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 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. 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	4
EET 101A	Electronic Lab and Essential Work Skills	1
EET 111	Electrical Circuit Analysis I	5
EET 121	Digital Systems 1	4
MTH 111 or EET 100A	Precalculus I: Functions (MTH111=MTH111Z) [Z] or Math for Electronic Engineering Technology	4

Second Term		
EET 101B	Electronic Equipment and Lab Skills	1
EET 112	Electrical Circuit Analysis II	5
EET 122	Digital Systems 2: Computing Systems	5
EET 188	Industrial Safety	2
Electronic Engineering Degree Electives		4
Third Term		
EET 113	Electrical Power	5
EET 123	Digital Systems 3: Mixed-Signal Systems §	5
EET 178	Computing Environments for Technicians	4
General Education: 1 Course		
Fourth Term		
EET 221	Semiconductor Devices and Circuits	5
EET 242	Microcontroller and Embedded Systems	4
EET 252	Electromechanical Systems Fundamentals	2
EET 254	Electronic Engineering Technology Seminar	1
General Education: 2 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
EET 263	PLC Fundamentals	2
Electronic Engineering Degree Electives		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	3
	Total Credits	98

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OSHA industrial safety training can be substituted

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

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Course cannot be substituted for another course.

Recommended General Education (p. 6)

ELECTRONIC ENGINEERING DEGREE ELECTIVES

Code	Title	Credits
BA 101	Introduction to Business (BA101=BA101Z) [Z]	4
BA 150	Intro to Entrepreneurship	4
BA 205	Business Communication Using Technology	4
BA 223	Principles of Marketing	4
BA 236	Product Management and Branding	4
BA 250	Small Business Design	3
BA 255	Project Management Essentials	4
BA 277	Professional Ethics in Business	4
HUM 221	Leadership Development	4
MSD 113	Influence Without Authority	1
MSD 116	Creative Thinking for Innovative Change	1
MSD 121	Leadership Skill Development	3
MSD 138B	Better Habits, Better Results	1
MSD 157	Constructive Conflict Skills	1
MSD 177	Team Building	1
MSD 279	Project Management - Intro	4
PHL 206	Introduction to Environmental Ethics	4
PHL 209	Business Ethics	4
PHY 211	General Physics (Calculus)	5
PHY 212	General Physics (Calculus)	5
PHY 213	General Physics (Calculus)	5

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This course is part of Oregon Common Course Numbering. The following courses are equivalent:
BA 101 and BA 101Z

BIOMEDICAL ENGINEERING TECHNOLOGY AAS DEGREE

Minimum 103 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. 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 100D	Introduction to Computers and Networking	4
EET 101A	Electronic Lab and Essential Work Skills	1
EET 111	Electrical Circuit Analysis I	5
EET 121	Digital Systems 1	4
MTH 111 or EET 100A	Precalculus I: Functions (MTH111=MTH111Z) [Z] or Math for Electronic Engineering Technology	4
Second Term		
EET 101B	Electronic Equipment and Lab Skills	1
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
General Education: 1 Course		
Fourth Term		
EET 221	Semiconductor Devices and Circuits	5
EET 242	Microcontroller and Embedded Systems	4
EET 252	Electromechanical Systems Fundamentals	2

EET 254	Electronic Engineering Technology Seminar	1
EET 260	Biomedical Equipment Technology	4
Fifth Term		
CIS 179	Data Communication Concepts I	4
EET 261	Medical Imaging Equipment	3
EET 280C	Cooperative Education: BMET Practicum	5
General Education: 2 Courses		
Sixth Term		
EET 223	RF Communications Circuits	5
EET 262	Biomedical Information Technology	2
EET 273	Electronic Control Systems	3
EET 274	Dental Equipment	2
EET 280C	Cooperative Education: BMET Practicum	6
	Total Credits	103

[1]

OSHA industrial safety training can be substituted

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

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Course cannot be substituted for another course.

Recommended General Education (p. 6)

MECHATRONICS/AUTOMATION/ROBOTICS ENGINEERING TECHNOLOGY AAS DEGREE

Minimum 100 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. 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	4
EET 101A	Electronic Lab and Essential Work Skills	1
EET 111	Electrical Circuit Analysis I	5
EET 121	Digital Systems 1	4
MTH 111 or EET 100A	Precalculus I: Functions (MTH111=MTH111Z) [Z] or Math for Electronic Engineering Technology	4
Second Term		
EET 101B	Electronic Equipment and Lab Skills	1
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
General Education: 1 Course		
Fourth Term		
EET 221	Semiconductor Devices and Circuits	5
EET 242	Microcontroller and Embedded Systems	4
EET 252	Electromechanical Systems Fundamentals	2
EET 254	Electronic Engineering Technology Seminar	1
Mechatronics Electives		3
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
EET 263	PLC Fundamentals	2
Mechatronics Electives		3
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	3
Mechatronics Electives		4
	Total Credits	100

[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

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Course cannot be substituted for another course.

Recommended General Education (p. 6)

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

Course	Title	Credits
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

Course	Title	Credits
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

Course	Title	Credits
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

Course	Title	Credits
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

Course	Title	Credits
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

Course	Title	Credits
MT 101	Introduction to Semiconductor Manufacturing	1
MT 102	Introduction to Semiconductor Devices	1
MT 103	Introduction to Micro and Nano Processing	1
MT 150	Hand Tools for Assembly of Mechanical Systems	1
MT 223	Vacuum Technology	3
MT 224	Process Equipment I	3
MT 227	Process Equipment II	3
MT 228	Process Equipment III	4
MT 240	RF Plasma Systems	3

Mechanical Focus

Courses from PCC's Mechatronics Technology Certificate

Course	Title	Credits
MT 151	Intro to Hand Tools and Mechanical Assembly	1
MT 153	Assembly of Mechanical Systems II	3
MT 155	Mechanical Systems	5

Engineering Mechanical/Manufacturing Focus

Course	Title	Credits
ENGR 102	2D Modeling and Engineering Graphics	3
ENGR 105	3D Modeling and Engineering Graphics	3
ENGR 211	Statics	4
ENGR 212	Dynamics	4
ENGR 213	Strength of Materials	4
ENGR 231	Material Science	4
ENGR 262	Manufacturing Processes	2

RENEWABLE ENERGY SYSTEMS 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. 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	4
EET 101A	Electronic Lab and Essential Work Skills	1
EET 111	Electrical Circuit Analysis I	5
EET 121	Digital Systems 1	4
MTH 111 or EET 100A	Precalculus I: Functions (MTH111=MTH111Z) [Z] or Math for Electronic Engineering Technology	4

Second Term		
EET 101B	Electronic Equipment and Lab Skills	1
EET 112	Electrical Circuit Analysis II	5
EET 122	Digital Systems 2: Computing Systems	5
EET 188	Industrial Safety [2]	2
Renewable Energy Systems Elective		2
General Education: 1 Course		

Third Term		
EET 110	Introduction to Renewable Energy [1]	3
EET 113	Electrical Power	5
EET 123	Digital Systems 3: Mixed-Signal Systems [§]	5
EET 178	Computing Environments for Technicians	4

Fourth Term		
EET 221	Semiconductor Devices and Circuits	5
EET 242	Microcontroller and Embedded Systems	4
EET 252	Electromechanical Systems Fundamentals	2
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
EET 263	PLC Fundamentals	2
Renewable Energy Systems Elective		2
General Education: 2 Courses		

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	3
Renewable Energy Systems Elective		4
	Total Credits	101

[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

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Course cannot be substituted for another course.

Recommended General Education (p. 6)

RENEWABLE ENERGY SYSTEMS PROGRAM ELECTIVES

Code	Title	Credits
Courses From PCC's Solar Voltaic Manufacturing Technology Certificate		
CH 100	Everyday Chemistry with Lab	4
MT 101	Introduction to Semiconductor Manufacturing	1
MT 102	Introduction to Semiconductor Devices	1
MT 104	Introduction to Solar Voltaic Processing	1
Manufacturing Processes		
ENGR 262	Manufacturing Processes	2
MCH 121	Manufacturing Processes I	5
Sustainability		
BA 278	Eco-Innovation and Social Entrepreneurship	4
ESR 140	Introduction to Sustainability	4
ESR 141	Introduction to Individual Sustainability	4
G 184	Global Climate Change	4

WIRELESS AND DATA COMMUNICATIONS ENGINEERING TECHNOLOGY AAS DEGREE

Minimum 100 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. 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	4
EET 101A	Electronic Lab and Essential Work Skills	1
EET 111	Electrical Circuit Analysis I	5
EET 121	Digital Systems 1	4
MTH 111 or EET 100A	Precalculus I: Functions (MTH111=MTH111Z) [Z] or Math for Electronic Engineering Technology	4
Second Term		
EET 101B	Electronic Equipment and Lab Skills	1
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 178	Computing Environments for Technicians	4
General Education: 1 Course		
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
Wireless & Data Communication Electives		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
Wireless & Data Communication Electives		4
General Education: 2 Course		
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
General Education: 1 Course		
	Total Credits	100

[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

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Course cannot be substituted for another course.

WIRELESS & DATA COMMUNICATION ELECTIVES

Code	Title	Credits
CIS 121	Information Systems and Programming	4
CIS 122	Introduction to Programming Logic	4
CIS 140M	Operating Systems I: Microsoft	4
CIS 179	Data Communication Concepts I	4
CIS 184C	Introduction to Information Security	4
CIS 189	Wireless Security	4
CIS 240L	Linux Installation and Configuration	4
CIS 240M	Managing a Windows Server Environment	4

CIS 245	Project Management - Information Systems	4
CIS 279L	Linux Network Administration	4
CIS 284C	Cybersecurity Concepts	4
CIS 287M	Microsoft Server Security	4
CIS 288M	Microsoft Network Administration	4
CIS 289M	Microsoft Active Directory Administration	4
EET 262	Biomedical Information Technology	2
HIM 283	Health Information Systems	4
CIS 278B	Cisco 2: Switching, Routing, and Wireless Essentials	4
CIS 278C	Cisco 3: Enterprise Networking, Security, and Automation	4

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	Social Change	4
SOC 206	Social Problems	4
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 41 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 100D	Introduction to Computers and Networking	4
EET 101A	Electronic Lab and Essential Work Skills	1
EET 111	Electrical Circuit Analysis I	5
EET 121	Digital Systems 1	4
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	1
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
	Total Credits	41

[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