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 System 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.

The Electrical Engineering Technology - Power Systems Major program is accredited by the Engineering Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, 415 N. Charles St., Baltimore, MD 21202-4012, phone (410) 347-7700.

For more information, please contact the Center for Innovative Technologies at (513) 569-1743.

Electrical Engineering Technology - Power Systems Major (PSET)

Semester 1		**Lec**	**Lab**	**Credits**
CIT 105	OSHA 10 General Industry Safety (**B**)	1	0	1
EET 131	Circuit Analysis 1 (**B**)	3	2	4
ENG 101	English Composition 1 (**G**)	3	0	3
PSET 110	Power Systems Computer Aided Drafting (**B**)	2	3	3
MAT XXX Mathematics Elective 1 (**G**)		3	2	4
FYE 10X First Year Experience Elective (**B**)		1	0	1
Semester 2				
EET 132	Circuit Analysis 2 (**T**)	3	2	4
PSET 140	Power Systems Foundations (**T**)	2	2	3
PSET 120	Geographic Information Systems (GIS) (**T**)	2	2	3
PSET 130	National Electric Code and National Electric Safety Code (**B**)	1	2	2
MAT XXX Mathematics Elective 2 (**B**)		3	2	4
Semester 3				
EET 291	Full-Time Cooperative Education 1: Electronics Engineering Technology (**T**)	1	40	2
Semester 4				
EMET 240	Programmable Logic Controllers, Motors, Motor Controls, and Kinematics (**T**)	2	3	3
PSET 225	Industrial and Commercial Power Design (**T**)	3	3	4
PSET 250	Power Transmission and Distribution Design (**T**)	2	3	3
ENG 10X English Composition Elective (**G**)		3	0	3

PHY XXX Physics Elective (**G**)		3	3	4
Semester 5				
PSET 260	Stationary Engineering with Instrumentation and Controls (**T**)	3	3	4
PSET 275	Protective Relays and Controls (**T**)	2	3	3
PSET 290	Power Systems Capstone (**T**)	1	2	2
ECO 1XX Economics Elective (**G**)		3	0	3
Semester 6				
EET 292	Full-Time Cooperative Education 2: Electronics Engineering Technology (**T**)	1	40	2
Total Credits:		48	117	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 Survival Skills	1
FYE 105	College Success Strategies	2
FYE 110	Community College Experience	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

Faculty

Program Chair

Dr. Ralph Whaley, Jr., PhD
ralph.whaley@cincinnatistate.edu

Co-op Coordinator

Professor Kimberly Richards, PhD
kimberly.richards@cincinnatistate.edu

Advisor

Russell Campbell, PE, ME, MS
russell.campbell@cincinnatistate.edu

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 092 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 094 or MAT 120, and AFL 085, or appropriate placement test scores

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 121 or appropriate placement test score

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

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 121 or appropriate placement test score
Ohio Career-Technical 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 placement test score
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 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 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

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: AFL 085, and AFM 094 or MAT 120, or appropriate placement test scores

PSET 120 Geographic Information Systems (GIS)
3 Credits. 2 Lecture Hours. 2 Lab Hours.
A course on skills used for computer-aided electronic mapping as applied to the power grid system. Topics include: power grid mapping, map databases, spatial positioning, analysis, modeling, and visualization.
Prerequisites: PSET 110

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 198 First Year Special Topics in Power Systems Engineering Technology
1-9 Credits. 0 Lecture Hour. 0 Lab Hour.
A course on selected topics related to Power Systems 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

PSET 199 First Year Independent Project in Power Systems Engineering Technology
1-9 Credits. 0 Lecture Hour. 0 Lab Hour.
A project related to Power Systems Engineering Technology that is completed by one or more students to meet specific educational goals. Projects must have prior approval and supervision by Power Systems Engineering Technology faculty. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: Instructor Approval

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

PSET 298 Second Year Special Topics in Power Systems Engineering Technology
1-9 Credits. 0 Lecture Hour. 0 Lab Hour.
A course on selected topics related to Power Systems 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

PSET 299 Second Year Independent Project in Power Systems Engineering Technology
1-9 Credits. 0 Lecture Hour. 0 Lab Hour.
A project related to Power Systems Engineering Technology that is completed by one or more students to meet specific educational goals. Projects must have prior approval and supervision by Power Systems Engineering Technology faculty. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: Instructor Approval