ECE Technical Elective courses listed by Focus Area.

Course	Title	Cr	Requirements	Usual Semester
Power and Energy:				
EE 4219	Introduction to Electric Machinery and Drives	3	(EE2112 or EE3010) and EE3120	Spring
EE 4220	Intro to Electric Machinery and Drives Lab	1	Co-req: EE4219	Spring
EE 4221	Power System Analysis 1	3	EE3120 and (EE2112 or EE3010)	Fall
EE 4222	Power System Analysis 2	3	EE4221	Spring
EE 4226	Power Engineering Laboratory	1	EE4221 and co-req EE4222	Spring
EE 5223	Power System Protection (lab EE 5224 optional)	3	EE4221 and co-req EE4222	Odd Spring
EE 5224	Power System Protection Lab	1	EE 5223 co-req	Odd Spring
EE 5250	Distribution Engineering	3	EE 4221	Even Spring
EE 4227	Power Electronics (lab EE 4228 optional)	3	EE3120 and (EE3131 co-req or pre-req)	Fall
EE 4228	Power Electronics Lab	1	EE4227 co-req	Fall
EE 4295	Intro to Propulsion for HEV's	3	MEEM2200 or ENG3200 or MEEM2201	Fall
EE 4296	Experimental Studies in Hybrid Electric Vehicles	3	Must be enrolled in COE, and not FR,SO,JR	Fall
Photonics:				
EE 2190	Introduction to Photonics	3	(MA3520 or MA3521) & PH2200(Co or pre-req)	Spring
EE 3190	Optical Sensing and Imaging	3	MA3520 or MA3521 or MA3530 or MA3560	Fall
EE 3290	Photonic Material, Devices & Applications w/Lab	4	EE 3140 or PH2400 or EE2190	Spring
EE 4490	Laser Systems and Applications (includes lab)	4	EE3140	Fall
Control, Robotics and Automation:				
EE 2180	Introduction to Robotics and Lab	3	Co or Pre: (EE3010 or EE2111) & (MA2320 or MA2321)	Spring
EE 3261	Control Systems	3	EE3160	Fall, Spring
EE 3280	ROS (Robot Operating System)	3	SAT2711 and EE2180	Fall
EE 4235	Sensing and Processing in Robotic Applications	3	EE2180 and ENG1101	Fall
EE 4219	Intro to Electric Machinery & Drives; Lab EE4220 Optional	3	(EE2112 or EE3010) and EE3120	Spring
EE 4262	Digital and non-linear Control	3	EE3261	Spring
EE 5750	Model-based Embedded Control System Design	3	EE3261 or MEEM4700 or MEEM4775	Fall
EE 3373	Intro to Programmable Logic Controllers (w/lab)	3	EE3010 or EE2112	Fall
EET 4373	Advanced Programmable Logic Controllers	4	EE3373 or EET3373	Spring
Communication and Digital Signal Processing:				
EE 4250	Modern Communication Systems	3	EE3180 and EE3131	Fall, Spring, Smr
EE 4252	Digital Signal Processing and It's Applications	4	EE3160	Fall
EE 4253	Real Time Signal Processing	3	EE4252	Spring
TBD	DSP for Power Systems	3	Course originally offered under EE4800.	Spring
Electronics:				
EE 2230	Printed Circuit Seminar Series; Requires EE 2231 Lab	3,1	Permission of Instructor; Requires EE2231 Co-req	Spring
EE 2231	Printed Circuit Fabrication	1	Co-req: EE2230	Spring
EE 4231	Physical Electronics	3	EE3131	Fall
EE 4232	Electronic Applications	3	EE3131	Spring
EE 4271	VLSI Design	3	EE2174 and EE3131	Fall
EE 4240	Introduction to MEMS	4	May not be in FR, SO, or JR class.	Fall
EE 5435	High-speed Circuit Design	3	Seek instructor approval to register	Odd Spring
Electromagnetics:				
EE 4490	Laser Systems and Applications (w/lab)	4	EE3140	Fall
EE 4411	Engineering Electromagnetics	3	EE3140	On demand
Computer Systems:				
EE 4271	VLSI Design (Very Large-Scale Integration) (includes lab)	4	EE2174 and EE3131	Fall
EE 4272	Computer Networks	3	CS3411	Fall, Spring, Smr
EE 4370	Internet of Things Applications and Design	3	EE4272 (or CS4461) .	Odd Fall
EE 4723	Network Security	3	EE4272 or CS4461 or SAT4812	Spring
EE 4737	Embedded System Interfacing	4	(CS1111 or CS1142) and (EE3171 or EE3173)	Spring

ECE Technical Elective courses listed by semester offered (usually)

This is a sample list of ECE courses that, if not required for the degree or concentration, may be used in Technical Electives, listed by the semester in which they are *usually* offered. Some courses are offered in alternating years. Refer to the Schedule of Classes for actual offerings in a given semester. This list is subject to change.

Some courses are designed for one major, but may be taken by others if the prerequisites are completed.

Summer: Course Offerings vary. Refer to the Schedule of Classes for a given summer semester.

Fall:

EE 3190	Optical Sensing and Imaging	3	MA3520 or MA3521 or MA3530 or MA3560
EE 3261	Control Systems (includes lab)	3	EE3160
EE 3373	Introduction to Programmable Logic Controllers (w/lab)	3	EE3010 or EE2112
EE 3280	ROS (Robot Operating System)	3	SAT2711 and EE2180
EE 4221	Power System Analysis 1	3	EE3120 and (EE2112 or EE3010)
EE 4227	Power Electronics	3	EE3120 and (EE3131 co-req or pre0req)
EE 4228	Power Electronics Lab (optional)	1	EE4227 co-req
EE 4231	Physical Electronics	3	EE3131
EE 4235	Sensing and Processing in Robotic Applications	3	EE2180 and ENG1101
EE 4240	Introduction to MEMS	4	May not be in FR, SO, or JR class.
EE 4250	Modern Communication Systems	3	EE3180 and EE3131
EE 4252	Digital Signal Processing and It's Applications	4	EE3160
EE 4271	VLSI Design (Very Large-Scale Integration) (includes lab)	4	EE2174 and EE3131
EE 4272 or CS 4461	Computer Networks	3	CS3411
EE 4295	Introduction to Propulsion Systems for HEV's	3	MEEM2200 or ENG3200 or MEEM2201
EE 4296	Experimental Studies in Hybrid Electric Vehicles	3	Must be enrolled in COE, and not FR,SO,JR
EE 4370	Internet of Things Applications and Design	3	EE4272 (or CS4461) Odd Year Fall semesters.
EE 4411	Engineering Electromagnetics	3	On demand
EE 4490	Laser Systems and Applications (includes lab)	4	EE3140
EE 4777	Distributed Addictive Mftg. Using Open-Source 3D printing	3	Must be enrolled in SR class
EE 4800	Special Topics in ECE	varies	Check the Schedule of Classes each semester

Spring:

EE 2180	Introduction to Robotics and Lab	3	Co or Preqs: (EE3010 or EE2111) and (MA2320 or MA2321)
EE 2190	Introduction to Photonics	3	(MA3520 or MA3521) and PH2200(Co or prereq)
EE 2230	Printed Circuit Seminar Series	3	Permission of Instructor; Requires EE2231 Coreq
EE 2231	Printed Circuit Fabrication	1	Co-req: EE2230
EE 3261	Control Systems	3	EE3160
EE 3290	Photonic Material, Devices and Applications (w/lab)	4	EE 3140 or PH2400 or EE2190
EE 4219	Introduction to Electric Machinery and Drives	3	(EE2112 or EE3010) and EE3120
EE 4220	Introduction to Electric Machinery and Drives Lab	1	Co-req: EE4219
EE 4222	Power System Analysis 2	3	EE4221
EE 4226	Power Engineering Laboratory	1	EE4221 and co-req EE4222
EE 4232	Electronic Applications	3	EE3131
EE 4250	Modern Communication Systems	3	EE3180 and EE3131
EE 4253	Real Time Signal Processing	3	EE4252
EE 4262	Digital and non-linear Control	3	EE3261
EE 4272 or CS 4461	Computer Networks	3	CS3411
EE 4373	Network Security	3	EE4272 or CS4461 or SAT4812
EE 4375	Autonomous Vehicle Design	4	Future course for Robotics Engineers.
EE 4723	Network Securiy	3	EE 4272 or CS 4461 or SAT 4812
EE 4737	Embedded System Interfacing	4	(CS1111 or CS1142) and (EE3171 or EE3173)
EE 4800	Special Topics in ECE	varies	Instructor permission required to register
EE 5223	Power System Protection (lab EE 5224 optional)	3	EE4221 and co-req EE4222. Odd Springs.
EE 5250	Distribution Engineering	3	EE4221
EET 4373	Advanced Programmable Logic Controllers (EE,RE)	4	EE3373 or EET3373

Notes:

- Courses that are graded pass/fail may not count in EE/CpE/RE Technical Electives areas.
- EE 4800 is not regularly offered, and will have varying topics. Refer to the Schedule of Classes for offerings, if any. Seek approval from advisor/UPC.
- EE 3010 (not listed above) may not count toward the Electrical Engineering nor Computer Engineering degree. EE 3010 is the circuits class taken by other majors.
- Courses that are project based, research, or independent study may not count in Technical Electives. Seek approval for EE4000, EE4800, or EE4805 from advisor/UPC.
- See Degree Audit for required courses and allowed electives, which vary by major and concentration.