

EE Technical Requirements

Courses that satisfy EE technical electives are shown below. Three courses (9 credits) must be taken.

Course	Course Title	Focus ⁴ Area(s)	Semester Offered ¹	Pre-requisites ²
BIOE 3700	Bioinstrumentation and Bioimaging	BioS	Fall & Spring	MATH 2080 and ECE 2020 or ECE 2070; Co-req BIOE 3701
BIOE 4310	Medical Imaging	BioS	Infrequent	MATH 2080 and ECE 2020 or ECE 2070; Pre or co-req BIOE 3700
BIOE 4350	Computational Modeling in Bioengineering	BioS	Fall	MATH 2080
BIOE 4710	Biophotonics	BioS	Fall	MATH 2080, PHYS 2210, and ECE 2020 or ECE 2070
ECE 2220	Systems Prog. Concepts for Computer Engineering	CSA	Fall & Spring	CPSC 1110 ²
ECE 4040	Semiconductor Devices	ELEC	Fall	ECE 3200 ²
ECE 4060	Intro to Microelectronics Processing	ELEC	Infrequent	ECE 3200 ²
ECE 4080	Silicon Photonic Integrated Circuits	AEM	Spring	ECE 3200 ² and ECE 3800 ²
ECE 4100	Industrial Control and Automation in ECE	IS	Spring	ECE 4090 ²
ECE 4160	Smart Grid	IS, POW	Spring	Senior standing
ECE 4180	Power Systems Analysis	POW	Fall	ECE 3600 ² and ECE 3800 ²
ECE 4190	Electric Machines and Drives	POW, RENE	Spring	ECE 3210 ² and ECE 3600 ² and ECE 3800 ²
ECE 4200	Renewable Energy Penetration on the Power Grid	RENE	Spring	ECE 2070 ² or ECE 3200 ²
ECE 4290	Organization of Computers	CSA	Fall	ECE 2720 ²
ECE 4300	Digital Communications	CSN	Infrequent	ECE 3170 ² and ECE 3300 ² and consent of instructor
ECE 4320	Instrumentation	AEM, ELEC	Spring	ECE 3210 ²
ECE 4330	Optical Fiber Communication Systems	CSN, AEM	Infrequent	ECE 3300 ² and ECE 3800 ²
ECE 4340	Optoelectronics and Photonics	AEM	Fall	ECE 3810 ²
ECE 4360	Microwave Circuits	AEM	Infrequent	ECE 3810 ²
ECE 4370	Microelectromechanical Systems	ELEC	Spring	CH 1020 and PHYS 1220 and Senior standing
ECE 4380	Computer Communications	CSN	Spring	Senior standing
ECE 4400	Performance Analysis of Local Computer Networks	CSN	Spring	ECE 2720 ² and ECE 3170 ²
ECE 4420	Knowledge Engineering	CSA, DSP, IS	Fall	ECE 3170 ² or MATH 4000 ² or STAT 3090 ²
ECE 4460	Antennas and Propagation	AEM	Infrequent	ECE 3300 ² and ECE 3810 ²
ECE 4550	Robot Manipulators	IS	Summer	MATH 2060 ² and MATH 3110 ²
ECE 4570	Fundamentals of Wind Power	IS, RENE	Summer	ECE 2070 ² or ECE 3200 ²
ECE 4580	Algorithms for VLSI Design Automation	ELEC	Infrequent	ECE 3300 ²
ECE 4590	Integrated Circuit Design	ELEC	Fall	ECE 3200 ² or ECE 3210 ² ; Co-req ECE 4591
ECE 4610	Fundamentals of Solar Energy	RENE	Fall	ECE 3200 ²
ECE 4670	Introduction to Digital Signal Processing	DSP, IS	Fall	ECE 3300 ²
ECE 4680	Embedded Computing	CSA, IS	Spring	ECE 2230 ² and ECE 3710 ² ; Co-req ECE 4681
ECE 4710	Electrification of Transportation	RENE	Fall & Spring	Junior standing
ECE 4730	Introduction to Parallel Systems	CSA	Fall	ECE 3220 ² or ECE 3290 ²
ME 3100	Thermodynamics and Heat Transfer	ELEC	Spring	MATH 2060 and PHYS 2210
ECE 4050 ³	Design Projects	OCO	Fall & Spring	ECE 3300 ² or ECE 4090 ² , and consent of project supervisor
ECE 4910 ³	Honors Research	OCO	Fall & Spring	Consent of faculty member/mentor
ECE 4920 ³	Special Problems	OCO	Fall & Spring	Consent of faculty member/mentor
ECE 4930 ³	Selected Topics	OCO	Fall & Spring	Consent of instructor
ECE 4980 ³	Research in Electrification of Transportation	OCO	Fall & Spring	Consent of faculty member/mentor
ECE 4990 ³	Creative Inquiry	OCO	Fall & Spring	Consent of faculty member/mentor

¹ Semesters offered may be subject to change. Courses may be cancelled due to low enrollment.

² A student can enroll in ECE courses (excluding ECE 2070, 2080, 3080) only when all prerequisites have been passed with a grade of C or better.

³ A maximum of 3 credits from "OCO" may be used to satisfy one Technical Elective Requirement.

⁴Focus Areas:

CSA (Computer Systems & Architecture); BioS (Biomedical Systems); CSN (Communication Systems & Networks); DSP (Digital Signal Processing); AEM (Applied Electromagnetics); ELEC (Electronics); IS (Intelligent Systems); POW (Power); RENE (Renewable Energy & Electric Vehicles); OCO (Other Course Options)

Additional courses permissible but not scheduled: ECE 4220 (Electric System Design 1); ECE 4350 (Electromagnetic Compatibility); ECE 4600 (Computer-Aided Analysis & Design); and ECE 4700 (Vehicle Electronics)