

**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 2023-2024: Power Engineering (Class of 2027)

Fall First Year			Spring First Year		
CHY 121 CHY 131	Chemistry	3	ECE 177	Intro to Prog for Engineers	4
CHY 123 CHY 133	Chemistry Lab	1	ENG 101	College Composition	3
CMJ 103	Fund of Public Communication Human Values/Social Context	3	MAT 127	Calculus II	4
ECE 100	ELE & CEN Eng Seminar	1	PHY 121	Physics for Engineers I	4
ECE 101	Intro to ELE & CEN Eng	3	15		
MAT 126	Calculus I	4			
15					

Fall Sophomore			Spring Sophomore		
ECE 210	Electric Circuits I	3	ECE 214	Electric Circuits II	4
ECE 271	Micro Arch & Applications	4	ECE 275	Sequential Logic Systems	3
Elective	HV & SC (1) - Western Cultural Tradition	3	EET 321	Electro-Mechanical Energy Conversion	4
MAT 228	Calculus III	4	MAT 258	Diff Eqn. & Linear Algebra	4
PHY 122	Physics for Engineers II	4	15		
18					

Fall Junior			Spring Junior		
ECE 316 STS 332	Random Signal Analysis Statistics	3	ECE 343	Electronics II	4
ECE 342	Electronics I	4	ECE 401	Design Project	2
ECE 314	Signals and Systems	3	ECE 414	Feedback Control Systems	3
ECE 427	Electric Power Systems	4	ECE 351	Fields and Waves	3
EET 460	Renewable Energy and Electricity Production	3	ECE 498	Smart Grid and Enabling Technologies	3
17			15		

Fall Senior			Spring Senior		
ECE 402	Design Project II	4	ECE 403	Design Project III	2
ECE 450	Power Electronics	3	ECE 486	Digital Signal Processing	4
ECE xxx	Suggest: Adv Controls, Cybersecurity, ...	3	ECE 455	Electric Drives	3
Elective	HV & SC (4) Artistic & Creative Expression	3	Elective	HV & SC (5) Ethics	3
Elective	HV & SC (3) Cultural Diversity & International Perspectives	3	EET 423	Protective Relay Applications	3
16			15		

Total Credit Hours	126
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Suggested Electives for Power Engineering			
ECE			
Math & Science		Electrical Focus Tech Elective	ECE 427 Electric Power Systems 4
English		Electrical Focus Tech Elective	ECE 498 Smart Grid and Enabling Technologies 3
Gen Ed		Electrical Focus Tech Elective	ECE 450 Power Electronics 3
		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