

School of Electrical and Computer Engineering Projected Schedule of Graduate Courses

The following table lists the ECE graduate courses currently projected to be offered at the Atlanta campus and through the video/internet distance education program. Classes taught at GT-Lorraine, GT-Shenzhen, or as part of study abroad programs are not listed.

The projected schedule of classes is normally updated each year during summer semester. The projected schedule for the coming year (2022-23) is fairly certain; changes will be reflected in the registration schedule for each term. The projected schedule for 2023-24 is preliminary and is likely to be modified significantly in summer 2023.

Additionally, summer schedules are subject to changes in student enrollment, budgets, and/or faculty availability. Summer graduate electives will be offered as faculty and resources are available, but there is no guarantee that any graduate electives will be offered in future summer terms. There are no current plans to offer graduate electives in Atlanta during future summer terms.

X = course scheduled to be offered

? = course may be offered in this term, based on prior years' schedules

ST = special topic course (offered as ECE 88xx)

video = course offered via video/internet in addition to on-campus section

altvid = course normally offered via video/internet in alternate years; not offered via video/internet this year

NOTE: Cross-listed courses (for satisfying MS and PhD domain requirements) are listed under multiple Technical Interest Areas

Permanent ECE Graduate Course
Permanent ECE Graduate Course CROSS-LISTED in other TIG(s) OR with other department(s)
Special Topics ECE Graduate Course
Special Topics ECE Graduate Course CROSS-LISTED in other TIG(s) OR with other department(s)

Bioengineering	Credits	Fall 2022	Spring 2023	Summer 2023	Fall 2023	Spring 2024
ECE 6200 - Biomedical Applications of MEMS	3-0-0-3		X			
ECE 6780 - Medical Image Processing <i>(Cross-listed in Digital Signal Processing; with BMED/CS 6780)</i>	3-0-0-3		X			
ECE 6781 - Biomedical Sensing Systems <i>(Cross-listed with ECE/BMED/ME 4781)</i>	3-0-0-3	X			X	
ECE 6786 - Medical Imaging Systems <i>(Cross-listed in Digital Signal Processing; with BMED 6786)</i>	3-0-0-3	X			X	
ECE 6790 - Information Processing Models in Neural Systems <i>(Cross-listed with BMED 6790)</i>	3-0-0-3		X			
ECE 8833 - Medical Ultrasound: From Diagnostic Imaging to Image-guided Therapy <i>(Cross-listed with BME 8813MU)</i>	3-0-0-3					
ECE 8843 - Advanced Medical Imaging Systems: CT/PET/SPECT Physics, Engineering and Applications <i>(Cross-listed with BMED 8813AM)</i>	3-0-0-3					

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Computer Systems and Software (previously part of Computer Engineering)	Credits	Fall 2022	Spring 2023	Summer 2023	Fall 2023	Spring 2024
ECE 6100 - Advanced Computer Architecture	3-0-0-3	video	X		video	X
ECE 6101 - Parallel & Distributed Computer Arch	3-0-0-3					
ECE 6102 - Dependable Distributed Systems	3-0-0-3					
ECE 6110 - CAD for Computer Communication Networks	2-0-3-3		X			
ECE 6115 - Interconnection Networks for High Performance (Cross-listed with CS 8803)	3-0-0-3		X			X
ECE 6122 - Advanced Programming Techniques for Engineering Applications (Cross-listed with ECE 4122)	2-0-3-3	video			video	
ECE 6612 Computer Network Security (Cross-listed in Telecommunications)	3-0-0-3					X
ECE 6747 - Advanced Topics in Malware Analysis (Cross-listed with CS 8803SVS and ECE 4147)	3-0-0-3	X			X	
ECE 6770 - Introduction to Cyber-Physical Systems Security (Cross-listed with CS 6263)	3-0-0-3	X				
ECE 7102 - RISC Architectures	3-0-0-3					
ECE 8803 CPS - Cyber Physical Design and Analysis (MSCSEC Energy)	3-0-0-3	X	X		?	?
ECE 8803 ECS - Empirical Computer Security	3-0-0-3		X		X	
ECE 8803 CSD - Cybersecurity of Drones (Cross-listed with ECE 4803 CSD; CS 4803/8803 COD)	3-0-0-3		X			
ECE 8813 ACS - Advanced Computer Security (Cross-listed with CS 8803ACS)	3-0-0-3					
ECE 8813 ANS - Advanced Network Security (Cross-listed with CS 6262)	3-0-0-3					
ECE 8853 QCS - Introduction to Quantum Computing Systems	3-0-0-3					
ECE 8893 AML - Hardware Acceleration for Machine Learning	2-0-3-3					
ECE 8893 FPG - FPGA Acceleration	3-0-0-3		X			X

Digital Signal Processing	Credits	Fall 2022	Spring 2023	Summer 2023	Fall 2023	Spring 2024
ECE 6250 - Advanced Digital Signal Processing	3-0-0-3				X	
ECE 6254 - Statistical Machine Learning	3-0-0-3	video	video		X	X
ECE 6255 - Digital Processing of Speech Signals	3-0-0-3		X			
ECE 6258 - Digital Image Processing	3-0-0-3				video	
ECE 6260 - Data Compression and Modeling	3-0-0-3		X			
ECE 6270 - Convex Optimization for SP	3-0-0-3	video			X	
ECE 6271 - Adaptive Filtering	3-0-0-3		video			
ECE 6272 - Fund of Radar Signal Processing	3-0-0-3		video			
ECE 6273 - Methods Pattern Recog w/ Appl to Voice	3-0-0-3					X
ECE 6274 - Statistical Language Processing	3-0-0-3					
ECE 6276 - DSP Hardware Systems Design (Cross-listed in VLSI Systems & Digital Design)	2-0-3-3					
ECE 6279 - Spatial Array Processing	3-0-0-3					
ECE 6280 - Cryptography and Security	3-0-0-3					
ECE 6282 - Radar Imaging	3-0-0-3					video
ECE 6780 - Medical Image Processing (Cross-listed in Bioengineering; with BMED/CS 6780)	3-0-0-3		X			
ECE 6786 - Medical Imaging Systems (Cross-listed in Bioengineering; with BMED 6786)	3-0-0-3	X			X	
ECE 7251 - Signal Detection and Estimation	3-0-0-3					
ECE 7252 - Advanced Signal Processing Theory	3-0-0-3					
ECE 7750 - Mathematical Foundations of Machine Learning (Cross-listed with ISYE/CS/BMED)	3-0-0-3	video				
ECE 7751 - Probabilistic Graphical Models in Machine Learning (Cross-listed with ISYE/CS)	3-0-0-3		X			X
ECE 8803 CAI - Conversational AI (Cross-listed with CS 8803 CAI)	3-0-3-4					X
ECE 8803 FML - Fundamentals of Machine Learning (Cross-listed with ECE 4803 FML)	3-0-0-3		X			
ECE 8803 SPL - Spoken Language Processing with Deep Learning	3-0-0-3					
ECE 8803 ODM - Online Decision Making in ML	3-0-0-3	X			X	

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Electrical Energy	Credits	Fall 2022	Spring 2023	Summer 2023	Fall 2023	Spring 2024
ECE 6320 - Power Systems Control and Operation	3-0-0-3	video			video	
ECE 6321 - Power System Stability	3-0-0-3					
ECE 6323 - Power System Protection	2-0-2-3					video
ECE 6331 - Power Electronic Circuits	3-0-0-3		video			
ECE 6335 - Electric Machinery Analysis	3-0-0-3					
ECE 6336 - Dynamics & Ctrl Electric Machine Drives	3-0-0-3		X			X
ECE 6374 - Cyber-Physical Electric Energy Systems	3-0-0-3	X			X	
ECE 6445 - Power IC Design <i>(Cross-listed in Electronic Design & Applications)</i>	3-0-0-3	X				
ECE 8803 - Power Systems Economics // Electricity Markets	3-0-0-3					
ECE 8883 HVE - High Voltage Engineering	2-0-3-3		X			
ECE 8803 GRD - Principles of Smart Electricity Grids // Smart Electricity Grids	3-0-0-3					

Electromagnetics	Credits	Fall 2022	Spring 2023	Summer 2023	Fall 2023	Spring 2024
ECE 6350 - Applied Electromagnetics	3-0-0-3	X				
ECE 6360 - Microwave Design	3-0-0-3		X			X
ECE 6361 - Microwave Design Laboratory						
ECE 6370 - Electromagnetic Radiation and Antennas	3-0-0-3		X			X
ECE 6375 - Radio Wave Propagation in Earth & Space Environments	3-0-0-3		X			
ECE 6380 - Intro to Computational Electromagnetics	3-0-0-3	X				
ECE 6390 - Satellite Comm and Navigation Systems <i>(Cross-listed in Telecommunications)</i>	3-0-0-3	X			X	
ECE 7350 - Advanced Topics in Analytical Electromagnetics	3-0-0-3				X	
ECE 8803 WOB - Wireless Without Batteries // Wireless Power Transmission and Sensing Systems	3-0-0-3					X

Electronic Design & Applications	Credits	Fall 2022	Spring 2023	Summer 2023	Fall 2023	Spring 2024
ECE 6412 - Analog Integrated Circuit Design	3-0-0-3		X			X
ECE 6414 - Analog Integrated System Design	3-0-0-3		X			X
ECE 6420 - Wireless IC Design	3-0-0-3				?	
ECE 6422 - Interface IC Design for MEMS and Sensors	3-0-0-3	X			X	
ECE 6435 - Neuromorphic Analog VLSI Circuits	3-0-0-3					X
ECE 6444 - Silicon-Based Heterostructure Devices and Circuits <i>(Cross-listed in Nanotechnology)</i>	3-0-0-3					
ECE 6445 - Power IC Design <i>(Cross-listed in Electrical Energy)</i>	3-0-0-3	X				

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Nanotechnology	Credits	Fall 2022	Spring 2023	Summer 2023	Fall 2023	Spring 2024
ECE 6229 - Introduction to MEMS (Cross-listed with CHBE/ME 6229)	3-0-0-3	X			X	
ECE 6444 - Silicon-Based Heterostructure Devices and Circuits (Cross-listed in Electronic Design & Applications)	3-0-0-3					
ECE 6450 - Intro to Microelectronics Technology	3-0-0-3	X			X	
ECE 6451 - Intro to the Theory of Microelectronics	3-0-0-3	X			X	
ECE 6453 - Theory of Electronic Devices	3-0-0-3					
ECE 6455 - Semiconductor Process Control	3-0-0-3		X			
ECE 6456 - Solar Cells	3-0-0-3	X			X	
ECE 6458 - Gigascale Integration	3-0-0-3					X
ECE 6460 - Microelectromechanical Devices (Cross-listed with CHBE/ME 6460)	3-0-0-3		X			X
ECE 6465 - Memory Device Technologies and applications (previously 8803/8823) (Cross-listed with VSDD)	3-0-0-3					
ECE 6542 - Optoelectronics: Devices, Integration, Packaging, Systems (Cross-listed in Optics and Photonics)	3-0-0-3					
ECE 6771 - Optoelectronics: Materials, Processes, Devices (Cross-listed in Optics and Photonics; with PHYS 6771)	3-0-0-3					
ECE 6776 - Microelectronic Systems Packaging Technologies (Cross-listed with ME/MSE 6776)	3-0-0-3		X			X
ECE 6779 - Thermal Engineering for Packaging of Micro and Nano Systems (Cross-listed with ME 6779)	3-0-0-3					
ECE 8833 (FMM) Design for Reliability of Complex Systems (formerly Failure Mechanisms of Microelectronics)	3-0-0-3					

Optics and Photonics	Credits	Fall 2022	Spring 2023	Summer 2023	Fall 2023	Spring 2024
ECE 6500 - Fourier Techniques and Signal Analysis	3-0-0-3	video				
ECE 6501 - Fourier Optics and Holography	3-0-0-3		X			
ECE 6510 - Electro-Optics	3-0-0-3	X			X	
ECE 6515 - Introduction to Nanophotonic Systems	3-0-0-3					
ECE 6520 - Integrated Optics	3-0-0-3					
ECE 6522 - Nonlinear Optics	3-0-0-3					
ECE 6530 - Modulation, Diffractive & Crystal Optics	3-0-0-3					X
ECE 6540 - Organic Optoelectronics	3-0-0-3					
ECE 6542 - Optoelectronics: Devices, Integration, Packaging, Systems (Cross-listed in Nanotechnology)	3-0-0-3					
ECE 6543 - Fiber Optic Networks	3-0-0-3	X			X	
ECE 6771 - Optoelectronics: Materials, Processes, Devices (Cross-listed in Nanotechnology; with PHYS 6771)	3-0-0-3					

Systems and Controls	Credits	Fall 2022	Spring 2023	Summer 2023	Fall 2023	Spring 2024
ECE 6550 - Linear Systems and Controls	3-0-0-3	video		video	video	
ECE 6551 - Digital Control	3-0-0-3			video		
ECE 6552 - Nonlinear Systems and Control	3-0-0-3					video
ECE 6553 - Optimal Control and Optimization	3-0-0-3		video			video
ECE 6554 - Adaptive Control	3-0-0-3		video			video
ECE 6555 - Optimal Estimation	3-0-0-3	video				
ECE 6558 - Stochastic Systems	3-0-0-3					
ECE 6559 - Advanced Linear Systems	3-0-0-3		video			
ECE 6560 - PDEs in Image Proc and Comp Vision	3-0-0-3		video			video
ECE 6562 - Autonomous Control of Robotic Systems	3-0-0-3					
ECE 6563 - Networked Control Systems	3-0-0-3	video			video	

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Telecommunications	Credits	Fall 2022	Spring 2023	Summer 2023	Fall 2023	Spring 2024
ECE 6390 - Satellite Comm and Navigation Systems <i>(Cross-listed in Electromagnetics)</i>	3-0-0-3	X			X	
ECE 6601 - Random Processes	3-0-0-3	video		video	video	
ECE 6602 - Digital Communications	3-0-0-3		video			video
ECE 6603 - Advanced Digital Communications	3-0-0-3	X				
ECE 6604 - Personal and Mobile Communications	3-0-0-3	video			video	
ECE 6605 - Information Theory	3-0-0-3	X			X	
ECE 6606 - Coding Theory and Applications	3-0-0-3					
ECE 6607 - Computer Communication Networks	3-0-0-3	video			video	
ECE 6610 - Wireless Networks	3-0-0-3	video			video	
ECE 6612 - Computer Network Security <i>(Cross-listed in Computer Systems and Software)</i>	3-0-0-3					X
ECE 6613 - Broadband Access Networks	3-0-0-3					
ECE 6615 - Sensor Networks	3-0-0-3					
ECE 8803 AWN - Advanced Wireless Networks	3-0-0-3		X			

VLSI Systems and Digital Design (previously part of Computer Engineering)	Credits	Fall 2022	Spring 2023	Summer 2023	Fall 2023	Spring 2024
ECE 6130 - Advanced VLSI Systems	3-0-0-3	X			X	
ECE 6132 - Computer-Aided System Design	3-0-0-3					
ECE 6133 - Physical Design Automation VLSI Sys	3-0-0-3					
ECE 6135 - Digital Systems at Nanometer Nodes	2-0-3-3				X	
ECE 6140 - Digital Systems Test	3-0-0-3				X	
ECE 6150 - Computational Aspects of Cyber-Physical Systems // Foundations of Cyber Physical Systems Design	3-0-0-3					
ECE 6156 - Hardware Oriented Security and Trust	3-0-0-3		X			X
ECE 6276 - DSP Hardware Systems Design <i>(Cross-listed in Digital Signal Processing)</i>	2-0-3-3					
ECE 6465 - Memory Device Technologies and applications <i>(previously 8803/8823)</i> <i>(Cross-listed in Nanotechnology)</i>	2-0-3-3					
ECE 7141 - Advanced Digital Systems Test	2-0-3-3					
ECE 8803 ALT - Advanced Logic Transistor: Physics and Technology	3-0-0-3		X			
ECE 8803 QDH - Quantum Computing Devices and Hardware	3-0-0-3		X			X
ECE 8804 VLS - VLSI Design: Theory to Tapeout <i>(Cross-listed with ECE 4804 VLS)</i>	3-0-3-4					
ECE 8813 - Advanced Digital Design with Verilog	3-0-0-3					
ECE 8893 - Digital Design with Modern VLSI Devices	2-0-3-3					
ECE 8894 ATV - Advanced Topics in VLSI Circuits	3-0-3-4					

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Courses not in ECE MS/PhD domains	Credits	Fall 2022	Spring 2023	Summer 2023	Fall 2023	Spring 2024
ECE 6001 Technology Entrepreneurship: Teaming, Ideation, Entrepreneurship, Intrepreneurship, and Leadership	3-0-0-3	X	X		X	X
ECE 6710 - Ethics of Biotechnology and Bioengineering Research (Cross-listed with PHIL 6710/APPH 6710)	3-0-0-3					
ECE 6727 - Information Security Practicum (Cross-listed with CS/PUBP 6727)	1-0-12-5	X	X		X	X
ECE 6730 - Modeling & Simulation: Foundations and Implementation (Cross-listed with CSE 6730)	3-0-0-3					
ECE 6792 - Manufacturing Seminar (Cross-listed with ISYE/ME 6792)	1-0-0-1	X	X		X	X
ECE 7721 - Are You Thinking of Becoming an Academic?	1-0-0-1	X			X	
ECE 7722 - Future Faculty Practicum	2-0-3-3		X			X
ECE 7741 - Robotics Pro Prep 1	1-0-0-1	X			X	
ECE 7743 - Robotics Pro Prep 3	1-0-0-1	X			X	
ECE 7785 - Intro Robotics Research (Cross-listed with AE/BMED/CS/ME 7785)	3-0-0-3	X			X	
ECE 8001 - ECE Seminar	1-0-0-1	X			X	
ECE 8002 - ECE Seminar	1-0-0-1		X			X
ECE 8022 - Professional Communication Seminar	1-0-0-1	X	X		X	X
ECE 8750 - Robotics Research Foundation I (Cross-listed with AE/BMED/CS/ME 8750)	0-0-9-3	X	X		X	X
ECE 8751 - Robotics Research Foundation II (Cross-listed with AE/BMED/CS/ME 8751)	0-0-9-3	X	X		X	X
ECE 8863 DIS - Deliberate Innovation and Startups	3-0-0-3					
CETL 8000 - GTA Preparation	1-0-0-1	X	X		X	X