

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, unless they are available by video, in which case they are indicated as "video only".

The projected schedule of classes is normally updated each year during summer semester. The projected schedule for the coming year (2019-20) is fairly certain; changes will be reflected in the registration schedule for each term. The projected schedule for 2020-21 is preliminary and is likely to be modified significantly in summer 2020.

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 <i>with other department(s)</i>
Special Topics ECE Graduate Course
Special Topics ECE Graduate Course CROSS-LISTED in other TIG(s) OR <i>with other department(s)</i>

Bioengineering	Credits	Fall 2019	Spring 2020	Summer 2020	Fall 2020	Spring 2021
ECE 6200 - Biomedical Applications of MEMS	3-0-3		X			X
ECE 6780 - Medical Image Processing (cross-listed in Digital Signal Processing) <i>(Cross-listed with BMED/CS 6780)</i>	3-0-3		X			X
ECE 6781 - Biomedical Sensing Systems <i>(Cross-listed with ECE/BMED/ME 4781)</i>	3-0-3	X			X	
ECE 6786 - Medical Imaging Systems (cross-listed in Digital Signal Processing) <i>(Cross-listed with BMED 6786)</i>	3-0-3	X			X	
ECE 6790 - Information Processing Models in Neural Systems <i>(Cross-listed with BMED 6790)</i>	3-0-3					X
ECE 88x3 - Advanced Medical Imaging Systems: CT/PET/SPECT Physics, Engineering and Applications <i>(Cross-listed with BMED 8813AMI)</i>	3-0-3					
ECE 88x3 - Medical Ultrasound: From Diagnostic Imaging to Image-guided Therapy <i>(Cross-listed with BME 8813MU)</i>	3-0-3					

School of Electrical and Computer Engineering
Projected Schedule of Graduate Courses

Computer Systems and Software (previously part of Computer Engineering)	Credits	Fall 2019	Spring 2020	Summer 2020	Fall 2020	Spring 2021
ECE 6100 - Advanced Computer Architecture	3-0-3	video	X		X	X
ECE 6102 - Dependable Distributed Systems	3-0-3		X			
ECE 6110 - CAD for Computer Communication Networks	2-3-3					
ECE 6115 - Interconnection Networks for High Performance (Cross listed with CS 8803)	3-0-3		X			X
ECE 6122 - Advanced Programming Techniques for Engineering Applications (Cross-listed with ECE 4122)	2-3-3	video			video	
ECE 6612 Computer Network Security (Cross-listed in Telecommunications)	3-0-3		X			X
ECE 7103 - Advanced Topics in Memory Systems	3-0-3					
ECE 88x3 - Advanced Computer Security (Cross-listed with CS 8803ACS)	3-0-3					
ECE 88x3 - Advanced Network Security (Cross-listed with CS 6262)	3-0-3					
ECE 88x3 - Advanced Topics in Malware Analysis // Software Vulnerabilities and Security (Cross-listed with CS 8803SVS and ECE 4833)	3-0-3	ST				ST
ECE 88x3 - Introduction to Cyber-Physical Systems Security	3-0-3	ST			ST	
ECE 88x3 - GPU Architectures	3-0-3					
ECE 88x3 - Hardware Acceleration for Machine Learning	2-3-3					
ECE 88x3 - Introduction to Quantum Computing Systems	3-0-3					ST
ECE 8803 CPS - Cyber Physical Design and Analysis (MSCSEC Energy)	3-0-3	ST	ST		ST	ST

Digital Signal Processing	Credits	Fall 2019	Spring 2020	Summer 2020	Fall 2020	Spring 2021
ECE 6250 - Advanced Digital Signal Processing	3-0-3	video			video	
ECE 6254 - Statistical Machine Learning	3-0-3		video			video
ECE 6255 - Digital Processing of Speech Signals	3-0-3		X			
ECE 6258 - Digital Image Processing	3-0-3	video			video	
ECE 6260 - Data Compression and Modeling	3-0-3					X
ECE 6271 - Adaptive Filtering	3-0-3					
ECE 6272 - Fund of Radar Signal Processing	3-0-3					
ECE 6273 - Methods Pattern Recog w/ Appl to Voice	3-0-3		X			
ECE 6274 - Statistical Language Processing	3-0-3					
ECE 6276 - DSP Hardware Systems Design (cross-listed in VLSI Systems & Digital Design)	2-3-3				X	
ECE 6279 - Spatial Array Processing	3-0-3					
ECE 6280 - Cryptography and Security	3-0-3					
ECE 6282 - Radar Imaging	3-0-3	video				
ECE 6780 - Medical Image Processing (cross-listed in Bioengineering) (Cross-listed with BMED/CS 6780)	3-0-3		X			X
ECE 6786 - Medical Imaging Systems (cross-listed in Bioengineering) (Cross-listed with BMED 6786)	3-0-3	X			X	
ECE 7251 - Signal Detection and Estimation	3-0-3					
ECE 7252 - Advanced Signal Processing Theory	3-0-3					
ECE 88x3 - Convex Optimization for SP	3-0-3					ST
ECE 88x3 - Mathematical Foundations of Machine Learning (cross-listed with ISYE/CS/BMED)	3-0-3	ST			ST	
ECE 88x3 - Probabilistic Graphical Models in Machine Learning (cross-listed with ISYE/CS)	3-0-3		ST			ST

School of Electrical and Computer Engineering
Projected Schedule of Graduate Courses

Electrical Energy	Credits	Fall 2019	Spring 2020	Summer 2020	Fall 2020	Spring 2021
ECE 6320 - Power Systems Control and Operation	3-0-3	video			video	
ECE 6321 - Power System Stability	3-0-3					
ECE 6323 - Power System Protection	2-2-3		video			
ECE 6331 - Power Electronic Circuits	3-0-3	video				
ECE 6335 - Electric Machinery Analysis	3-0-3					
ECE 6336 - Dynamics & Ctrl Electric Machine Drives	3-0-3		X			
ECE 88x3 - Cyber-Physical Security in Electric Energy Systems // Introduction to Cyber-Physical Energy Systems	3-0-3	ST			ST	
ECE 88x3 - High Voltage Engineering	2-3-3					ST
ECE 88x3 - Power Systems Economics // Electricity Markets	3-0-3					
ECE 88x3 - Principles of Smart Electricity Grids // Smart Electricity Grids	3-0-3		ST			ST

Electromagnetics	Credits	Fall 2019	Spring 2020	Summer 2020	Fall 2020	Spring 2021
ECE 6350 - Applied Electromagnetics	3-0-3	X			X	
ECE 6360 - Microwave Design	3-0-3		X			X
ECE 6370 - Electromagnetic Radiation and Antennas	3-0-3		X			X
ECE 6380 - Intro to Computational Electromagnetics	3-0-3				X	
ECE 6390 - Satellite Comm and Navigation Systems (cross-listed in Telecommunications)	3-0-3	video				
ECE 7380 - Advanced Topics in Analytical Electromagnetics	3-0-3				X	
ECE 88x3 - Radio Wave Propagation in Earth & Space Environments	3-0-3					ST
ECE 88x3 - Wireless Without Batteries // Wireless Power Transmission and Sensing Systems	3-0-3		ST			

Electronic Design & Applications	Credits	Fall 2019	Spring 2020	Summer 2020	Fall 2020	Spring 2021
ECE 6412 - Analog Integrated Circuit Design	3-0-3		X			X
ECE 6414 - Analog Integrated System Design	3-0-3		X			X
ECE 6420 - Wireless IC Design	3-0-3	X			X	
ECE 6422 - Interface IC Design for MEMS and Sensors	3-0-3	X			X	
ECE 6435 - Neuromorphic Analog VLSI Circuits	3-0-3		X			X
ECE 6444 - Silicon-Based Heterostructure Devices and Ckts (cross-listed in Nanotechnology)	3-0-3					
ECE 6445 - Power IC Design		video only				

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Nanotechnology	Credits	Fall 2019	Spring 2020	Summer 2020	Fall 2020	Spring 2021
ECE 6229 - Introduction to MEMS (Cross-listed with CHBE/ME 6229)	3-0-3	X			X	
ECE 6444 - Silicon-Based Heterostructure Devices and Ckts (cross-listed in Electronic Design & Applications)	3-0-3					
ECE 6450 - Intro to Microelectronics Technology	3-0-3	X			X	
ECE 6451 - Intro to the Theory of Microelectronics	3-0-3	video			X	
ECE 6453 - Theory of Electronic Devices	3-0-3					video
ECE 6455 - Semiconductor Process Control	3-0-3					
ECE 6456 - Solar Cells	3-0-3	X			X	
ECE 6458 - Gigascale Integration	3-0-3		X			
ECE 6460 - Microelectromechanical Devices (Cross-listed with CHBE/ME 6460)	3-0-3		X			
ECE 6542 - Optoelectronics: Dev, Integr, Pkg, Sys (cross-listed in Optics and Photonics)	3-0-3					
ECE 6771 - Optoelectronics: Matls, Processes, Dev (cross-listed in Optics and Photonics) (Cross-listed with PHYS 6771)	3-0-3					X
ECE 6776 - Microelectronic Systems Packaging Technologies (Cross-listed with ME/MSE 6776)	3-0-3				X	
ECE 6779 - Thermal Engineering for Packaging of Micro and Nano Systems (Cross-listed with ME 6779)	3-0-3					
ECE 88x3 - Failure Mechanisms in Microelectronics	3-0-3					
ECE 88x3 - Memory Device Technologies and Applications	3-0-3	ST				

Optics and Photonics	Credits	Fall 2019	Spring 2020	Summer 2020	Fall 2020	Spring 2021
ECE 6500 - Fourier Techniques and Signal Analysis	3-0-3	video			video	
ECE 6501 - Fourier Optics and Holography	3-0-3					X
ECE 6510 - Electro-Optics	3-0-3				X	
ECE 6520 - Integrated Optics	3-0-3				video	
ECE 6522 - Nonlinear Optics	3-0-3					
ECE 6530 - Modulation, Diffractive & Crystal Optics	3-0-3					
ECE 6540 - Organic Optoelectronics	3-0-3		X			
ECE 6542 - Optoelectronics: Dev, Integr, Pkg, Sys (cross-listed in Nanotechnology)	3-0-3		X			
ECE 6543 - Fiber Optic Networks	3-0-3	X				
ECE 6771 - Optoelectronics: Matls, Processes, Dev (cross-listed in Nanotechnology) (Cross-listed with PHYS 6771)	3-0-3	X				X

Systems and Controls	Credits	Fall 2019	Spring 2020	Summer 2020	Fall 2020	Spring 2021
ECE 6550 - Linear Systems and Controls	3-0-3	video		video	video	
ECE 6551 - Digital Control	3-0-3	video			video	
ECE 6552 - Nonlinear Systems and Control	3-0-3		video			video
ECE 6553 - Optimal Control and Optimization	3-0-3					video
ECE 6554 - Adaptive Control	3-0-3					video
ECE 6555 - Optimal Estimation	3-0-3		X			
ECE 6558 - Stochastic Systems	3-0-3	video only			X	
ECE 6560 - PDEs in Image Proc and Comp Vision	3-0-3		X			
ECE 6561 - Computing for Control Systems	3-0-3					
ECE 6562 - Autonomous Control of Robotic Systems	3-0-3	video only				
ECE 6563 - Networked Control Systems	3-0-3	video				

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Telecommunications	Credits	Fall 2019	Spring 2020	Summer 2020	Fall 2020	Spring 2021
ECE 6390 - Satellite Comm and Navigation Systems (cross-listed in Electromagnetics)	3-0-3	video				
ECE 6601 - Random Processes	3-0-3	video		video	video	
ECE 6602 - Digital Communications	3-0-3		X			X
ECE 6603 - Advanced Digital Communications	3-0-3					
ECE 6604 - Personal and Mobile Communications	3-0-3	X				
ECE 6605 - Information Theory	3-0-3				X	
ECE 6606 - Coding Theory and Applications	3-0-3					X
ECE 6607 - Computer Communication Networks	3-0-3	video			X	
ECE 6610 - Wireless Networks	3-0-3		video			video
ECE 6612 - Computer Network Security (cross-listed in Computer Systems and Software)	3-0-3		X			X
ECE 6613 - Broadband Access Networks	3-0-3	X			X	
ECE 6615 - Sensor Networks	3-0-3		video			video

VLSI Systems and Digital Design (previously part of Computer Engineering)	Credits	Fall 2019	Spring 2020	Summer 2020	Fall 2020	Spring 2021
ECE 6130 - Advanced VLSI Systems	3-0-3	X			X	
ECE 6132 - Computer-Aided System Design	3-0-3		X			
ECE 6133 - Physical Design Automation VLSI Sys	3-0-3		X			X
ECE 6135 - Digital Systems at Nanometer Nodes	2-3-3					X
ECE 6140 - Digital Systems Test	3-0-3	video			X	
ECE 6150 - Computational Aspects of Cyber-Physical Systems // Foundations of Cyber Physical Systems Design	3-0-3					
ECE 6276 - DSP Hardware Systems Design (cross-listed in Digital Signal Processing)	2-3-3				X	
ECE 7141 - Advanced Digital Systems Test	2-3-3					
ECE 88x3 - Advanced Digital Design with Verilog	3-0-3					
ECE 88x3 - Advanced Hardware Oriented Security and Trust // Hardware Security	3-0-3				ST	
ECE 88x3 - Digital Design with Modern VLSI Devices	2-3-3					
ECE 88x3 - Quantum Computing Devices and Hardware	3-0-3	ST				

Courses not in ECE MS/PhD domains	Credits	Fall 2019	Spring 2020	Summer 2020	Fall 2020	Spring 2021
ECE 6710 - Ethics of Biotechnology and Bioengineering Research (Cross-listed with PHIL 6710/APPH 6710)						
ECE 6730 - Modeling & Simulation: Foundations and Implementation (Cross listed with CSE 6730)	3-0-3	X				X
ECE 6792 - Manufacturing Seminar (Cross-listed with ISYE/ME 6792)	1-0-1	X	X		X	X
ECE 7785 - Intro Robotics Research (Cross-listed with AE/BMED/CS/ME 7785)	3-0-3	X			X	
ECE 8001 - ECE Seminar	1-0-1	X			X	
ECE 8002 - ECE Seminar	1-0-1		X			X
ECE 8022 - Professional Communication Seminar	1-0-1	X	X		X	X
ECE 8750 - Robotics Research Foundation I (Cross-listed with AE/BMED/CS/ME 8750)	0-9-3	X	X		X	X
ECE 8751 - Robotics Research Foundation II (Cross-listed with AE/BMED/CS/ME 8751)	0-9-3	X	X		X	X
CETL 8000 - GTA Preparation	1-0-1	X	X		X	X
ECE 8801 - Are You Thinking of Becoming an Academic?	1-0-1	ST			ST	
ECE 88x3 - Deliberate Innovation and Startups	3-0-3					
ECE 88x3 - Future Faculty Practicum	2-3-3		ST			ST
ECE 88x3 - Tech Ventures: Teaming, Innovation and Entrepreneurship	3-0-3	ST	ST		ST	ST