

Computer Focus Technical Electives

"Computer Focus Technical Electives" are courses not used to satisfy other degree requirements that are taken from the following list of ECE courses, or all COS courses at the 300, 400, or 500 level excluding COS 397, COS 495, COS 497 and COS 499.

An appropriate ECE 498 special topics course may be considered as "Computer Focus" if an approved degree-credit exception is filed.

		<i>Offered Fall 2021 (but not spring)</i>			
		<i>Offered Spr 2022 (but not fall)</i>			
		<i>Offered both Fall 2021 and Spr 2022</i>			
		Spr 2022	Fall 2021	Spr 2021	Fall 2020
ECE Courses that have been approved as "Computer Focus"					
ECE 417	Introduction to Robotics	x		x	
ECE 435	Network Engineering	x		x	
ECE 471	Embedded Systems		x		x
ECE 477	Hardware Applications Using C (May not be offered after Spring 2022)	x		x	
ECE 478	Industrial Computer Control (Moving to Spring in 2022/23)		x		x
ECE 491	Deep Learning				
ECE 533	Advanced Robotics	x			
ECE 571	Advanced Microprocessor-Based Design				x
ECE 573	Microprogramming		x		
ECE 574	Cluster Computing			x	
ECE 577	Fuzzy Logic				
ECE 590	Neural Networks				
ECE 591	Deep Learning				
COS 300, 400, 500 level courses.					
COS 301	Programming Languages	x			x
COS 312	An Introduction to Video Game Programming with the Unity Game Engine	x		x	
COS 331	Operating Systems		x		x
COS 412	Advanced Game Programming with Unity	x		x	
COS 415	Computer Simulation and Modeling, from Development to Display				
COS 417	Spatial Interaction Design	x			
COS 420	Introduction to Software Engineering	x		x	
COS 430	Introduction to Cybersecurity	x		x	
COS 435	Information Privacy Engineering				
COS 440	Computer Networks I				x
COS 451	Automata, Computability, and Languages	x		x	
COS 454	Data Structures and Algorithms		x	x	
COS 460	Interactive Computer Graphics				
COS 465	Data Visualization				
COS 470	Introduction to Artificial Intelligence		x	x	
COS 480	Database Management Systems		x		
COS 490	Computers, Ethics and Society		x		x
COS 498	Topics in Computer Science		x		
COS 515	Topics in Scientific Computation: Simulation and Modeling				
COS 520	Software Engineering I	x		x	
COS 550	Theoretical Computer Science I	x		x	
COS 554	Algorithms		x	x	
COS 565	Data Visualization				
COS 570	Topics in Artificial Intelligence		x	x	
COS 580	Topics in Database Management Systems		x		
COS 598	Advanced Topics in Computer Science	x	x	x	x

ECE/COS Technical Electives for CEN Majors

ECE/COS Technical Electives include all "Computer Focus Electives", and any other ECE course at the 300,400, or 500 level excluding ECE 394. (Selections must not be used to fulfill other degree requirements.)

		<i>Offered Fall 2021 (but not spring)</i>	x		
		<i>Offered Spr 2022 (but not fall)</i>	x		
		<i>Offered both Fall 2021 and Spr 2022</i>	x	x	
		Spr 2022	Fall 2021	Spr 2021	Fall 2020
ECE Electives (in addition to Computer-Focus Electives)					
ECE 316	Random Signal Analysis				x
ECE 323	Electric Power Conversion				
ECE 343	Electronics II	x		x	
ECE 351	Fields and Waves	x		x	
ECE 414	Feedback Control Systems	x		x	
ECE 427	Electric Power Systems		x		x
ECE 444	Analog Integrated Circuits			x	
ECE 445	Analysis and Design of Digital Integrated Circuits	x			x
ECE 450	Power Electronics		x		
ECE 453	Microwave Engineering		x		
ECE 457	Nanoscience		x		
ECE 462	Introduction to Basic Semiconductor Devices and Associated Circuit Models		x		x
ECE 464	Microelectronics Science and Engineering	x		x	
ECE 465	Introduction to Sensors		x		x
ECE 466	Sensor Technology and Instrumentation				
ECE 467	Solar Cells and Their Applications			x	
ECE 484	Communications Engineering				
ECE 498	Selected Topics in Electrical and Computer Engineering	x	x		x
ECE 515	Random Variables and Stochastic Processes		x		
ECE 523	Mathematical Methods in Electrical Engineering				x
ECE 543	Microelectronic Devices I		x		x
ECE 548	VLSI Test/Characterization				
ECE 550	Electromagnetic Theory	x		x	
ECE 552	Wave Propagation	x			x
ECE 565	Solid State Device Theory I		x		x
ECE 574	Cluster Computing			x	
ECE 581	Estimation and Detection Theory				
ECE 583	Coding Theory			x	
ECE 584	Estimation Theory				
ECE 585	Fundamentals of Wireless Communication	x			
ECE 598	Selected Advanced Topics in Electrical and Computer Engineering	x	x	x	x

Electrical Engineering Focus Technical Electives

"Electrical Engineering Focus Technical Electives" include the following list of approved courses.

An appropriate ECE 498 special topics course may be considered as "Electrical Focus" if an approved degree-credit exception is filed

		Offered Fall 2021 (but not spring)		x		
		Offered Spr 2022 (but not fall)	x			
		Offered both Fall 2021 and Spr 2022	x	x		
			Spr 2022	Fall 2021	Spr 2021	Fall 2020
ECE Courses that have been approved as "Electrical Focus"						
ECE 323	Electric Power Conversion					
ECE 427	Electric Power Systems			x		x
ECE 444	Analog Integrated Circuits				x	
ECE 445	Analysis and Design of Digital Integrated Circuits	x				x
ECE 450	Power Electronics			x		
ECE 453	Microwave Engineering			x		
ECE 457	Nanoscience			x		
ECE 462	Introduction to Basic Semiconductor Devices and Associated Circuit Models			x		x
ECE 464	Microelectronics Science and Engineering	x			x	
ECE 465	Introduction to Sensors			x		x
ECE 466	Sensor Technology and Instrumentation					
ECE 467	Solar Cells and Their Applications				x	
ECE 484	Communications Engineering					
ECE 543	Microelectronic Devices I			x		x
ECE 548	VLSI Test/Characterization					
ECE 550	Electromagnetic Theory	x			x	
ECE 552	Wave Propagation	x				x
ECE 565	Solid State Device Theory I			x		x
ECE 581	Estimation and Detection Theory					
ECE 583	Coding Theory				x	
ECE 584	Estimation Theory					
ECE 585	Fundamentals of Wireless Communication	x				

ECE Technical Electives for ELE majors

ECE Technical Electives include all "Electrical Engineering Focus Electives", and any other ECE course at the 300,400, or 500 level excluding ECE 394. (Selections must not be used to fulfill other degree requirements.)

	<i>Offered Fall 2021 (but not spring)</i>		x		
	<i>Offered Spr 2022 (but not fall)</i>	x			
	<i>Offered both Fall 2021 and Spr 2022</i>	x	x		
ECE Electives (in addition to "Electrical Focus" Electives)		Spr 2022	Fall 2021	Spr 2021	Fall 2020
ECE 316	Random Signal Analysis				x
ECE 331	Introduction to Unix Systems Administration	x		x	
ECE 417	Introduction to Robotics	x		x	
ECE 435	Network Engineering	x		x	
ECE 471	Embedded Systems		x		x
ECE 473	Computer Architecture and Organization		x		x
ECE 477	Hardware Applications Using C (May not be offered after Spring 2022)	x		x	
ECE 478	Industrial Computer Control (Moving to Spring in 2022/23)		x		x
ECE 498	Selected Topics in Electrical and Computer Engineering	x	x		x
ECE 515	Random Variables and Stochastic Processes		x		
ECE 523	Mathematical Methods in Electrical Engineering				x
ECE 533	Advanced Robotics	x			
ECE 571	Advanced Microprocessor-Based Design				x
ECE 573	Microprogramming		x		
ECE 574	Cluster Computing			x	
ECE 577	Fuzzy Logic				
ECE 590	Neural Networks				
ECE 598	Selected Advanced Topics in Electrical and Computer Engineering	x	x	x	x

Generic Technical Electives

- All ECE Technical Electives

- Any 300,400, or 500 level course with the designation ECE, COS, CHY, PHY, BIO, BMB, BEN, CHE, CIE, GEE, MAT, STS, BUA

- Any of the additional courses listed below (Selections must not be used to fulfill other degree requirements.)

	<i>Offered Fall 2021 (but not spring)</i>		x		
	<i>Offered Spr 2022 (but not fall)</i>	x			
	<i>Offered both Fall 2021 and Spr 2022</i>	x	x		
		Spr 2022	Fall 2021	Spr 2021	Fall 2020
Pre-approved Generic Electives not fitting the above description					
CHE 200	Fundamentals of Process Engineering		x		x
CIE 331	Fundamentals of Environmental Engineering		x		x
COS 221	Data Structures in C++ (May not be offered after Spring 2022)		x		x
ECE 198	Selected Topics in Electrical and Computer Engineering	x	x	x	
ECE 394	Electrical and Computer Engineering Practice	x	x	x	x
EET 276	Programmable Logic Controllers		x		x
EET 321	Electro-Mechanical Energy Conversion	x		x	
EET 386	Project Management		x	x	
EET 414	Introduction to Printed Circuit Boards	x	x	x	x
EET 423	Protective Relay Applications	x		x	
EET 460	Renewable Energy and Electricity Production		x		x
GEE 230	Introduction to Engineering Leadership and Management	x		x	
INV 180	Create: Innovation Engineering I				
INV 282	Advanced Innovation Skills			x	
INV 392	Commercialize: Innovation Engineering III			x	x
MEE 150	Applied Mechanics: Statics	x	x	x	x
MEE 230	Thermodynamics I	x	x	x	x
MEE 252	Statics and Strength of Materials		x		x
MEE 270	Applied Mechanics: Dynamics	x	x	x	x
PHY 236	Introductory Quantum Physics		x		x
PPA 264	Introduction to the Pulp and Paper Industry	x		x	