

# EE Technical Requirements

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

Subject	Course	Course Title	Semester Offered <sup>1</sup>	Pre-requisites <sup>2</sup>
<b>Computer Systems &amp; Architecture</b>	ECE 2220	Systems Prog. Concepts for Computer Engineering	Fall & Spring	CPSC 1110 <sup>2</sup>
	ECE 4420	Knowledge Engineering	Fall	ECE 3170 <sup>2</sup> or MATH 4000 <sup>2</sup> or STAT 3090 <sup>2</sup>
	ECE 4290	Organization of Computers	Fall	ECE 2720 <sup>2</sup>
	ECE 4680/4681	Embedded Computing	Spring	ECE 2230 <sup>2</sup> and ECE 3710 <sup>2</sup> ; Co-req ECE 4681
	ECE 4730	Introduction to Parallel Systems	Fall or Spring	ECE 3220 <sup>2</sup> or ECE 3290 <sup>2</sup>
<b>Biomedical Systems</b>	BIOE 3700/3701	Bioinstrumentation and Bioimaging	Fall & Spring	MATH 2080 and ECE 2020 or ECE 2070; Co-req BIOE 3701
	BIOE 4310/4311	Medical Imaging	Spring	MATH 2080 and ECE 2020 or ECE 2070; Pre or co-req BIOE 3700; Co-req BIOE 4311
	BIOE 4350	Computational Modeling in Bioengineering	Spring	MATH 2080
	BIOE 4710	Biophotonics	Check w/ Dept.	MATH 2080 and PHYS 2210, and ECE 2070 or ECE 3200
<b>Communication Systems &amp; Networks</b>	ECE 4300	Digital Communications	Fall or Spring	ECE 3170 <sup>2</sup> and ECE 3300 <sup>2</sup> and consent of instructor
	ECE 4330	Optical Fiber Communication Systems	Spring	ECE 3300 <sup>2</sup> and ECE 3800 <sup>2</sup>
	ECE 4380	Computer Communications	Spring	Senior standing in EE or CpE
	ECE 4400	Performance Analysis of Local Computer Networks	Spring	ECE 2720 <sup>2</sup> and ECE 3170 <sup>2</sup>
<b>Digital Signal Processing</b>	ECE 4420	Knowledge Engineering	Fall	ECE 3170 <sup>2</sup> or MATH 4000 <sup>2</sup> or STAT 3090 <sup>2</sup>
	ECE 4670	Introduction to Digital Signal Processing	Fall	ECE 3300 <sup>2</sup>
<b>Applied Electromagnetics</b>	ECE 4360	Microwave Circuits	Fall	ECE 3810 <sup>2</sup>
	ECE 4080	Silicon Photonic Integrated Circuits	Spring	ECE 3200 <sup>2</sup> and ECE 3800 <sup>2</sup>
	ECE 4460	Antennas and Propagation	Spring	ECE 3300 <sup>2</sup> and ECE 3810 <sup>2</sup>
	ECE 4320	Instrumentation	Spring	ECE 3210 <sup>2</sup>
	ECE 4330	Optical Fiber Communication Systems	Spring	ECE 3300 <sup>2</sup> and ECE 3800 <sup>2</sup>
	ECE 4340	Optoelectronics and Photonics	Fall	ECE 3810 <sup>2</sup>
	ECE 4350	Electromagnetic Compatibility	Spring	ECE 3810 <sup>2</sup>
<b>Electronics</b>	ECE 4040	Semiconductor Devices	Fall	ECE 3200 <sup>2</sup>
	ECE 4060	Intro to Microelectronics Processing	Fall	ECE 3200 <sup>2</sup>
	ECE 4220/4221	Electronic System Design I	Spring	ECE 3210 <sup>2</sup> and ECE 3300 <sup>2</sup> and ECE 3600 <sup>2</sup> and ECE 3710 <sup>2</sup> and ECE 3810 <sup>2</sup> ; Co-req ECE 4221
	ECE 4320	Instrumentation	Spring	ECE 3210 <sup>2</sup>
	ECE 4370	Microelectromechanical Systems	Spring	CH 1020 and PHYS 1220 and Senior standing in EE or CpE
	ECE 4580	Algorithms for VLSI Design Automation	Spring	ECE 3200 <sup>2</sup>
	ECE 4590	Integrated Circuit Design	Fall	ECE 3200 <sup>2</sup> or ECE 3210 <sup>2</sup> ; Co-req ECE 4591
	ECE 4700	Vehicle Electronics	Spring	ECE 3200 <sup>2</sup>
	ME 3100	Thermodynamics and Heat Transfer	Spring	MATH 2060 and PHYS 2210
	ECE 4100	Industrial Control and Automation in ECE	Spring	ECE 4090 <sup>2</sup>
<b>Intelligent Systems</b>	ECE 4160	Smart Grid	Spring	Senior standing in EE or CPE
	ECE 4420	Knowledge Engineering	Fall	ECE 3170 <sup>2</sup> or MATH 4000 <sup>2</sup> or STAT 3090 <sup>2</sup>
	ECE 4550	Robot Manipulators	Summer	MATH 2060 <sup>2</sup> and MATH 3110 <sup>2</sup>
	ECE 4570	Fundamentals of Wind Power	Summer	ECE 2070 <sup>2</sup> or ECE 3200 <sup>2</sup>
	ECE 4600	Computer-Aided Analysis & Design	Spring	ECE 2620 <sup>2</sup>
	ECE 4670	Introduction to Digital Signal Processing	Fall	ECE 3300 <sup>2</sup>
	ECE 4680/4681	Embedded Computing	Spring	ECE 2230 <sup>2</sup> and ECE 3710 <sup>2</sup> ; Co-req ECE 4681
	ECE 4160	Smart Grid	Spring	Senior standing in EE or CPE
<b>Power</b>	ECE 4180	Power Systems Analysis	Fall	ECE 3600 <sup>2</sup> and ECE 3800 <sup>2</sup>
	ECE 4190	Electric Machines and Drives	Spring	ECE 3210 <sup>2</sup> and ECE 3600 <sup>2</sup> and ECE 3800 <sup>2</sup>
	ECE 4190	Electric Machines and Drives	Spring	ECE 3210 <sup>2</sup> and ECE 3600 <sup>2</sup> and ECE 3800 <sup>2</sup>
<b>Renewable Energy &amp; Electric Vehicles</b>	ECE 4200	Renewable Energy Penetration on the Power Grid	Spring	ECE 2070 <sup>2</sup> or ECE 3200 <sup>2</sup>
	ECE 4570	Fundamentals of Wind Power	Summer	ECE 2070 <sup>2</sup> or ECE 3200 <sup>2</sup>
	ECE 4610	Fundamentals of Solar Energy	Fall	ECE 3200 <sup>2</sup>
	ECE 4700	Vehicle Electronics	Spring	ECE 3200 <sup>2</sup>
	ECE 4710	Electrification of Transportation	Fall	Junior standing
<b>Other Course Options<sup>3</sup></b>	ECE 4050 <sup>3</sup>	Design Projects	Fall & Spring	ECE 3300 <sup>2</sup> or ECE 4090 <sup>2</sup> , and consent of project supervisor
	ECE 4910 <sup>3</sup>	Honors Research	Fall & Spring	Consent of faculty member/mentor
	ECE 4920 <sup>3</sup>	Special Problems	Fall & Spring	Consent of faculty member/mentor
	ECE 4930 <sup>3</sup>	Selected Topics	Fall & Spring	Consent of instructor
	ECE 4980 <sup>3</sup>	Research in Electrification of Transportation	Fall & Spring	Consent of faculty member/mentor
ECE 4990 <sup>3</sup>	Creative Inquiry	Fall & Spring	Consent of faculty member/mentor	

<sup>1</sup> Semesters offered may be subject to change.

<sup>2</sup> 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.

<sup>3</sup> A maximum of 3 credits from courses listed in "Other Course Options" may be used to satisfy a Technical Elective Requirement.