technology Seminar	1
EET 260	Biomedical Equipment Technology	4
General Education: 1 course		
Fifth Term		
CIS 179	Data Communication Concepts I	4
EET 252	Electromechanical Systems Fundamentals	2
EET 280C	Cooperative Education: BMET Practicum	4
WR 121	Composition I (WR121=WR121Z)	4
General Education: 1 course		
Sixth Term		
EET 223	RF Communications Circuits	5
EET 273	Electronic Control Systems	2
EET 280C	Cooperative Education: BMET Practicum	7
General Education: 1 course		
Total Credits		101

¹ OSHA industrial safety training can be substituted

Z This course is part of Oregon Common Course Numbering. The following courses are equivalent:
MTH 111 and MTH 111Z
MTH 112 and MTH 112Z

Recommended General Education (p. 5)

MECHATRONICS/AUTOMATION/ROBOTICS ENGINEERING TECHNOLOGY AAS DEGREE

Minimum 99 credits. Students must also meet Associate Degree Comprehensive Requirements and Associate of Applied Science Requirements. Students must complete a total of four courses of General Education. Some courses specified within the program may be used as General Education. Math/computation competency is met through the math course(s) required in the program of study or completion of MTH 111 (or higher). Students should consult with program advisors for course planning.

COURSE OF STUDY

The coursework listed below is required. The following is an example of a term-by-term breakdown.

First Term		Credits
EET 100D	Introduction to Computers and Networking	3
EET 101A	Electronic Lab and Essential Work Skills	2
EET 111	Electrical Circuit Analysis I	5
EET 121	Digital Systems 1	4
MTH 111 or EET 100A	Precalculus I: Functions (MTH111=MTH111Z) (or higher) ² or Math for Electronic Engineering Technology	4
Second Term		
EET 101B	Electronic Equipment and Lab Skills	2
EET 112	Electrical Circuit Analysis II	5
EET 122	Digital Systems 2: Computing Systems	5
EET 188	Industrial Safety ¹	2
General Education: 1 course		
Third Term		
EET 113	Electrical Power	5
EET 123	Digital Systems 3: Mixed-Signal Systems	5
EET 178	Computing Environments for Technicians	4
EET 150	Introduction to Soldering	1
Fourth Term		
EET 221	Semiconductor Devices and Circuits	5
EET 242	Microcontroller and Embedded Systems	4
EET 254	Electronic Engineering Technology Seminar	1
Mechatronics Electives		4
WR 121	Composition I (WR121=WR121Z)	4
Fifth Term		
EET 241	Advanced Microcontrollers and Embedded Systems	4
EET 256A or EET 280A	EET Capstone Project 1 or Cooperative Education: Electronics Engineering Technology	2
EET 263	PLC Fundamentals	2
General Education: 1 Course		
EET 252	Electromechanical Systems Fundamentals	2
General Education: 1 course		3
Sixth Term		
EET 223	RF Communications Circuits	5
EET 256B or EET 280A	EET Capstone Project 2 or Cooperative Education: Electronics Engineering Technology	2
EET 272	Motors and Motor Controls	3
EET 273	Electronic Control Systems	2
General Education: 1 course		
Total Credits		99

¹ OSHA industrial safety training can be substituted.

² This course is part of Oregon Common Course Numbering. The following courses are equivalent:
MTH 111 and MTH 111Z

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MECHATRONICS ELECTIVES

Code	Title	Credits
Renewable Energy Focus		
EET 110	Introduction to Renewable Energy	3
Courses from PCC's Solar Voltaic Manufacturing Technology Certificate		
MT 101	Introduction to Semiconductor Manufacturing	1
MT 102	Introduction to Semiconductor Devices	1
MT 104	Introduction to Solar Voltaic Processing	1
CH 100	Everyday Chemistry with Lab	4
Courses from PCC's Manufacturing Technician Certificate		
MCH 100	Machine Tool Basics	1
MCH 110B	Blueprint Reading for Machine Manufacturing	3
MCH 115A	Geometric Dimensioning and Tolerancing I	2
MCH 120	Machine Shop Math	2
MCH 121	Manufacturing Processes I	5
MCH 130	Machine Shop Trigonometry	2.5
Courses from PCC's Technical Designer Certificate		
CADD 115	Practical Mathematics for CAD Designers and Drafters	4
CADD 175	SolidWorks Fundamentals	3
CADD 185	Inventor Fundamentals	3
CADD 195	CAD Simulation for Drafters and Designers	4
CADD 235	Materials and Design for Manufacturing Processes	3
CADD 245	Product Design and Development Fundamentals	3
Courses from PCC's Mechanical Drafter Certificate		
CADD 126	Introduction to AutoCAD	3
CADD 160	Drafting Fundamentals	4
CADD 175	SolidWorks Fundamentals	3
CADD 265	Mechanical Design Drafting	4
Courses from PCC's CAD Operator Certificate		
CADD 175	SolidWorks Fundamentals	3
CADD 185	Inventor Fundamentals	3
CADD 235	Materials and Design for Manufacturing Processes	3
CADD 275	SolidWorks Advanced	3
Medical Equipment Focus		
EET 260	Biomedical Equipment Technology	4
EET 261	Medical Imaging Equipment	3
EET 270		
Biotechnology Equipment Manufacturing Focus		
Courses from PCC's Bioscience Technician Certificate		
BIT 102	Current Topics in Bioscience Technology	2
BIT 105	Safety in the Bioscience Workplace	2
BIT 107	Bioscience Lab Math	2
BIT 109	Basic Laboratory Techniques and Instruments	5
BIT 125	Quality Systems in Bioscience Technology	2
BIT 126	Applied Quality Practice	3
BIT 181	Exploring Bioscience	3
Semiconductor Equipment Focus		

MT 101	Introduction to Semiconductor Manufacturing	1	Fourth Term		
MT 102	Introduction to Semiconductor Devices	1	EET 221	Semiconductor Devices and Circuits	5
MT 103	Introduction to Micro and Nano Processing	1	EET 242	Microcontroller and Embedded Systems	4
MT 150	Hand Tools for Assembly of Mechanical Systems	1	EET 254	Electronic Engineering Technology Seminar	1
MT 223	Vacuum Technology	3	WR 121	Composition I (WR121=WR121Z)	4
MT 224	Process Equipment I	3	General Education: 1 course		
MT 227	Process Equipment II	3	Fifth Term		
MT 228	Process Equipment III	4	EET 252	Electromechanical Systems Fundamentals	2
MT 240	RF Plasma Systems	3	EET 241	Advanced Microcontrollers and Embedded Systems	4
Mechanical Focus			EET 256A or EET 280A	EET Capstone Project 1 or Cooperative Education: Electronics Engineering Technology	2
Courses from PCC's Mechatronics Technology Certificate			EET 263	PLC Fundamentals	2
MT 151	Intro to Hand Tools and Mechanical Assembly	1	General Education: 2 courses		
MT 153	Assembly of Mechanical Systems II	3	Sixth Term		
MT 155	Mechanical Systems	5	EET 223	RF Communications Circuits	5
Engineering Mechanical/Manufacturing Focus			EET 256B or EET 280A	EET Capstone Project 2 or Cooperative Education: Electronics Engineering Technology	2
ENGR 102	2D Modeling and Engineering Graphics	3	EET 272	Motors and Motor Controls	3
ENGR 105	3D Modeling and Engineering Graphics	3	EET 273	Electronic Control Systems	2
ENGR 211	Statics	4	General Education: 1 course		
ENGR 212	Dynamics	4	Total Credits		
ENGR 213	Strength of Materials	4			
ENGR 231	Material Science	4			
ENGR 262	Manufacturing Processes	2			

RENEWABLE ENERGY SYSTEMS AAS DEGREE

Minimum 97 credits. Students must also meet Associate Degree Comprehensive Requirements and Associate of Applied Science Requirements. Students must complete a total of four courses of General Education. Some courses specified within the program may be used as General Education. Math/computation competency is met through the math course(s) required in the program of study or completion of MTH 111 (or higher). Students should consult with program advisors for course planning.

COURSE OF STUDY

The coursework listed below is required. The following is an example of a term-by-term breakdown.

First Term		Credits
EET 101A	Electronic Lab and Essential Work Skills	2
EET 111	Electrical Circuit Analysis I	5
EET 121	Digital Systems 1	4
EET 100D	Introduction to Computers and Networking	3
MTH 111 or EET 100A	Precalculus I: Functions (MTH111=MTH111Z) (or higher) ^z or Math for Electronic Engineering Technology	4
Second Term		
EET 101B	Electronic Equipment and Lab Skills	2
EET 112	Electrical Circuit Analysis II	5
EET 122	Digital Systems 2: Computing Systems	5
EET 110	Introduction to Renewable Energy	2
Third Term		
EET 178	Computing Environments for Technicians	4
EET 113	Electrical Power	5
EET 123	Digital Systems 3: Mixed-Signal Systems	5
EET 188	Industrial Safety	2
EET 150	Introduction to Soldering	1

¹ REE 201 of Oregon Tech can substitute

² OSHA industrial safety training can be substituted

^z This course is part of Oregon Common Course Numbering. The following courses are equivalent:
MTH 111 and MTH 111Z

Recommended General Education (p. 5)

WIRELESS AND DATA COMMUNICATIONS ENGINEERING TECHNOLOGY AAS DEGREE

Minimum 98 credits. Students must also meet Associate Degree Comprehensive Requirements and Associate of Applied Science Requirements. Students must complete a total of four courses of General Education. Some courses specified within the program may be used as General Education. Math/computation competency is met through the math course(s) required in the program of study or completion of MTH 111 (or higher). Students should consult with program advisors for course planning.

COURSE OF STUDY

The coursework listed below is required. The following is an example of a term-by-term breakdown.

First Term		Credits
EET 100D	Introduction to Computers and Networking	3
EET 101A	Electronic Lab and Essential Work Skills	2
EET 111	Electrical Circuit Analysis I	5
EET 121	Digital Systems 1	4
MTH 111 or EET 100A	Precalculus I: Functions (MTH111=MTH111Z) (or higher) ^z or Math for Electronic Engineering Technology	4
Second Term		
EET 101B	Electronic Equipment and Lab Skills	2
EET 112	Electrical Circuit Analysis II	5

EET 122	Digital Systems 2: Computing Systems	5
EET 188	Industrial Safety ¹	2
WR 121	Composition I (WR121=WR121Z)	4
Third Term		
EET 113	Electrical Power	5
EET 123	Digital Systems 3: Mixed-Signal Systems	5
EET 178	Computing Environments for Technicians	4
EET 150	Introduction to Soldering	1
Fourth Term		
CIS 179	Data Communication Concepts I	4
EET 221	Semiconductor Devices and Circuits	5
EET 242	Microcontroller and Embedded Systems	4
EET 254	Electronic Engineering Technology Seminar	1
General Education: 1 course		
Fifth Term		
EET 241	Advanced Microcontrollers and Embedded Systems	4
EET 256A or EET 280A	EET Capstone Project 1 or Cooperative Education: Electronics Engineering Technology	2
General Education: 3 courses		
Sixth Term		
CIS 189	Wireless Security	4
CIS 278A	Cisco 1: Introduction to Networks	4
EET 223	RF Communications Circuits	5
EET 256B or EET 280A	EET Capstone Project 2 or Cooperative Education: Electronics Engineering Technology	2
Total Credits		98

¹ OSHA industrial safety training can be substituted

Z This course is part of Oregon Common Course Numbering. The following courses are equivalent:
MTH 111 and MTH 111Z

RECOMMENDED GENERAL EDUCATION

Code	Title	Credits
COMM 111Z	Public Speaking (COMM111=COMM111Z)	4
COMM 140	Introduction to Intercultural Communication	4
COMM 227	Nonverbal Communication	4
COMM 228	Mass Communication and Society	4
COMM 237	Gender and Communication	4
PHL 202	Ethics	4
PHL 205	Biomedical Ethics	4
PHL 206	Introduction to Environmental Ethics	4
PHL 209	Business Ethics	4
PSY 101	Psychology and Human Relations	4
PSY 214	Introduction to Personality	4
PSY 215	Human Development	4
PSY 216	Social Psychology	4
PSY 240	Personal Awareness and Growth	4
SOC 205		
SOC 206		
SOC 211	Peace and Conflict Studies	4

SOC 213	Diversity in the United States	4
WR 222	Writing Research Papers	4

ELECTRONIC ENGINEERING TECHNOLOGY LESS THAN ONE-YEAR: CAREER PATHWAY CERTIFICATE

Minimum 43 credits. Students must meet all certificate requirements.

Course of Study

The coursework listed below is required. The following is an example of a term-by-term breakdown.

First Term		Credits
EET 101A	Electronic Lab and Essential Work Skills	2
EET 111	Electrical Circuit Analysis I	5
EET 121	Digital Systems 1	4
EET 100D	Introduction to Computers and Networking	3
MTH 111 or EET 100A	Precalculus I: Functions (MTH111=MTH111Z) ² or Math for Electronic Engineering Technology	4
Second Term		
EET 101B	Electronic Equipment and Lab Skills	2
EET 112	Electrical Circuit Analysis II	5
EET 122	Digital Systems 2: Computing Systems	5
EET 188	Industrial Safety ¹	2
Third Term		
EET 113	Electrical Power	5
EET 123	Digital Systems 3: Mixed-Signal Systems	5
EET 150	Introduction to Soldering	1
Total Credits		43

¹ OSHA industrial training can be substituted

Z This course is part of Oregon Common Course Numbering. The following courses are equivalent:
MTH 111 and MTH 111Z