

CpE Technical Requirements

Courses that satisfy CpE technical electives are shown below. Four courses (12 credits) must be taken, one of which must meet the Probability and Statistics requirement*

Subject Area	Course	Course Title	Semester Offered ¹	Pre-requisites ²
Architecture	ECE 4680/4681	Embedded Computing	Spring	ECE 2230 ² and ECE 3710 ²
	ECE 4290	Organization of Computers	Fall	ECE 2720 ²
	ECE 4730	Introduction to Parallel Systems	Fall or Spring	ECE 3220 ² or ECE 3290 ²
Biomedical Systems	BIOE 3700/3701 ³	Bioinstrumentation and Bioimaging	Fall & Spring	MATH 2080 and ECE 2020 or ECE 2070; Co-req BIOE 3701
	BIOE 4310/4311 ³	Medical Imaging	Spring	MATH 2080 and ECE 2020 or ECE 2070; Prereq or concurrent enrollment BIOE 3700; Co-req BIOE 4311
	BIOE 4350 ³	Computer Modeling of Multiphysics Problems	Spring	MATH 2080
	BIOE 4710 ³	Biophotonics	Check w/ Dept.	MATH 2080, PHYS 2210 and ECE 2070 or ECE 3200
Communication Systems & Networks	ECE 4270	Communications Systems	Fall, Spring & Summer	ECE 3170 ² and ECE 3300 ²
	ECE 4300	Digital Communications	Fall or Spring	ECE 3170 ² , ECE 3300 ² and consent of instructor
	ECE 4380	Computer Communications	Spring & Summer	Senior standing in CpE or EE
	ECE 4400	Performance Analysis of Local Computer Networks	Spring	ECE 2720 ² and ECE 3170 ²
	ECE 4490/4491	Computer Network Security	Fall	Senior standing in CpE or EE; Co-req ECE 4491
Electronics	ECE 3210 ³	Electronics II	Fall, Spring & Summer	ECE 3200 ²
	ECE 4590 ³	Integrated Circuit Design	Fall	ECE 3200 ² ; Co-req ECE 4591
Intelligent Systems	ECE 4100	Industrial Control and Automation in ECE	Spring	ECE 4090 ²
	ECE 4160	Smart Grid	Spring	SR standing in EE or CPE
	ECE 4310	Introduction to Computer Vision	Fall	ECE 2230 ²
	ECE 4550	Robot Manipulators	Summer	MATH 2060 ² and MATH 3110 ²
	ECE 4600	Computer-Aided Analysis and Design	Spring	ECE 2620 ²
	ECE 4670	Introduction to Digital Signal Processing	Fall & Summer	ECE 3300 ²
	ECE 4680/4681	Embedded Computing	Spring	ECE 2230 ² and ECE 3710 ² ; Co-req ECE 4681
Signal Processing	ECE 4310	Introduction to Computer Vision	Fall	ECE 2230 ²
	ECE 4670	Introduction to Digital Signal Processing	Fall & Summer	ECE 3300 ²
	ECE 4270	Communications Systems	Fall, Spring & Summer	ECE 3170 ² and ECE 3300 ²
Software	ECE 4420	Knowledge Engineering	Fall	ECE 3170 ² or MATH 4000 ² or STAT 3090 ²
	ECE 4490/4491	Computer Network Security	Fall	Senior standing in CpE or EE; Co-req ECE 4491
	ECE 4600	Computer-Aided Analysis and Design	Spring	ECE 2620 ²
	ECE 4730	Introduction to Parallel Systems	Fall or Spring	ECE 3220 ² or ECE 3290 ²
	ECE 4740	Fault Tolerance & Reliability in High Performance Computing	Fall	ECE 3220 ² or ECE 3290 ² ; ECE 4730 recommended
Other Course Options	ECE 4050 ⁴	Design Projects	Fall & Spring	ECE 3300 ² or ECE 4090 ² and consent of project supervisor
	ECE 4910 ⁴	Undergraduate Honors Research	Fall & Spring	Consent of faculty member/mentor
	ECE 4920 ⁴	Special Problems	Fall & Spring	Consent of faculty member/mentor
	ECE 4930 ⁴	Selected Topics	Fall & Spring	Consent of instructor
	ECE 4980 ⁴	Research in Electrification of Transportation	Fall & Spring	Consent of faculty member/mentor
	ECE 4990 ⁴	Creative Inquiry	Fall & Spring	Consent of faculty member/mentor

***ECE 4270, ECE 4300 or ECE 4400 meet the probability/statistics requirement. Students MUST choose one of these courses.**

¹ Semesters offered may be subject to change.

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 No more than 2 courses (6 credits) collectively from the Biomedical Systems and Electronics areas can be used to satisfy the Technical Elective Requirements.

⁴ A maximum of 3 credits from all courses listed in "Other Course Options" may be used to satisfy a Technical Elective Requirement.