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 approved COS courses at the 300, 400, or 500 level

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

	Spr 2025	Fall 2024
Offered Fall 2024 (but not spring)		x
Offered Spr 2025 (but not fall)	x	
Offered both Fall 2024 and Spr 2025	x	x

ECE Courses that have been approved as "Computer Focus"		Spr 2025	Fall 2024	Spr 2024	Fall 2023
ECE 417	Mobile Robotics		x		
ECE 435	Network Engineering	x		x	
ECE 479	Advanced Cybersecurity	x			
ECE 490	Neural Networks			x	
ECE 491	Deep Learning	x			x
ECE 498	Selected Topics in Electrical and Computer Engineering (Computer/Electrical "focus" subject to approval)	x	x	x	x
ECE 531	Advanced Operating Systems				
ECE 533	Advanced Robotics	x			
ECE 571	Advanced Microprocessor-Based Design		x		
ECE 573	Microprogramming				
ECE 574	Cluster Computing	x		x	
ECE 579	Advanced Cybersecurity	x			
ECE 590	Neural Networks			x	
ECE 591	Deep Learning	x			x
ECE 598	Selected Advanced Topics in Electrical and Computer Engineering (Computer/Electrical "focus" subject to approval)	x	x	x	x
COS 300, 400, 500 level courses.					
COS 301	Programming Languages	x		x	x
COS 312	An Introduction to Video Game Programming with the Unity Game Engine		x		x
COS 320	Client-Side Web Development Languages	x			
COS 331	Operating Systems	x	x	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				
COS 420	Introduction to Software Engineering	x	x	x	x
COS 430	Introduction to Cybersecurity	x	x	x	
COS 435	Information Privacy Engineering		x		
COS 440	Computer Networks I			x	
COS 442	Cloud Computing	x			
COS 451	Automata, Computability, and Languages		x		
COS 454	Data Structures and Algorithms				x
COS 460	Interactive Computer Graphics				
COS 465	Data Visualization				
COS 470	Introduction to Artificial Intelligence		x		x
COS 473	Computer Vision		x		
COS 475	Machine Learning	x		x	
COS 478	Introduction to Private Machine Learning (AI)				
COS 480	Database Management Systems				
COS 482	Introduction to Data Science		x		
COS 490	Computers, Ethics and Society	x	x		x
COS 498	Topics in Computer Science	x		x	
COS 520	Software Engineering I		x	x	x
COS 530	Introduction to Cybersecurity	x		x	
COS 535	Information Privacy Engineering		x		
COS 540	Computer Networks			x	
COS 542	Cloud Computing	x			
COS 550	Theoretical Computer Science I		x		
COS 554	Algorithms				x
COS 565	Data Visualization				
COS 570	Topics in Artificial Intelligence		x		x
COS 573	Computer Vision		x		
COS 575	Machine Learning	x		x	
COS 578	Introduction to Private Machine Learning (AI)				
COS 580	Topics in Database Management Systems				
COS 598	Advanced Topics in Computer Science	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.)

		Spr 2025	Fall 2024	Spr 2024	Fall 2023
Offered Fall 2024 (but not spring)			x		
Offered Spr 2025 (but not fall)		x			
Offered both Fall 2024 and Spr 2025		x	x		

ECE Electives (in addition to Computer-Focus Electives)		Spr 2025	Fall 2024	Spr 2024	Fall 2023
ECE 316	Random Signal Analysis		x		x
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 428	Smart Grid and Enabling Technologies		x		
ECE 444	Analog Integrated Circuits				
ECE 445	Analysis and Design of Digital Integrated Circuits			x	
ECE 450	Power Electronics		x		x
ECE 453	Microwave Engineering		x		x
ECE 455	Electric Drives			x	
ECE 456	Electric Drives Lab				
ECE 457	Nanoscience				x
ECE 462	Introduction to Basic Semiconductor Devices and Associated Circuit Models	x			x
ECE 463	Energy Harvesting and Sensing		x		
ECE 464	Microelectronics Science and Engineering			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	x			
ECE 498	Selected Topics in Electrical and Computer Engineering (Computer/Electrical "focus" subject to approval)	x	x	x	x
ECE 515	Random Variables and Stochastic Processes		x		
ECE 523	Mathematical Methods in Electrical Engineering				
ECE 528	Smart Grid and Enabling Technologies		x		
ECE 543	Microelectronic Devices I	x			x
ECE 548	VLSI Test/Characterization				
ECE 550	Electromagnetic Theory	x			
ECE 552	Wave Propagation				
ECE 563	Energy Harvesting and Sensing		x		
ECE 565	Solid State Device Theory I		x		
ECE 581	Estimation and Detection Theory				
ECE 583	Coding Theory				
ECE 584	Estimation Theory				x
ECE 585	Fundamentals of Wireless Communication	x			
ECE 598	Selected Advanced Topics in Electrical and Computer Engineering (Computer/Electrical "focus" subject to approval)	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

	Spr 2025	Fall 2024	Spr 2024	Fall 2023
Offered Fall 2024 (but not spring)		x		
Offered Spr 2025 (but not fall)	x			
Offered both Fall 2024 and Spr 2025	x	x		

ECE Courses that have been approved as "Electrical Focus"		Spr 2025	Fall 2024	Spr 2024	Fall 2023
ECE 427	Electric Power Systems		x		x
ECE 428	Smart Grid and Enabling Technologies		x		
ECE 444	Analog Integrated Circuits				
ECE 445	Analysis and Design of Digital Integrated Circuits			x	
ECE 450	Power Electronics		x		x
ECE 453	Microwave Engineering		x		x
ECE 455	Electric Drives			x	
ECE 456	Electric Drives Lab				
ECE 457	Nanoscience				x
ECE 462	Introduction to Basic Semiconductor Devices and Associated Circuit Models	x			x
ECE 463	Energy Harvesting and Sensing		x		
ECE 464	Microelectronics Science and Engineering			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	x			
ECE 498	Selected Topics in Electrical and Computer Engineering (Computer/Electrical "focus" subject to approval)	x	x	x	x
ECE 528	Smart Grid and Enabling Technologies		x		
ECE 543	Microelectronic Devices I	x			x
ECE 548	VLSI Test/Characterization				
ECE 550	Electromagnetic Theory	x			
ECE 552	Wave Propagation				
ECE 563	Energy Harvesting and Sensing		x		
ECE 565	Solid State Device Theory I		x		
ECE 581	Estimation and Detection Theory				
ECE 583	Coding Theory				
ECE 584	Estimation Theory				x
ECE 585	Fundamentals of Wireless Communication	x			
ECE 598	Selected Advanced Topics in Electrical and Computer Engineering (Computer/Electrical "focus" subject to approval)	x	x	x	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.)

		Spr 2025	Fall 2024	Spr 2024	Fall 2023
Offered Fall 2024 (but not spring)			x		
Offered Spr 2025 (but not fall)		x			
Offered both Fall 2024 and Spr 2025		x	x		

ECE Electives (in addition to "Electrical Focus" Electives)		Spr 2025	Fall 2024	Spr 2024	Fall 2023
ECE 316	Random Signal Analysis		x		x
ECE 331	Embedded Operating System Design	x		x	
ECE 417	Mobile Robotics		x		
ECE 435	Network Engineering	x		x	
ECE 471	Embedded Systems		x		x
ECE 473	Computer Architecture and Organization		x		x
ECE 479	Advanced Cybersecurity	x			
ECE 490	Neural Networks			x	
ECE 491	Deep Learning	x			x
ECE 498	Selected Topics in Electrical and Computer Engineering (Computer/Electrical "focus" subject to approval)	x	x	x	x
ECE 515	Random Variables and Stochastic Processes		x		
ECE 523	Mathematical Methods in Electrical Engineering				
ECE 531	Advanced Operating Systems				
ECE 533	Advanced Robotics	x			
ECE 571	Advanced Microprocessor-Based Design		x		
ECE 573	Microprogramming				
ECE 579	Advanced Cybersecurity	x			
ECE 574	Cluster Computing	x		x	
ECE 590	Neural Networks			x	
ECE 591	Deep Learning	x			x
ECE 598	Selected Advanced Topics in Electrical and Computer Engineering (Computer/Electrical "focus" subject to approval)	x	x	x	x

Generic Technical Electives

- All ECE Techncial Electives

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

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

		Spr 2025	Fall 2024	Spr 2024	Fall 2023
Offered Fall 2024 (but not spring)			x		
Offered Spr 2025 (but not fall)		x			
Offered both Fall 2024 and Spr 2025		x	x		
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
ECE 198	Selected Topics in Electrical and Computer Engineering		x		x
ECE 277	Programming II: From Hardware to Objects		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 414	Printed Circuit Board Design	x	x	x	x
EET 423	Protective Relay Applications	x		x	
EET 460	Renewable Energy and Electricity Production	x	x	x	x
EET 486	Project Management	x		x	
GEE 230	Introduction to Engineering Leadership and Management	x		x	
INV 282	Advanced Innovation Skills				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	
INV 392	Commercialize: Innovation Engineering III				