

Electro-Mechanical Engineering Technology (EMET)

Electro-Mechanical Engineering Technology prepares graduates to work in an industrial setting where automation, robotics, controls, and systems integration are used, providing a blend of electronics and mechanical systems studies. Two majors are offered, in Renewable Energy and in Lasers. These majors address the needs of growing industries in Ohio and the region, including manufacturing of photovoltaic electric panels, wind turbines, and fuel cells; installing and servicing photovoltaic and wind turbine systems; and assisting energy efficiency companies and consultants.

Electro-Mechanical Engineering Technology (EMET)

The Electro-Mechanical Engineering Technology program is the largest of its kind in Ohio. The program combines electronics engineering technology and mechanical engineering technology, so students develop skills that are highly valued by industrial firms, including a focus on industrial automation. Students gain skills in controlling systems, linking software and hardware maintaining systems, and improving machines and systems.

Program graduates also are prepared to pursue a Bachelor of Science degree in Engineering Technologies such as Electronics and Electro-Mechanical, or pursue a Bachelor of Science degree in Engineering such as Electrical Engineering.

The Electro-Mechanical Engineering Technology program is accredited by the Engineering Technology Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, phone (410) 347-7700 and has received an Ohio Board of Regents Program Excellence Award.

Electro-Mechanical Engineering Technology—Laser Major (EMETL)

The Laser major prepares graduates to successfully begin careers and advance professionally in local and national industries that utilize lasers and electro-optics systems. Students work with laser material processing systems, and operate and troubleshoot optical systems including lasers, lens systems, and fiber optics. Graduates can support industrial equipment in automated manufacturing and research environments, and are also prepared to pursue a bachelor's degree in Electro-Mechanical Engineering or related fields.

Program graduates also are prepared to pursue a Bachelor of Science degree in Engineering Technologies such as Electronics and Electro-Mechanical, or pursue a Bachelor of Science degree in Engineering such as Electrical Engineering.

Electro-Mechanical Engineering Technology—Renewable Energy and Energy Efficiency Major (EMTR)

The Renewable Energy major prepares graduates to address needs in several related and growing industries, including the manufacturing of photovoltaic electric panels, geothermal, solar thermal, wind turbines, and fuel cells; installing and servicing photovoltaic and wind turbine systems; and assisting energy efficiency companies and consultants. Understanding these new technologies requires most of the traditional foundations of electro-mechanical engineering technology studies.

Program graduates also are prepared to pursue a Bachelor of Science degree in Engineering Technologies such as Electronics and Electro-Mechanical, or pursue a Bachelor of Science degree in Engineering such as Chemical Engineering for research and development.

Electro-Mechanical Engineering Technology—Laser Certificate

The Electro-Mechanical Engineering Technology – Laser Certificate prepares students to enter careers and advance professionally in local and national industries that utilize laser and electro-optics systems. Students work with laser material processing systems, and operate and troubleshoot optical systems including laser, lens systems, and fiber optics. Graduates of the certificate program receive OSHA 10 Electrical Safe Practices certification and are prepared for Laser Safety Officer training based on ANSI 36 standards, OSHA guidelines and the FDA Center for Devices and Radiological Health (CDRH).

Electro-Mechanical Engineering Technology (EMET)

All degree-seeking students must complete a First Year Experience (FYE) course as part of the first 12 credit hours taken at Cincinnati State.

Semester 1		Lec	Lab	Credits
EET 131	Circuit Analysis 1	3	2	4
ENG 101	English Composition 1	3	0	3
MAT XXX	Mathematics			4
	Elective 1			
EMET 140	Electro-Mechanical Engineering Technology Foundations	1	2	2

PSET 110	Power Systems CAD	2	3	3
Semester 2				
MET 111	Manufacturing Processes 1	2	3	3
EMET 180	Process Instrumentation	2	3	3
EET 132	Circuit Analysis 2	3	2	4
MAT XXX Mathematics Elective 2				4
EET 121	Digital Systems 1	2	2	3
Semester 3				
EMET 291	Full-Time Cooperative Education 1: Electro- Mechanical Engineering Technology	1	40	2
MET 150	Statics and Strength of Materials for MET	2	3	3
Semester 4				
PHY XXX Physics Elective				4
COMM 110	Public Speaking	3	0	3
ECO 1XX Economics Elective				3
ENG 10X English Composition Elective				3
EMET 240	Programmable Logic Controllers, Motors, Motor Controls, and Kinematics	2	3	3
EMET 285	Electro-Mechanical Engineering Technology Capstone 1	0	2	1
Semester 5				
XXX XXX Technical Elective				3
EMET 290	Electro-Mechanical Engineering Technology Capstone 2	1	2	2
EMET 270	Robotics and Servomechanisms	3	3	4
XXX XXX Humanities Elective				3
Semester 6				
EMET 292	Full-Time Cooperative Education 2: Electro- Mechanical Engineering Technology	1	40	2
Total Credits:		31	110	69

Electives

Mathematics Electives

Select one of the following series: 8-10

MAT 125
& MAT 126 Algebra and Trigonometry
and Functions and Calculus

MAT 251
& MAT 252 Calculus 1
and Calculus 2

English Composition Elective

ENG 102	English Composition 2: Contemporary Issues	3
ENG 103	English Composition 2: Topics in Literature	3
ENG 104	English Composition 2: Technical Communication	3

ENG 105	English Composition 2: Business Communication	3
Economics Elective		
ECO 105	Principles of Microeconomics	3
ECO 110	Principles of Macroeconomics	3
Physics Elective		
PHY 151	Physics 1: Algebra and Trigonometry-Based	4
PHY 201	Physics 1: Calculus-Based	5
Humanities Elective		
CULT 105	Issues in Human Diversity	3
CULT 110	Social Issues in Technology	3
PHI 110	Ethics	3
Technical Elective		
EMET 245	Laser Foundations and Safety	3
MET 240	Hydraulics and Pneumatics	3
MET 260	Applied Thermodynamics	3

Electro-Mechanical Engineering Technology—Renewable Energy Major (EMETE)

All degree-seeking students must complete a First Year Experience (FYE) course as part of the first 12 credit hours taken at Cincinnati State.

		Lec	Lab	Credits
Semester 1				
EMET 140	Electro-Mechanical Engineering Technology Foundations	1	2	2
MAT XXX Mathematics Elective 1				4
ENG 101	English Composition 1	3	0	3
EET 131	Circuit Analysis 1	3	2	4
PSET 110	Power Systems CAD	2	3	3
Semester 2				
EET 121	Digital Systems 1	2	2	3
EMET 180	Process Instrumentation	2	3	3
EET 132	Circuit Analysis 2	3	2	4
MAT XXX Mathematics Elective 2				4
MET 111	Manufacturing Processes 1	2	3	3
Semester 3				
EMET 291	Full-Time Cooperative Education 1: Electro-Mechanical Engineering Technology	1	40	2
MET 150	Statics and Strength of Materials for MET	2	3	3
Semester 4				
PHY XXX Physics Elective				4
EMET 240	Programmable Logic Controllers, Motors, Motor Controls, and Kinematics	2	3	3
EMET 210	Energy Efficiency and Audits	2	2	3
EMET 285	Electro-Mechanical Engineering Technology Capstone 1	0	2	1
ENG 10X English Composition Elective				3
COMM 110	Public Speaking	3	0	3

Semester 5

XXX XXX Technical Elective				3
EMET 225	Solar and Renewable Energy	3	3	4
ECO XXX Economics Elective				3
XXX XXX Humanities Elective				3
EMET 290	Electro-Mechanical Engineering Technology Capstone 2	1	2	2
Semester 6				
EMET 292	Full-Time Cooperative Education 2: Electro-Mechanical Engineering Technology	1	40	2
Total Credits:		33	112	72

Electives**Mathematics Electives**

Select one of the following series: 8-10

MAT 125 & MAT 126 Algebra and Trigonometry and Functions and Calculus

MAT 251 & MAT 252 Calculus 1 and Calculus 2

English Composition Elective

ENG 102	English Composition 2: Contemporary Issues	3
ENG 103	English Composition 2: Topics in Literature	3
ENG 104	English Composition 2: Technical Communication	3
ENG 105	English Composition 2: Business Communication	3

Economics Elective

ECO 105	Principles of Microeconomics	3
ECO 110	Principles of Macroeconomics	3

Physics Elective

PHY 151	Physics 1: Algebra and Trigonometry-Based	4
PHY 201	Physics 1: Calculus-Based	5

Humanities Elective

CULT 105	Issues in Human Diversity	3
CULT 110	Social Issues in Technology	3
PHI 110	Ethics	3

Technical Elective

EMET 245	Laser Foundations and Safety	3
MET 240	Hydraulics and Pneumatics	3
MET 260	Applied Thermodynamics	3

Electro-Mechanical Engineering Technology—Laser Major (EMETL)

All degree-seeking students must complete a First Year Experience (FYE) course as part of the first 12 credit hours taken at Cincinnati State.

Semester 1		Lec	Lab	Credits
EMET 140	Electro-Mechanical Engineering Technology Foundations	1	2	2
ENG 101	English Composition 1	3	0	3
MAT XXX Mathematics Elective 1				4

PSET 110	Power Systems CAD	2	3	3
EET 131	Circuit Analysis 1	3	2	4
Semester 2				
ENG 10X English Composition Elective				3
EET 132	Circuit Analysis 2	3	2	4
EET 121	Digital Systems 1	2	2	3
MAT XXX Mathematics Elective 2				4
MET 111	Manufacturing Processes 1	2	3	3
Semester 3				
EMET 291	Full-Time Cooperative Education 1: Electro- Mechanical Engineering Technology	1	40	2
MET 150	Statics and Strength of Materials for MET	2	3	3
Semester 4				
PHY XXX Physics Elective				4
XXX 2XX Technical Elective				3
EMET 240	Programmable Logic Controllers, Motors, Motor Controls, and Kinematics	2	3	3
COMM 110	Public Speaking	3	0	3
EMET 245	Laser Foundations and Safety	2	3	3
Semester 5				
EMET 255	Optical Components, and Geometrical and Wave Optics	3	3	4
EMET 265	Industrial Laser Systems	3	3	4
XXX XXX Humanities Elective				3
ECO 1XX Economics Elective				3
Semester 6				
EMET 292	Full-Time Cooperative Education 2: Electro- Mechanical Engineering Technology	1	40	2
Total Credits:		33	109	70

Electives

Mathematics Electives

Select one of the following series: 8-10

MAT 125 Algebra and Trigonometry
& MAT 126 and Functions and Calculus

MAT 251 Calculus 1
& MAT 252 and Calculus 2

English Composition Elective

ENG 102 English Composition 2: Contemporary Issues 3

ENG 103 English Composition 2: Topics in Literature 3

ENG 104 English Composition 2: Technical Communication 3

ENG 105 English Composition 2: Business Communication 3

Economics Elective

ECO 105	Principles of Microeconomics	3
ECO 110	Principles of Macroeconomics	3
Physics Elective		
PHY 151	Physics 1: Algebra and Trigonometry-Based	4
PHY 201	Physics 1: Calculus-Based	5
Humanities Elective		
CULT 105	Issues in Human Diversity	3
CULT 110	Social Issues in Technology	3
PHI 110	Ethics	3
Technical Elective		
EMET 180	Process Instrumentation	3
MET 240	Hydraulics and Pneumatics	3
MET 260	Applied Thermodynamics	3

Electro-Mechanical Engineering Technology Renewable Energy and Energy Efficiency Major (EMTR)

All degree-seeking students must complete a First Year Experience (FYE) course as part of the first 12 credit hours taken at Cincinnati State.

Semester 1		Lec	Lab	Credits
ENG 101	English Composition 1	3	0	3
PSET 110	Power Systems CAD	2	3	3
MET 111	Manufacturing Processes 1	2	3	3
EET 131	Circuit Analysis 1	3	2	4
EMET 140	Electro-Mechanical Engineering Technology Foundations	1	2	2
MAT XXX Mathematics Elective 1				4
Semester 2				
ENG 10X English Composition Elective				3
EET 121	Digital Systems 1	2	2	3
EET 132	Circuit Analysis 2	3	2	4
MET 150	Statics and Strength of Materials for MET	2	3	3
MAT XXX Mathematics Elective 2				4
Semester 3				
EMET 291	Full-Time Cooperative Education 1: Electro- Mechanical Engineering Technology	1	40	2
Semester 4				
PSC 115	Energy	2	2	3
ECO 1XX Economics Elective				3
EMET 210	Energy Efficiency and Audits	2	2	3
EMET 240	Programmable Logic Controllers, Motors, Motor Controls, and Kinematics	2	3	3
EET 251	Electronics	3	3	4
Semester 5				
COMM 110	Public Speaking	3	0	3
CULT 110	Social Issues in Technology	3	0	3

EMET 220	Photovoltaic and Solar Thermal Devices	2	3	3
EMET 230	Fuel Cells and Wind Devices	2	2	3
MET 260	Applied Thermodynamics	2	2	3
EMET 290	Electro-Mechanical Engineering Technology Capstone 2	1	2	2
Semester 6				
EMET 292	Full-Time Cooperative Education 2: Electro-Mechanical Engineering Technology	1	40	2
Total Credits:		42	116	73

Electives

Mathematics Electives

Select one of the following: 8-10

MAT 125 & MAT 126	Algebra and Trigonometry and Functions and Calculus			
MAT 251 & MAT 252	Calculus 1 and Calculus 2			

English Composition Elective

ENG 102	English Composition 2: Contemporary Issues			3
ENG 103	English Composition 2: Topics in Literature			3
ENG 104	English Composition 2: Technical Communication			3
ENG 105	English Composition 2: Business Communication			3

Economics Elective

ECO 105	Principles of Microeconomics			3
ECO 110	Principles of Macroeconomics			3

Electro-Mechanical Engineering Technology - Laser Certificate (EMETLC)

Semester 1		Lec	Lab	Credits
EMET 245	Laser Foundations and Safety	2	3	3
CIT 105	OSHA 10 General Industry Safety	1	0	1
Semester 2				
EMET 255	Optical Components, and Geometrical and Wave Optics	3	3	4
EMET 265	Industrial Laser Systems	3	3	4
Total Credits:		9	9	12

EET Courses

EET 100 Introduction to Electrical Engineering Technology

2 Credits. 1 Lecture Hour. 2 Lab Hours.

An introduction to concepts and measuring skills for the electronics field. Topics include: current, voltage, power, Ohm's law, series circuits, meter reading, software simulation use, and circuit construction.

Prerequisites: AFM 090 or appropriate placement test score

EET 101 Electronic Fundamentals 1

3 Credits. 2 Lecture Hours. 3 Lab Hours.

A course on electrical fundamentals for non-electrical majors. Topics include: DC and AC circuit theory, electrical motors and controls, electromagnetic devices, and transformers.

Prerequisites: AFM 095 or MAT 120, and AFL 085, or appropriate placement test scores

EET 102 Electronic Fundamentals 2

4 Credits. 3 Lecture Hours. 2 Lab Hours.

A continuation of EET 101. Topics include: number systems, codes, Boolean algebra, and combinational and sequential logic systems; digital circuits including comparators, decoders, and counters; diodes, bipolar junction transistors, and operational amplifiers; circuit construction; and troubleshooting. Prerequisites: EET 101

EET 121 Digital Systems 1

3 Credits. 2 Lecture Hours. 2 Lab Hours.

A course on analyzing, designing, and troubleshooting digital logic circuits. Topics include: basic gates and PLDs, number systems and codes, Boolean algebra, circuit simplification, functions of logic circuits, latches, flip-flops, counters, timers, and memory. Prerequisites: MAT 120 or appropriate placement test score

EET 122 Digital Systems 2

4 Credits. 3 Lecture Hours. 2 Lab Hours.

A continuation of EET 121. Topics include: counter design and cascading, shift registers, PLD applications, microprocessor registers, I/O, busses, DMA, memory expansion, and assembly language programming. Prerequisites: EET 121

EET 131 Circuit Analysis 1

4 Credits. 3 Lecture Hours. 2 Lab Hours.

A course on DC electric circuits. Topics include: current, voltage, resistance, and power; laws applied to series, parallel, and series-parallel circuits; Thevenin's, Superposition, and Norton's theorems; steady state and transient behavior of capacitive and inductive devices; and magnetic properties. Prerequisites: Take either MAT 121, MAT 122, MAT 123, MAT 125, MAT 126 or appropriate placement test score

EET 132 Circuit Analysis 2

4 Credits. 3 Lecture Hours. 2 Lab Hours.

A continuation of EET 131. Topics include: sinusoidal wave characteristics; complex numbers; phasors; transformers; RC, RL, and RLC networks; filter networks; three-phase and poly-phase systems; and power factor analysis. Prerequisites: EET 131, MAT 125

EET 191 Part-Time Cooperative Education 1: Electronics Engineering Technology

1 Credit. 1 Lecture Hour. 20 Lab Hours.

Students seeking an associate's degree participate in their first part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory. Prerequisites: None

EET 192 Part-Time Cooperative Education 2: Electronics Engineering Technology

1 Credit. 1 Lecture Hour. 20 Lab Hours.

Students seeking an associate's degree participate in their second part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory. Prerequisites: EET 191

EET 193 Part-Time Cooperative Education 3: Electronics Engineering Technology

1 Credit. 1 Lecture Hour. 20 Lab Hours.

Students seeking an associate's degree participate in their third part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory. Prerequisites: EET 192

EET 194 Part-Time Cooperative Education 4: Electronics Engineering Technology

1 Credit. 1 Lecture Hour. 20 Lab Hours.

Students seeking an associate's degree participate in their fourth part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory. Prerequisites: EET 193

EET 195 Part-Time Cooperative Education 5: Electronics Engineering Technology

1 Credit. 1 Lecture Hour. 20 Lab Hours.

Students seeking an associate's degree participate in their fifth part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory. Prerequisites: EET 194

EET 196 Part-Time Cooperative Education 6: Electronics Engineering Technology**1 Credit. 1 Lecture Hour. 20 Lab Hours.**

Students seeking an associate's degree participate in their sixth part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: EET 195

EET 198 First Year Special Topics in Electronics Engineering Technology**1-9 Credits. 0 Lecture Hour. 0 Lab Hour.**

A course on selected topics related to Electronics Engineering Technology, which gives students opportunities to study information not currently covered in other courses. Grades issued are A, B, C, D, or F.

Prerequisites: Instructor Approval

EET 199 First Year Independent Project in Electronics Engineering Technology**1-9 Credits. 0 Lecture Hour. 0 Lab Hour.**

A project related to Electronics Engineering Technology that is completed by one or more students to meet specific educational goals. Projects must have prior approval and supervision by Electronics Engineering Technology faculty. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: Instructor Approval

EET 220 Microprocessor Systems**4 Credits. 3 Lecture Hours. 2 Lab Hours.**

A course on designing, programming, and troubleshooting microprocessor systems and applications. Topics include: assembly language programming, interrupt and polled I/O, interrupt service routines, parallel ports, timer functions, serial interfaces, A/D converters, and external hardware interfaces.

Prerequisites: EET 122

EET 251 Electronics**4 Credits. 3 Lecture Hours. 3 Lab Hours.**

A course on semiconductor and amplifier theory and application. Topics include: diode circuits and basic power supplies; bipolar transistor, FET, thyristor, and operational amplifier theory; inverters; circuit construction; and troubleshooting.

Prerequisites: EET 132

EET 290 Electronics Engineering Technology Capstone Project**4 Credits. 2 Lecture Hours. 4 Lab Hours.**

Students design a system using analog and digital electronics concepts, and prepare and deliver a professional presentation of their completed project. Topics include: design theory, feasibility study, engineering economics, and presentation skills.

Prerequisites: EET 122, EET 251

EET 291 Full-Time Cooperative Education 1: Electronics Engineering Technology**2 Credits. 1 Lecture Hour. 40 Lab Hours.**

Students seeking an associate's degree participate in their first full-time field learning experience related to their degree. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: None

EET 292 Full-Time Cooperative Education 2: Electronics Engineering Technology**2 Credits. 1 Lecture Hour. 40 Lab Hours.**

Students seeking an associate's degree participate in their second full-time field learning experience related to their degree. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: EET 291

EET 293 Full-Time Cooperative Education 3: Electronics Engineering Technology**2 Credits. 1 Lecture Hour. 40 Lab Hours.**

Students seeking an associate's degree participate in their third full-time field learning experience related to their degree. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: EET 292

EET 294 Internship 1: Electronics Engineering Technology**2 Credits. 1 Lecture Hour. 40 Lab Hours.**

Students seeking an associate's degree participate in their first unpaid field learning experience related to their degree. Students must follow applicable policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: EET 131 and CIT 190

EET 295 Internship 2: Electronics Engineering Technology**2 Credits. 1 Lecture Hour. 40 Lab Hours.**

Students seeking an associate's degree participate in their second unpaid field learning experience related to their degree. Students must follow applicable policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: EET 294

EET 298 Second Year Special Topics in Electronics Engineering Technology

1-9 Credits. 0 Lecture Hour. 0 Lab Hour.

A course on selected topics related to Electronics Engineering Technology, which gives students opportunities to study information not currently covered in other courses. Grades issued are A, B, C, D, or F.

Prerequisites: Instructor Approval

EET 299 Second Year Independent Project in Electronics Engineering Technology

1-9 Credits. 0 Lecture Hour. 0 Lab Hour.

A project related to Electronics Engineering Technology that is completed by one or more students to meet specific educational goals. Projects must have prior approval and supervision by Electronics Engineering Technology faculty. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: Instructor Approval

EMET Courses

EMET 140 Electro-Mechanical Engineering Technology Foundations

2 Credits. 1 Lecture Hour. 2 Lab Hours.

An introduction to project-based learning, safety, and professional practices for electro-mechanical and power systems projects. Students who pass the course receive an OSHA 10-hour certificate.

Prerequisites: None

EMET 150 Introduction to Controls and Robotics

2 Credits. 1 Lecture Hour. 2 Lab Hours.

An introduction to the operation and usage of robots in manufacturing applications. Topics include: programmable robotics, flow charting, logic controllers, motors, control language, motion, and quality assurance.

Prerequisites: AFL 085, and AFM 095 or MAT 120, or appropriate placement test scores

EMET 180 Process Instrumentation

3 Credits. 2 Lecture Hours. 3 Lab Hours.

A course on process instrumentation theory and applications. Topics include: principles and practices of measurement and control of temperature, pressure, flow, level, and analytical quantities; and data acquisition for process instruments and controls.

Prerequisites: EMET 140, EET 131

EMET 191 Part-Time Cooperative Education 1: Electro-Mechanical Engineering Technology

1 Credit. 1 Lecture Hour. 20 Lab Hours.

Students seeking an associate's degree participate in their first part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: None

EMET 192 Part-Time Cooperative Education 2: Electro-Mechanical Engineering Technology

1 Credit. 1 Lecture Hour. 20 Lab Hours.

Students seeking an associate's degree participate in their second part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: EMET 191

EMET 193 Part-Time Cooperative Education 3: Electro-Mechanical Engineering Technology

1 Credit. 1 Lecture Hour. 20 Lab Hours.

Students seeking an associate's degree participate in their third part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: EMET 192

EMET 194 Part-Time Cooperative Education 4: Electro-Mechanical Engineering Technology

1 Credit. 1 Lecture Hour. 20 Lab Hours.

Students seeking an associate's degree participate in their fourth part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: EMET 193

EMET 195 Part-Time Cooperative Education 5: Electro-Mechanical Engineering Technology

1 Credit. 1 Lecture Hour. 20 Lab Hours.

Students seeking an associate's degree participate in their fifth part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: EMET 194

EMET 196 Part-Time Cooperative Education 6: Electro-Mechanical Engineering Technology**1 Credit. 1 Lecture Hour. 20 Lab Hours.**

Students seeking an associate's degree participate in their sixth part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: EMET 195

EMET 198 First Year Special Topics in Electro-Mechanical Engineering Technology**1-9 Credits. 0 Lecture Hour. 0 Lab Hour.**

A course on selected topics related to Electro-Mechanical Engineering Technology, which gives students opportunities to study information not currently covered in other courses. Grades issued are A, B, C, D, or F.

Prerequisites: Instructor Approval

EMET 199 First Year Independent Project in Electro-Mechanical Engineering Technology**1-9 Credits. 0 Lecture Hour. 0 Lab Hour.**

A project related to Electro-Mechanical Engineering Technology that is completed by one or more students to meet specific educational goals. Projects must have prior approval and supervision by Electro-Mechanical Engineering Technology faculty. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: Instructor Approval

EMET 210 Energy Efficiency and Audits**3 Credits. 2 Lecture Hours. 2 Lab Hours.**

A course on concepts related to energy consumption. Topics include: conducting energy audits for residential, commercial and industrial locations; conserving energy; reducing energy consumption; and applying renewable energies.

Prerequisites: None

EMET 220 Photovoltaic and Solar Thermal Devices**3 Credits. 2 Lecture Hours. 3 Lab Hours.**

A course on planning, installing, and maintaining solar energy devices. Topics include: photovoltaic electrical systems, passive and thermal solar systems, and geothermal systems.

Prerequisites: EMET 210

EMET 225 Solar and Renewable Energy**4 Credits. 3 Lecture Hours. 3 Lab Hours.**

A course on planning, installing, and maintaining solar and renewable energy devices. Topics include: photovoltaic electrical systems, solar thermal systems, fuel cell technology, and wind turbine technology.

Prerequisites: EMET 210

EMET 230 Fuel Cells and Wind Devices**3 Credits. 2 Lecture Hours. 2 Lab Hours.**

A course on planning, installing, and maintaining alternative energy sources. Topics include: converting chemical energy to electricity; fuel cell components, power efficiencies, and applications; electrolysis; and wind turbine components.

Prerequisites: EMET 210

EMET 240 Programmable Logic Controllers, Motors, Motor Controls, and Kinematics**3 Credits. 2 Lecture Hours. 3 Lab Hours.**

A course on programmable logic controllers, motors, and variable speed drives and mechanisms. Topics include: operating, troubleshooting and controlling circuits; calculating speed, torque, horsepower, and efficiency; and machine kinematics.

Prerequisites: EET 132

EMET 245 Laser Foundations and Safety**3 Credits. 2 Lecture Hours. 3 Lab Hours.**

A course on the operational theory and safe use of lasers. Topics include: properties of laser light, elements of the laser, laser classifications, structure of the eye, and hazards associated with laser light.

Prerequisites: MAT 121 or appropriate placement test score EMET 140

EMET 250 Servomechanisms**3 Credits. 2 Lecture Hours. 3 Lab Hours.**

A course on negative feedback for closed-loop servo systems. Topics include: transducers for sensing system parameters; proportional, proportional-derivative, and proportional-integral-derivative positional control systems; computer control of servo-control systems; and simple closed-loop controls.

Prerequisites: EET 132, EMET 140

EMET 255 Optical Components, and Geometrical and Wave Optics**4 Credits. 3 Lecture Hours. 3 Lab Hours.**

A course on optical elements used in photonics applications. Topics include: lens, mirrors, prisms, laser modulators and Q-switches, optical power, and energy measurements.

Prerequisites: EMET 245

EMET 260 Robotics

3 Credits. 2 Lecture Hours. 2 Lab Hours.

A course on robotics and factory automation. Topics include: analyzing industrial robotics applications in automated manufacturing environments, evaluating mechanical and electrical components, programming and operating robots, choosing robots for industrial applications, and applying quality assurance techniques.

Prerequisites: EET 132, EMET 140

EMET 265 Industrial Laser Systems

4 Credits. 3 Lecture Hours. 3 Lab Hours.

A course on lasers used in industry. Topics include: types of industrial lasers; applying lasers for cutting, welding, drilling, and heat treating; and motion control.

Prerequisites: EMET 245

EMET 270 Robotics and Servomechanisms

4 Credits. 3 Lecture Hours. 3 Lab Hours.

A course on theory and applications of robotics and servomechanisms. Topics include: analyzing industrial robotics applications in automated manufacturing environments; programming and operating robots; transducers, proportional, proportional-integral, and proportional-integral-derivative positional control systems; and closed-loop controls.

Prerequisites: EET 132

EMET 285 Electro-Mechanical Engineering Technology Capstone 1

1 Credit. 0 Lecture Hour. 2 Lab Hours.

Students participate in a team design project. Topics include: design concepts, modeling, detail and assembly drawings, bill of materials, vendors, and costs of project design.

Prerequisites: EMET 140, EET 132

EMET 290 Electro-Mechanical Engineering Technology Capstone 2

2 Credits. 1 Lecture Hour. 2 Lab Hours.

A continuation of EMET 285. Students participate in the manufacturing, assembly, and testing of their product design, and prepare a presentation about the complete design process.

Prerequisites: EMET 285

EMET 291 Full-Time Cooperative Education 1: Electro-Mechanical Engineering Technology

2 Credits. 1 Lecture Hour. 40 Lab Hours.

Students seeking an associate's degree participate in their first full-time field learning experience related to their degree. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: None

EMET 292 Full-Time Cooperative Education 2: Electro-Mechanical Engineering Technology

2 Credits. 1 Lecture Hour. 40 Lab Hours.

Students seeking an associate's degree participate in their second full-time field learning experience related to their degree. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: EMET 291

EMET 293 Full-Time Cooperative Education 3: Electro-Mechanical Engineering Technology

2 Credits. 1 Lecture Hour. 40 Lab Hours.

Students seeking an associate's degree participate in their third full-time field learning experience related to their degree. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: EMET 292

EMET 294 Internship 1: Electro-Mechanical Engineering Technology

2 Credits. 1 Lecture Hour. 40 Lab Hours.

Students seeking an associate's degree participate in their first unpaid field learning experience related to their degree. Students must follow applicable policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: EMET 140

EMET 295 Internship 2: Electro-Mechanical Engineering Technology

2 Credits. 1 Lecture Hour. 40 Lab Hours.

Students seeking an associate's degree participate in their second unpaid field learning experience related to their degree. Students must follow applicable policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: EMET 294

EMET 298 Second Year Special Topics in Electro-Mechanical Engineering Technology

1-9 Credits. 0 Lecture Hour. 0 Lab Hour.

A course on selected topics related to Electro-Mechanical Engineering Technology, which gives students opportunities to study information not currently covered in other courses. Grades issued are A, B, C, D, or F.

Prerequisites: Instructor Approval

EMET 299 Second Year Independent Project in Electro-Mechanical Engineering Technology**1-9 Credits. 0 Lecture Hour. 0 Lab Hour.**

A project related to Electro-Mechanical Engineering Technology that is completed by one or more students to meet specific educational goals. Projects must have prior approval and supervision by Electro-Mechanical Engineering Technology faculty. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: Instructor Approval

ENG Courses**ENG 100 English Principles: Grammar and Structure****3 Credits. 3 Lecture Hours. 0 Lab Hour.**

A comprehensive review of writing principles for business and professional communication. Topics include: grammar, punctuation, word usage, and techniques for reviewing and revising various business-related documents.

Prerequisites: AFL 085 or appropriate placement test score

ENG 101 English Composition 1**3 Credits. 3 Lecture Hours. 0 Lab Hour.**

An introduction to college writing focusing on understanding the writing process. Topics include: identifying audiences; developing a strong thesis; providing sufficient evidence for claims; and writing essays with grammatical, mechanical, and stylistic correctness.

Prerequisites: AFL 085 or appropriate placement test score

ENG 102 English Composition 2: Contemporary Issues**3 Credits. 3 Lecture Hours. 0 Lab Hour.**

A continuation of ENG 101. Topics include: critical reasoning; argumentation; the research process and the research paper; and reading, synthesizing, and responding critically to policy-driven research.

Prerequisites: ENG 101

ENG 103 English Composition 2: Topics in Literature**3 Credits. 3 Lecture Hours. 0 Lab Hour.**

A continuation of ENG 101. Topics include: critical reading, argumentation, the research process and the research paper; and reading, synthesizing, and responding critically to literature.

Prerequisites: ENG 101

ENG 104 English Composition 2: Technical Communication**3 Credits. 3 Lecture Hours. 0 Lab Hour.**

A continuation of ENG 101. Topics include: audience analysis; planning, preparing, and revising technical and professional documents used for reference, persuasion, or instruction; using and reporting on research; and integrating visuals with text.

Prerequisites: ENG 101, and 8 credit hours in technical courses

ENG 105 English Composition 2: Business Communication**3 Credits. 3 Lecture Hours. 0 Lab Hour.**

A continuation of ENG 101. Topics include: planning, preparing, and revising business documents such as formal and informal business letters, emails, proposals, and reports; and using and reporting on research.

Prerequisites: ENG 101

ENG 131 Creative Writing: Poetry**3 Credits. 3 Lecture Hours. 0 Lab Hour.**

A workshop-oriented poetry writing course. Topics include: the invention process, revision, poetic form, and critical response to works of literature and student work.

Prerequisites: 6 Credit Hours of English Composition

ENG 132 Creative Writing: Fiction**3 Credits. 3 Lecture Hours. 0 Lab Hour.**

A workshop-oriented fiction writing course. Topics include: the invention process, revision, form of fiction, and critical response to works of literature and student work.

Prerequisites: 6 credit hours of English Composition

ENG 134 Creative Writing: Writing for Children**3 Credits. 3 Lecture Hours. 0 Lab Hour.**

A workshop-oriented course on writing picture books, chapter books, and middle grade novels. Topics include: the invention process, revision, form of children's literature, and critical response to works of literature and student work.

Prerequisites: 6 credit hours of English Composition

ENG 198 First Year Special Topics in English**1-9 Credits. 0 Lecture Hour. 0 Lab Hour.**

A course on selected topics related to English, which gives students opportunities to study information not currently covered in other courses. Grades issued are A, B, C, D, or F.

Prerequisites: Vary by section

ENG 199 First Year Independent Project in English

1-9 Credits. 0 Lecture Hour. 0 Lab Hour.

A project related to English that is completed by one or more students to meet specific educational goals. Projects must have prior approval and supervision by English faculty. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: Vary by section

ENG 205 Scriptwriting: Short

3 Credits. 2 Lecture Hours. 3 Lab Hours.

A course on developing scripts for short form electronic media messages such as commercials and public service announcements. Topics include: analyzing audiences and products; applying basic concepts of marketing; conducting research; preparing copy platforms, scripts, and storyboards; and persuasively presenting concepts.

Prerequisites: 6 credits of English Composition (minimum grade C)

ENG 210 Scriptwriting: Long

3 Credits. 2 Lecture Hours. 3 Lab Hours.

A course on developing scripts for long form electronic media messages such as instructional and promotional video and documentaries. Topics include: analyzing audiences and products; conducting research; preparing documentation, scripts, and storyboards; and persuasively presenting concepts.

Prerequisites: 6 credits of English Composition (minimum grade C)

ENG 215 Copywriting

3 Credits. 2 Lecture Hours. 3 Lab Hours.

A course on developing promotional messages for print and online distribution. Topics include: analyzing audiences and products, conducting research, developing concepts, preparing copy platforms, selecting writing styles and formats, and designing materials.

Prerequisites: 6 credits of English Composition (minimum grade C)

ENG 230 Writing Online Content

3 Credits. 2 Lecture Hours. 3 Lab Hours.

A course on developing content for websites and web-supported publishing such as blogs and e-newsletters. Topics include: analyzing audiences and goals, choosing writing styles, creating and revising content, and applying best practices for online and digital document design.

Prerequisites: 6 credits of English Composition (minimum grade C)

ENG 298 Second Year Special Topics in English

1-9 Credits. 0 Lecture Hour. 0 Lab Hour.

A course on selected topics related to English, which gives students opportunities to study information not currently covered in other courses. Grades issued are A, B, C, D, or F.

Prerequisites: Vary by section

ENG 299 Second Year Independent Project in English

1-9 Credits. 0 Lecture Hour. 0 Lab Hour.

A project related to English that is completed by one or more students to meet specific educational goals. Projects must have prior approval and supervision by English faculty. Grades issued are Satisfactory or Unsatisfactory.

Prerequisites: Vary by section