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
- CHY 121 | CHY 131 Chemistry  
- CHY 123 | CHY 133 Chemistry Lab  
- CMJ 103 Fund of Public Communication Human Values/Social Context  
- ECE 100 ELE & CEN Eng Seminar  
- ECE 101 Intro to ELE & CEN Eng  
- MAT 126 Calculus I  

Total Credit Hours: 15

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

Total Credit Hours: 15

## Fall Sophomore
- ECE 210 Electric Circuits I  
- ECE 271 Micro Arch & Applications  
- Elective: HV & SC (1) - Western Cultural Tradition  
- MAT 228 Calculus III  
- PHY 122 Physics for Engineers II  

Total Credit Hours: 18

## Spring Sophomore
- ECE 214 Electric Circuits II  
- ECE 275 Sequential Logic Systems  
- Elective: EET 321 Electro-Mechanical Energy Conversion  
- MAT 258 Diff Eqn. & Linear Algebra  

Total Credit Hours: 15

## Fall Junior
- ECE 316 | STS 332 Random Signal Analysis | Statistics  
- ECE 342 Electronics I  
- ECE 314 Signals and Systems  
- ECE 427 Electric Power Systems  
- EET 460 Renewable Energy and Electricity Production  

Total Credit Hours: 17

## Spring Junior
- ECE 343 Electronics II  
- ECE 401 Design Project  
- ECE 414 Feedback Control Systems  
- ECE 351 Fields and Waves  
- ECE 498 Smart Grid and Enabling Technologies  

Total Credit Hours: 15

## Fall Senior
- ECE 402 Design Project II  
- ECE 450 Power Electronics  
- Elective: HV & SC (4) Artistic & Creative Expression  
- Elective: HV & SC (3) Cultural Diversity & International Perspectives  

Total Credit Hours: 16

## Spring Senior
- ECE 403 Design Project III  
- ECE 486 Digital Signal Processing  
- Elective: HV & SC (5) Ethics  
- EET 423 Protective Relay Applications  

Total Credit Hours: 15

## Total Credit Hours
126

### Suggested Electives for Power Engineering
- ECE 427 Electric Power Systems  
- ECE 498 Smart Grid and Enabling Technologies  
- ECE 450 Power Electronics  
- ECE 455 Electric Drives  
- ECE 455 Electric Drives  
- EET 321 Electro-Mechanical Energy Conversion  
- EET 460 Renewable Energy and Electricity Production  

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**ECE**  
- Electrical Focus Tech Elective  
- Electrical Focus Tech Elective  
- Electrical Focus Tech Elective  
- ECE Tech Elective  
- ECE Tech Elective  
- Generic Focus Tech Elective  
- Generic Focus Tech Elective  

**Math & Science**  
-  

**English**  
-  

**Gen Ed**  
-  

**HV & SC (2)** Population and Environment Elective