Subject to change

Computer Engineering Technical Elective Suggestions

Refer to degree audit for full, up-to-date list of allowed and not allowed courses. Some courses are specifically excluded, including EE 3171 and CS 4431. ENG 1102 may be used if taken as part of the first-year Engineering Fundamentals sequence. Some co-op credits of UN 3002/3003 may also be used. Speak to your academic advisor to learn more. Graduate-level (5000+) courses may also be allowed but often require permission of instructor.

Interest/Focus	CpE Technical Elective Suggested Courses	Credits	Prerequisites
Chip Design and Electronics	EE 2230 - Printed Circuit Seminar Series *and* EE 2231 - Printed Circuit Fabrication	3 1	CH 1150+1151, permission of instructor
	EE 4271 - VLSI Design	4	EE 3131 and EE 2174
	EE 4231 - Physical Electronics	3	EE 3131
	EE 4232 - Electronic Applications	3	EE 3131
	EE 4252 - DSP and its Applications *and* EE 4259 - DSP and its Applications Lab	3 1	EE 3160
	EE 4240 - Intro to MEMS	4	SR standing
	EE 4227 - Power Electronics + *optional lab EE 4228*	3 (*or 4)*	EE 3120 and EE 3131
Aritificial Intelligence	CS 3311 - Formal Models	3	CS 2311 or MA 3210
	CS 4811 - Artificial Intelligence	3	CS 2321 and CS 3311
	CS 5811 - Advanced Artificial Intelligence	3	CS 4811
	CS 5841 - Machine Learning	3	Seek permission of instructor; SR standing
	EE 5821 - Computational Intelligence	3	Seek permission of instructor; obtain level waiver
Computer Networks	EE 4723/CS 4723 - Network Security	3	EE 4272 or CS 4461 or SAT 4812
	EE 4370 - IoT Application and Design	3	EE 4272 and SR standing
	CS 5751 - Dependable & Secure CPS-IoT	3	CS 2311 and JR or SR standing
	MA 3202 - Intro to Coding Theory	3	MA 2320 or MA 2321 or MA 2330
Cyber Security	CS 4471 - Computer Security	3	CS 3411 or CS 4411
	EE 4723 - Network Security	3	EE 4272 or CS 4461
	MA 3203 - Intro to Cryptography	3	MA 2320 or MA 2321 or MA 2330
	CS 4710 - Model-driven Software Development	3	CS 3311 and CS 3141(C)
	CS 4711 - Software Processes and Management	3	CS 3141
Robotics , Embedded Systems & Control	EE 3280 - Robot Operating Systems	3	EE 2180 and SAT 2711
	EE 4737 - Embedded Systems Interfacing	4	(CS 1111 or CS 1142 or EE 2241) and (EE 3171 or EE 3173)
	EE 3261 - Control Systems	3	EE 3160
	EE 4262 - Digital and Non-Linear Control	3	EE 3261
	EE 4219 - Electric Machinery & Drives + *lab EE 4220*	3 (*or 4*)	EE 2112 or EE 3010
	MEEM 4705 - Robotics and Mechatronics	4	MEEM 3750; seek instructor permission
	EE 4235 - Sensing & Processing in Robotics	3	EE 2180 and ENG 1101, JR or SR standing
	EE 5750 - Model-Based Embedded Control System Design	3	(EE 3261 or EE 4261) and EE 4295; obtain level waiver
Computer Science	CS 3331 - Concurrent Programming	3	CS 1142 or (CS 1141 and CS 1040) and (CS 2311 or MA 3210) and CS 2321
	CS 3311 - Formal Models	3	CS 2311 or MA 3210
	CS 4411 - Operating Systems	3	CS 3331 and CS 3421
	CS 3425 - Intro to Database Systems	3	(CS 2311 or MA 3210) and CS 2321

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Computer Science continued	CS 4121 - Programming Languages	3	CS 2321 and CS 3421 and CS 3311
	EE 5300 - Math and Computational Models in Engineering	3	SR Standing
	CS 4130 - Compiler Design and Optimization	3	CS 4121
	CS 4821 - Data Mining	3	(CS 3425 or MIS 3100) and (MA 2330 or MA 2320 or MA 2321) and (MA 2710 or MA 2720 or MA 3710)
Game Development	CS 3141 - Team Software Project	3	(CS 2311 or MA 3210) and CS 2321
	CS 4760 - User Interface & Design Implementation	3	CS 3141
	CS 4611 - Computer Graphics	3	(CS 1141 or CS 1142) and CS 2321 and MA 2330 and JR or SR standing
	CS 3425 - Introduction to Database Systems	3	(CS 2311 or MA 3210) and CS 2321
	CS 4425 - Database Systems	3	CS 3425
Software Application Development	CS 3141 - Team Software Project	3	(CS 2311 or MA 3210) and CS 2321
	CS 3311 - Formal Models	3	CS 2311 or MA 3210
	CS 3712 - Software Quality Assurance	3	CS 3141
	CS 4121 - Programming Languages	3	CS 2321 and CS 3421 and CS 3311
	CS 4711 - Software Processes and Management	3	CS 3141
	CS 4710 - Model Driven Software Development	3	CS 3311 and CS 3141(C)
	CS 3425 - Introduction to Database Systems	3	(CS 2311 or MA 3210) and CS 2321
	CS 4425 - Database Systems	3	CS 3425
	CS 3331 - Concurrent Programming	3	CS 1142 and (CS 2311 or MA 3210) and CS 2321
	CS 4411 - Operating Systems	3	CS 3331 and CS 3421
Power & Energy Systems	EE 4221 - Power Systems Analysis I	3	EE 3120 and (EE 2112 or EE 2110)
	EE 4222 - PowerSystems Analysis II	3	EE 4221
	EE 4226 - Power Engineering Lab	1	EE 4221 and EE 4222(C)
	EE 5223 - Power System Protection + *optional lab EE 5224*	3 (*or 4*)	Obtain level waiver
	EE 4219 - Electric Machinery & Drives + *optional lab EE 4220*	3 (*or 4*)	EE 2110 or EE 2112 or EE 3010
	EE 4227 - Power Electronics + *optional lab EE 4228*	3 (*or 4)*	EE 3120 and EE 3131
Communication	EE 3180 - Intro. Probability & Random Signal Analysis	3	EE 3160
	EE 4250 - Modern Communication Systems	3	EE 3160 and EE 3131 and EE 3180
	EE 4252 - DSP and its Applications *and*	3	EE 3160
	EE 4259 - DSP and its Applications Lab	1	EE 3160
	EE 4253 - Real Time Signal Processing	3	EE 4252
	EE 5527 - Digital Communications	3	EE 4250; obtain level waiver
	EE 5365 - In-Vehicle Communication Networks	3	EE 3250 or EE 4250
	EE 5750 - Model-Based Embedded Control System Design	3	(EE 3261 or EE 4261); obtain level waiver
Electrophysics ; Optics	EE 3140 - Electromagnetics	3	PH 2200 and MA 3160 and (EE 2110 or EE 2112)
	EE 3190 - Optical Sensing & Imaging	3	MA 3520 or MA 3521 or MA 3530 or MA 3560 and JR or SR standing
	EE 3290 - Photonic Material, Devices and Applications	4	EE 3140 or EE 3090 or EE 2190 or PH 2400 and JR or SR standing
	EE 4490 - Laser Systems and Applications	4	EE 3140
	EE 4231 - Physical Electronics	3	EE 3131
	EE 4232 - Electronic Applications	3	EE 3131
	EE 4411 - Engineering Electromagnetics	3	EE 3140