

**Concentration in Power Engineering  
for students receiving the B.S. degree in Electrical Engineering**

The Power Concentration for Electrical Engineering majors reflects an increased background in the generation, transmission, distribution, and use of electric energy. Students complete a collection of core and elective courses with emphasis in the design, control, and operation of power systems using conventional and renewable energy sources, and related technologies. This concentration prepares students for working with the power industry, electric vehicles, smart homes, and/or attending graduate school for research and development in smart grid, microgrids, renewable energy, cybersecurity, and other electric energy related technologies.

To complete a Concentration in Power Engineering, students receiving the B.S. degree in Electrical Engineering must complete the required power concentration core courses, and at least nine credits of approved power elective courses.

**Power Concentration Core Courses (required):**

- ECE 427 - Electric Power Systems
- ECE 450 - Power Electronics

**Approved Power Elective Courses (9 credits):**

- EET-321 - Electro-Mechanical Energy Conversion
- EET-423 - Protective Relay Applications
- ECE 455 - Electric Drives
- ECE 498 or ECE 598 - Smart Grid and Enabling Technologies
- ECE 498 or ECE 598 - Foundations of Cyber Security
- ECE 498 or ECE 590 - Neural Networks
- ECE 498 or ECE 598 - Selected Topics in Electrical and Computer Engineering\*

\* Other “ECE 498/598 Selected Topics” courses must be related to the power engineering area, and are accepted at the discretion of the ECE chair. “Smart Grid and Enabling Technologies,” “Foundations of Cyber Security” and “Neural Networks” topics are pre-approved.

**Contact:**

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## Electrical Engineering: Power Engineering 2024-2025 (Class of 2028)

Fall First Year		
CHY 121   CHY 131	Chemistry	3
CHY 123   CHY 133	Chemistry Lab	1
CMJ 103	Fund of Public Communication Human Values/Social Context	3
ECE 100	ELE & CEN Eng Seminar	1
ECE 101	Intro to ELE & CEN Eng	3
MAT 126	Calculus I	4
		15

Spring First Year		
ECE 177	Intro to Prog for Engineers	4
ENG 101	College Composition	3
MAT 127	Calculus II	4
PHY 121	Physics for Engineers I	4
		15

Fall Sophomore				
ECE 210	Electric Circuits I	3		
ECE 271	Micro Arch & Applications	4		
Elective	HV & SC (1) - Western Cultural Tradition	3		
MAT 228	Calculus III	4		
PHY 122	Physics for Engineers II	4		
		18		
Spring Sophomore				
ECE 214	Electric Circuits II	4		
ECE 275	Sequential Logic Systems	3		
EET 321	Electro-Mechanical Energy Conversion	4		
MAT 258	Diff Eqn. & Linear Algebra	4		
		15		
Fall Junior				
ECE 316	STS 332	Random Signal Analysis	Statistics	3
ECE 342	Electronics I	4		
ECE 314	Signals and Systems	3		
ECE 427	Electric Power Systems	4		
EET 460	Renewable Energy and Electricity Production	3		
		17		
Spring Junior				
ECE 343	Electronics II	4		
ECE 401	Design Project	2		
ECE 414	Feedback Control Systems	3		
ECE 351	Fields and Waves	3		
ECE xxx	Suggest: Adv Controls, Cybersecurity, ...	3		
		15		
Fall Senior				
ECE 402	Design Project II	4		
ECE 450	Power Electronics	3		
ECE 428	Smart Grid and Enabling Technologies	3		
Elective	HV & SC (4) Artistic & Creative Expression	3		
Elective	HV & SC (3) Cultural Diversity & International Perspectives	3		
		16		
Spring Senior				
ECE 403	Design Project III	2		
ECE 486	Digital Signal Processing	4		
ECE 455	Electric Drives	3		
Elective	HV & SC (5) Ethics	3		
EET 423	Protective Relay Applications	3		
		15		

Total Credit Hours		126
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Suggested Electives for Power Engineering		
ECE	Electrical Focus Tech Elective	ECE 427 Electric Power Systems 4
Math & Science	Electrical Focus Tech Elective	ECE 428 Smart Grid and Enabling Technologies 3
English	Electrical Focus Tech Elective	ECE 450 Power Electronics 3
Gen Ed	ECE Tech Elective	ECE 455 Electric Drives 3
	ECE Tech Elective	ECE xxx Suggest: Adv Controls, Cybersecurity, Neural Networks ... 3
	Generic Focus Tech Elective	EET 321 Electro-Mechanical Energy Conversion 4
	Generic Focus Tech Elective	EET 423 Protective Relay Applications 3
	HV & SC (2) Population and Environment Elective	EET 460 Renewable Energy and Electricity Production