Electrical Engineering Technology - Power Systems Major (PSET)

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Power systems engineers monitor and maintain the quality, availability, reliability, transferability, and safety of the power systems we rely on daily, including smart grid technologies for distributed power generation and smart transmission line system technology.

Graduates of the program Electrical Engineering Technology - Power Systems Major earn an Associate of Applied Science degree, and have the skills and competencies needed to begin careers and advance professionally through technical and management positions in the power systems or electrical engineering fields.

Possible employers include utility companies, industrial organizations, consultants, and other service providers. Graduates also are prepared to continue their studies in a bachelor's degree program.

For more information, please contact the Engineering and Information Technologies Division at (513) 569-1743.

To apply for this program at Cincinnati State, visit the Admissions (http://www.cincinnatistate.edu/academics/admission/) section of the College website.

Electrical Engineering Technology - Power Systems Major (PSET)

Semester 1		**Lec**	**Lab**	**Credits**
EET 100	Introduction to Electrical Engineering Technology (**B**)	1	2	2
EMET 110	Computer Aided Design for Electro-Mechanical Systems (**B**)	2	3	3
ENG 101	English Composition 1 (**G**)	3	0	3
MAT XXX	Mathematics Elective 1 (**B**)	3	2	4
FYE 10X	First Year Experience Elective (**B**)	1	0	1
Semester 2				
EET 131	Circuit Analysis 1 (**T**)	3	2	4
CIT 105	OSHA 10 General Industry Safety (**B**)	1	0	1
CIT 190	Career Preparation: Engineering and Information Technologies (**B**)	1	0	1
MAT XXX	Mathematics Elective 2 (**G**)	3	2	4
ENG 10X	English Composition Elective (**G**)	3	0	3
Semester 3				
PSET 140	Power Systems Foundations (**T**)	2	2	3
EET 132	Circuit Analysis 2 (**T**)	3	2	4
EET 291	Full-Time Cooperative Education 1: Electronics Engineering Technology (**T**)	1	40	2
Semester 4				
PSET 225	Industrial and Commercial Power Design (**T**)	3	3	4
EET 121	Digital Systems 1 (**T**)	2	2	3
EMET 252	Motors, Motor Controls, and Variable Drives (**T**)	2	3	3
ECO 1XX	Economics Elective (**G**)	3	0	3
Semester 5				
PSET 275	Protective Relays and Controls (**T**)	2	3	3
PSET 290	Power Systems Capstone (**T**)	1	2	2
EMET 141	Programmable Logic Controllers (**T**)	2	3	3
PHY XXX	Physics Elective (**G**)	3	2	4
Semester 6				
NETC 121	Network Communications 1 (**B**)	2	2	3
EET 292	Full-Time Cooperative Education 2: Electronics Engineering Technology (**T**)	1	40	2
Total Credits:		**48**	**115**	**65**

Electives

Mathematics Electives		**8**
Select one of the following series:		
MAT 125 & MAT 126	Algebra and Trigonometry and Functions and Calculus	
Or		
MAT 251 & MAT 252	Calculus 1 and Calculus 2	
First Year Experience Elective		
FYE 100	College Success Strategies: Overview	1
FYE 105	College Success Strategies: Overview and Application	2
FYE 110	College Success Strategies: Practice and Application	3
English Composition Elective		
ENG 102	English Composition 2: Contemporary Issues	3
ENG 103	English Composition 2: Writing about Literature	3

ENG 104	English Composition 2: Technical Communication	3
ENG 105	English Composition 2: Business Communication	3
Physics Elective		
PHY 151	Physics 1: Algebra and Trigonometry-Based	4
PHY 201	Physics 1: Calculus-Based	5
Economics Elective		
ECO 105	Principles of Microeconomics	3
ECO 110	Principles of Macroeconomics	3

Some courses are offered in alternative versions identified with a letter after the course number-- for example, ENG 101 and ENG 101A.

- This curriculum displays only course numbers without the added letter.
- The alternative version, when available, meets the requirements of the course version without the added letter.

The letters G, B, and T (displayed after course titles or elective descriptions) identify types of courses required by the Ohio Department of Higher Education as part of an associate's degree curriculum.

G = General Education course in this curriculum

B = Basic Skills course in this curriculum

T = Technical course in this curriculum

Electrical Engineering Technology - Power Systems Major (PSET)

- An ability to select and apply a knowledge of mathematics, science, engineering and technology to engineering technology problems that require the application of principles and applied procedures or methodologies
- An ability to function effectively as a member or leader on a technical team
- An ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature.
- An ability to conduct standard tests and measurements; to conduct, analyze and interpret experiments; and to apply experimental results to improve processes.
- A commitment to quality, timeliness, and continuous improvement.
- An ability to apply project management techniques to electrical/electronic(s) systems development.
- An ability to proficiently apply circuit analysis and design, computer programming, associated software, analog and digital electronics, microcontroller technology, and engineering standards to the building, testing, operation, and maintenance of electrical/electronic(s) systems.
- An ability to integrate and synthesize technical information to resolve discrepancies requiring electrical or electronic knowledge.

Faculty

Program Chair

Ralph Whaley, Jr., PhD
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Co-op Coordinator

Kimberly Richards, EdD
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Engineering and Information Technologies Division Advising

Call (513) 569-1743 or Text (513) 569-1600

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: MAT 093 or appropriate placement

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: Placement into ENG 101A, and MAT 096 or MAT 124 or appropriate Math placement

EET 121 Digital Systems 1
3 Credits. 2 Lecture Hours. 3 Lab Hours.
A course on analyzing, designing, and troubleshooting digital logic circuits. Topics include: basic gates and programmable logic devices (PLDs); number systems and codes; Boolean algebra; circuit simplification; and functions of logic circuits, latches, flip-flops, counters, timers, and memory.
Prerequisites: MAT 124 (minimum grade C) or appropriate Math placement
Corequisites: EET 131 : Circuit Analysis 1

EET 122 Digital Systems 2
3 Credits. 2 Lecture Hours. 3 Lab Hours.
A continuation of EET 121. Topics include: counter design and cascading, shift registers, PLD applications, microprocessor registers, input/output (I/O), busses, direct memory access (DMA), memory expansion, and assembly language programming.
Prerequisites: EET 121 (minimum grade C)

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: MAT 124 (minimum grade C) or appropriate Math placement
Corequisites: EET 100 : Introduction to Electrical Engineering Technology or EMET 150 : Introduction to Controls and Robotics
Ohio Transfer Assurance Guide Approved

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, and MAT 125 or appropriate Math placement (minimum grade C for both)
Ohio Transfer Assurance Guide Approved

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 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

PSET Courses

PSET 110 Power Systems Computer Aided Drafting
3 Credits. 2 Lecture Hours. 3 Lab Hours.
A course on computer aided drafting and design for power systems. Topics include: CAD fundamentals; and designing, modifying, and editing documents that apply to the power systems industry.
Prerequisites: Placement into ENG 101A, and MAT 096 or MAT 124 or appropriate Math placement

PSET 130 National Electric Code and National Electric Safety Code
2 Credits. 1 Lecture Hour. 2 Lab Hours.
A course on the purpose, intent, use, and enforcement of the National Electric Code (NEC) and the National Electric Safety Code (NESC) in electrical design and in specifications of equipment used in power systems.
Prerequisites: EET 131

PSET 140 Power Systems Foundations
3 Credits. 2 Lecture Hours. 2 Lab Hours.
An introduction to electrical power systems from generation to utilization. Topics include: purpose, composition, operating characteristics, and design considerations of power system components; power quality and safety; fundamentals of AC waveforms including single and three phase connections, voltage and current calculations; per-unit representation; and power factor.
Prerequisites: EET 131

PSET 150 Electrical Power Technology Studies: Adv
30 Credits. 30 Lecture Hours. 0 Lab Hour.
Students complete apprenticeship education, post-secondary education, or work experience related to skills used in the electrical power industry.
Prerequisites: Program Chair consent
Instructor Consent Required

PSET 191 Part-Time Cooperative Education 1: Power Systems 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

PSET 192 Part-Time Cooperative Education 2: Power Systems 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: PSET 191

PSET 193 Part-Time Cooperative Education 3: Power Systems 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: PSET 192

PSET 194 Part-Time Cooperative Education 4: Power Systems 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: PSET 193

PSET 195 Part-Time Cooperative Education 5: Power Systems 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: PSET 194

PSET 196 Part-Time Cooperative Education 6: Power Systems 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: PSET 195

PSET 225 Industrial and Commercial Power Design
4 Credits. 3 Lecture Hours. 3 Lab Hours.
A course on design of industrial and commercial building electrical distribution systems. Topics include: load calculations, wiring devices, overcurrent protection, conductors, conduit and raceway systems, panelboards and switchboards, voltage drop calculations, grounding and bonding, branch circuit and feeder design, and motor circuits.
Prerequisites: PSET 140

PSET 250 Power Transmission and Distribution Design
3 Credits. 2 Lecture Hours. 3 Lab Hours.
A course on overhead and underground transmission and distribution systems. Topics include: operation, maintenance, and monitoring of transmission and distribution equipment; transmission line parameters; power flow; design of conductor support structures; overview of system protection; smart grid concepts; and data collection mechanisms.
Prerequisites: PSET 140

PSET 260 Stationary Engineering with Instrumentation and Controls
4 Credits. 3 Lecture Hours. 3 Lab Hours.
A course on steam plant operation and associated instrumentation and controls. Topics include: basic components, maintenance requirements for utility boilers, combined cycle and cogeneration systems, nuclear steam generation, standard pressure and horsepower calculations, and control of major steam boiler processes.
Prerequisites: EMET 140 and EMET 240

PSET 275 Protective Relays and Controls
3 Credits. 2 Lecture Hours. 3 Lab Hours.
A course on protective relays and their application to electric transmission and distribution systems. Topics include: power regulation and communication requirements; electro-mechanical relays and breakers, microprocessor relays and synchrophasors; transformers; transmission and distribution lines; capacitor banks; and regulator protection.
Prerequisites: EMET 240 and PSET 225

PSET 290 Power Systems Capstone
2 Credits. 1 Lecture Hour. 2 Lab Hours.
Students work in teams to complete a design project. Topics include: design concepts, modeling, detail and assembly drawings, bill of materials, vendors, costs, and manufacture of prototype.
Prerequisites: PSET 220 and PSET 225

PSET 291 Full-Time Cooperative Education 1: Power Systems 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

PSET 292 Full-Time Cooperative Education 2: Power Systems 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: PSET 291

PSET 293 Full-Time Cooperative Education 3: Power Systems 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: PSET 292

PSET 294 Internship 1: Power Systems 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

PSET 295 Internship 2: Power Systems 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: PSET 294