

EE Electives by Focus Area (also known as "EE Technical Electives")

Courses which may be used to fulfill "EE Electives" on the BSEE. See degree audit for minimum number of credits required.

This list shows which focus area(s) courses best fall into. Mix and match as the student chooses. EE (Technical) Electives are EE courses that are not specifically required, are lecture-based or lab-based. Check the Schedule of Classes for actual offerings each semester and plan ahead at least 3 semesters for preferred courses. Meet with the academic advisor for assistance. Contact instructor for course content.

Exclusions: EE3010, EE3805, EE4000, EE4805, EE3901, EE4901, EE4910. Graduate level courses may be used and typically require a level-waiver/instructor permission.

| Focus Area | Course | Title | Cr. | Requirements | Offered |
|-----------------------------------|----------------------------------------------|-------------------------------------------|-------------------------------|----------------------------------------------|--------------------|
| Varies | EE 4800 | Special Topics in ECE (EE &/or CpE) | 1-6 | Instructor permission | Occasionally |
| | EE 4800 | 0A - Electronic Materials and Devices | 3 | EE3131 | Spring 2021 |
| Power and Energy | EE4219 | Introduction to Machinery and Drives | 3 | (EE3120 and (EE2112 or EE3010) | Spg |
| | EE4220 | Introduction to Machinery and Drives Lab | 1 | EE4219(co-req) | Spg |
| | EE4221 | Power Analysis 1 | 3 | EE3120 and EE2112 | Fall |
| | EE4222 | Power Analysis 2 | 3 | EE4221 | Spg |
| | EE4226 | Power Engineering Lab | 1 | EE4221 and EE4222(co-req) | Spg, May |
| | EE5223 | Power System Protection | 3 | Level waiver; Instructor permission | Alternate Spg-Odd |
| | EE5224 | Power System Protection Lab | 1 | EE5223(co-req) | Alternate Spg-Odd |
| | EE5250 | Distribution Engineering | 3 | EE4221; Level waiver/Instr. permit | Alternate Spg-Even |
| | EE4227 | Power Electronics | 3 | EE3120 and EE3131(c) | Fall |
| | EE4228 | Power Electronics Lab | 1 | EE4227(co-req) | Fall |
| | EE4295/MI Intro. to Propulsion Syst. for HEV | 3 | MEEM2201 or ENG3200 | Fall | |
| | EE4296/MI Experimental Studies in HEV | 3 | COE enrolled; not FR,SO or JR | Fall, Sum | |
| Photonics | EE2190 | Introduction to Photonics | 3 | MA3520/21 and PH2200(co-req) | Spg |
| | EE3190 | Optical Sensing and Imaging | 3 | MA3520/21 or MA3530 or MA3560 | Fall |
| | EE3290 | Photonics Material, Devices, & Appls. | 4 | EE2190 or EE3140 or PH2400 | Spg |
| | EE4490 | Laser Systems and Applications | 4 | EE3140 | Fall |
| Robotics, Control, and Automation | EE2180 | Introduction to Robotics | 3 | MA1121, MA1160 or MA1161; Not SR | Spg |
| | EE3280 | Robot Operating Systems | 3 | EE2180 or SAT2711; begins spring 2022 | Spring 2022 |
| | EE4235 | Sensing & Processing in Robotics | 3 | begins fall 2022 | Fall 2022 |
| | EE4375 | Autonomous Vehicle Design (w/lab) | 3 | EE3261 & EE3280; begins in a future semester | Spg - 2023? |
| | EE4219 | Introduction to Machinery and Drives | 3 | (EE3120 and (EE2112 or EE3010) | Spg |
| | EE4220 | Introduction to Machinery and Drives Lab | 1 | EE4219(co-req) | Spg |
| | EE4262 | Digital and Non-linear Control | 3 | EE3261 | Spg |
| | EE4777 | Distributed Additive Manufac. Using Open- | 3 | COE enrolled; JR or SR | Fall |
| | EE5750 | Model-Based Embedded Control Syst. Design | 3 | EE3261 and EE4295; Level waiver | Fall |
| | EE3373 | Introduction to PLC's | 3 | EE2112 | Fall, Sum |
| EE4373 | Advanced PLC's | 4 | EE3373 | Spg | |
| Digital Signal Processing | EE4252 | DSP and It's Applications | 3 | EE3160 and EE4259 (co-req) | Fall |
| | EE4259 | DSP and It's Applications Lab | 1 | EE4252 (co-req) | Fall |
| | EE4253 | Real-Time Signal Processing | 3 | EE4252 (co-req) | Not spg 2021 |
| | EE5527 | Digital Communications | 3 | EE4250 | Not spg 2021 |
| Electronics | EE2230 | Printed Circuit Seminar Series | 3 | CH1150 & CH1151 & EE2231(co-req) | Spg |
| | EE2231 | Printed Circuit Fabrication | 1 | Instructor permission | Spg |
| | EE4231 | Physical Electronics | 3 | EE3131 | Fall |
| | EE4232 | Electronic Applications | 3 | EE3131 | Not spg 2021 |
| | EE4271 | VLSI Design | 4 | EE2174 and EE3131 | Fall |
| | EE4240 | Introduction to MEMS | 4 | Not FR, SO, or JR | Fall |
| EE 4800 | 0A - Electronic Materials and Devices | 3 | EE3131; One-time offering | Spring 2021 | |
| Electromagnetics | EE4490 | Laser Systems and Applications | 4 | EE3140 | Fall or Spg |
| | EE4411 | Engineering Electromagnetics | 3 | EE3140 | On Demand |
| Computer Systems | EE4271 | VLSI Design | 4 | EE2174 and EE3131 | Fall |
| | EE4272 | Computer Networks (listed w/ CS4461) | 3 | CS3411 | Fall, Spg |
| | EE4273 | Computer Security | 3 | EE4272 or CS4461 or SAT4812 | Spg |
| | EE4737 | Embedded System Interfacing | 4 | (CS1111 or CS1142) and (EE3171 or EE3173) | Not spg 2021 |

Check online descriptions for most current pre-requisites. See Schedule of Classes(SOC) for semester's offerings.

EE (Technical) Electives by Semesters Offered - Subject to change

Oct. 2020

Check online schedule & catalog for current course information

| Semester | Course ID | Title | Pre-requisites / Co-requisites(C) | | |
|--------------------|------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------|---------------------------------|--------------|
| Summer | varies | Check the Summer Schedule of Classes | | | |
| Fall | EE3190 | Optical Sensing & Imaging | MA3520 or MA3521 or MA3530 or MA3560 | | |
| | EE3373 | Intro. Programmable Controllers | EE2112 | | |
| | EE4221 | Power System Analysis I | EE3120 and EE2112 | | |
| | EE4227 | Power Electronics | EE3120 and EE3131 | | |
| | EE4228 | Power Electronics Lab | (C)EE4227 | | |
| | EE4231 | Physical Electronics | EE3131 | Fall or Spg | |
| | EE4240 | Intro to MEMS (alternating falls-odd) | Not FR,SO,JR | | |
| | EE4252 | Digital Signal Processing & It's Applications | EE3160 | | |
| | EE4259 | Digital Signal Processing & It's Applications Lab | | | |
| | EE4271 | VLSI Design | EE3131 and EE2174 | | |
| | EE4272/CS4461 | Computer Networks | CS3411 | | |
| | EE4295 | Intro to Propulsion Syst. for Hybrid Elec Vehicles | MEEM2200 or ENG3200 | | |
| | EE4296 | Intro Propulsion Sys. for Hybrid Elec veh Lab | Not FR,SO,JR | | |
| | EE4411 | Engineering Electromagnetics | EE3140 | On Dmd | |
| | EE4490 | Laser Systems & Applications (if offered) | EE3140 | | |
| | EE4777 | Dist. Additive Mfg. Using Open-Source 3D Printing | JR; SR; COE | | |
| Spring | EE2180 | Introduction to Robotics | MA1160 or MA1161 | | |
| | EE2190 | Introduction to Photonics (begins Spring 2019) | PH2200(C), MA3520/21 | | |
| | EE2230/2231 | Printed Circuit Board Seminar/Fabrication | Instructor Permission | | |
| | EE3290 | Photonic Materials , Devices & Applications | EE3090 or EE3140 or PH2400 or EE2190 | | |
| | EE4219 | Intro to Electric Machinery and Drives | EE3120 and (EE3010 or EE2112) | | |
| | EE4220 | Intro to Electric Machinery and Drives Lab | EE4219(C) co-req | | |
| | EE4222 | Power Systems Analysis 2 | EE4221 | | |
| | EE4226 | Power Engineering Lab (Also offered 1st week May FT) | EE4221 | EE4222(Co-req) | |
| | EE4232 | Electronic Applications | EE3131 | Spg or Fall | |
| | EE4253 | Real-time Signal Processing | EE4252 | | |
| | EE4262 | Digital & Non-linear Control | EE3261 | | |
| | EE4272/CS4461 | Computer Networks | CS3411 | | |
| | EE4373 | Advanced Programmable Contollers | EE3373 | | |
| | EE4490 | Laser Systems & Applications (if offered) | EE3140 | offered fall 2019 | |
| | EE4723 | Network Security | EE4272 or CS4461 | | |
| | EE4800 | Electronic Materials & Devices (special topic) | EE3131 | | |
| | EE4737 | Embedded Syst. Interfacing (Not Spg 2021) | (CS1142 or CS1111) and (EE3173 or EE3171) | | |
| Alternating | EE5223 | Power System Protection | EE4221 | EE4222(Co-req) | Odd Springs |
| Springs | EE5224 | Power System Protection Lab | EE5223(Co-req) | | Odd Springs |
| | EE5250 | Distribution Engineering | EE4221 | Obtain level-restriction waiver | Even Springs |
| Varies | EE4800; EE5900 | Special Topics (<i>check schedule of classes</i>) | Instr. Permission; Level waiver | | |
| GRAD level | <i>Seek level restriction waiver - instructor permission required.</i> | | | | |