

School of Electrical and Computer Engineering Projected Schedule of Undergraduate Courses

The following table lists the ECE undergraduate 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. Based on previous years' schedules, the School is likely to offer most core courses and, possibly, some senior electives. Note that the required culminating design courses are not offered in 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 38xx or ECE 48xx)

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

For CS courses, please check the offerings from the link below:

<https://www.dropbox.com/s/71t3z0r0ocupid7/Anticipated%20Course%20Offerings.pdf?dl=0>

Common Courses	Credits	Spring 2023	Summer 2023	Fall 2023	Spring 2024
Computer Engineering Common Core					
ECE 1100 - ECE Discovery Studio	0-0-2-1	X		X	X
CS 1331 - Introduction to Object-Oriented Programming	3-0-0-3				
CS 1332 - Data Structures and Algorithms	3-0-0-3				
CS 2050 or CS 2051 - Introduction to Discrete Math for CS	3-0-0-3				
ECE 2020 – Fundamentals of Digital System Design	3-0-0-3	X	X	X	X
ECE 2040 - Circuit Analysis	3-0-0-3	X	X	X	X
ECE 2031 – Digital Design Laboratory	1-0-3-2	X	X	X	X
ECE 2035 - Programming for Hardware/Software Systems	3-0-3-4	X	X	X	X
ECE 3005 - Professional Communications	1-0-0-1	X	X	X	X
ECE 3058 – Architecture, Systems, Concurrency and Energy in Computation	3-0-3-4	X	X	X	X
Electrical Engineering Common Core					
ECE 1100 - ECE Discovery Studio	0-0-2-1	X		X	X
ECE 2020 – Fundamentals of Digital System Design	3-0-0-3	X	X	X	X
ECE 2026 - Intro Signal Processing	3-0-0-3	X	X	X	X
ECE 2031 – Digital Design Laboratory	1-0-3-2	X	X	X	X
ECE 2040- Circuit Analysis	3-0-0-3	X	X	X	X
ECE 3005 - Professional Communications	1-0-0-1	X	X	X	X
ECE 3025 - Electromagnetics	3-0-0-3	X		X	X
ECE 3040 - Microelectronic Circuits	4-0-0-4	X	X	X	X
ECE 3043 - Microelectronics Lab	1-0-3-2	X	X	X	X
Choose 1					
ECE 2035 - Programming for Hardware/Software Systems	3-0-3-4	X	X	X	X
ECE 2036 Engineering Software Design	3-0-3-4	X		X	X
Major Design Courses					
ECE 4871 - ECE Culminating Design I	0-2-0-1	X		X	X
ECE 4872 - ECE Culminating Design II	0-0-6-2	X		X	X
ECE 3011 - ECE Design Fundamentals (<i>formerly ECE 3872</i>)	1-2-0-2	X		X	X
ECE 4873 A - ECE Culminating Design single semester	0-2-6-3	X		X	X
ECE 4723 A - ECE Multi-disciplinary Design single-semester	0-2-6-3	X		X	X

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ECE Threads					
Computer Engineering Threads					
Cybersecurity	Credits	Spring 2023	Summer 2023	Fall 2023	Spring 2024
Required					
CS 3251 - Computer Networking	3-0-0-3				
ECE 4115 - Introduction to Computer Security	3-0-3-4	X		X	X
Pick 2 of Cybersecurity Topics					
ECE 3170 - Cryptographic Hardware for Embedded Systems	3-0-3-4			X	
ECE 4112 - Internetwork Security	2-0-0-3				X
ECE 4117 - Introduction to Malware Reverse Engineering	3-0-3-4	X			X
ECE 4147 - Advanced Topics in Malware Analysis	3-0-0-3			X	
ECE 4156 - Hardware Oriented Security Trust	3-0-0-3	X			X
Distributed System & Software Design					
Credits	Spring 2023	Summer 2023	Fall 2023	Spring 2024	
Required					
CS 3251 - Computer Networking	3-0-0-3				
Pick 3 of DSSD Topics					
CS 4220 - Programming Embedded Systems	3-0-0-3				
ECE 4122 - Advanced Programming Techniques for Engineering Applications	2-0-3-3			X	
ECE 4795 - GPU Programming for Video Games	3-0-0-3		?		
ECE 4150 - Cloud Computing	3-0-0-3				
ECE 4180 - Embedded Systems Design	3-0-3-4	X		X	X
CS 4605 - Mobile and Ubiquitous Computing	3-0-0-3				
CS 3651 - Building Intelligent Appliances	3-3-0-4				
Computing Hardware & Emerging Architectures					
Credits	Spring 2023	Summer 2023	Fall 2023	Spring 2024	
Required					
ECE 3150 - VLSI & Adv Digital Design	3-0-3-4	X		X	X
ECE 3030 - Physical Found. of Computer Engineering	3-0-0-3	X		X	X
Pick 1 of Embedded Systems					
CS 4220 - Programming Embedded Systems	3-0-0-3				
ECE 4180 - Embedded Systems Design	3-0-3-4	X		X	X
ECE 4181 - Embedded Computer Systems	3-0-3-4				
Pick 1 of Integration, Devices, & Fabrication					
ECE 4130 - Advanced VLSI Systems	3-0-3-4			X	
ECE 4452 - Integrated Circuit Fabrication	2-0-0-3	X	X	X	X
ECE 4420 - Digital Integrated Circuits	3-0-0-3				
ECE 4460 - Introduction to Electronic Systems Packaging	3-0-0-3	X			X
Pick 1 of Computer Architecture					
ECE 4100 - Advanced Computer Architecture	3-0-0-3	X		X	X
ECE 4150 - Cloud Computing	3-0-0-3				
SYSTEMS & ARCHITECTURE					
Credits	Spring 2023	Summer 2023	Fall 2023	Spring 2024	
Required					
CS 2340 - Objects and Design	3-0-0-3				
CS 3210 - Design of Operating Systems	3-0-0-3				
CS 3220 - Computer Structures: HW/SW Codesign of a Processor	3-0-0-3				
CS 3510 or CS 3511 - Design and Analysis of Algorithms	3-0-0-3				
Pick 1 of Systems Software Tools					
CS 3300 - Introduction to Software Engineering	3-0-0-3				
CS 4240 - Compilers, Interpreters, and Program Analyzers	3-0-0-3				
Pick 1 of Advanced Systems & Architecture					
CS 4210 - Advanced Operating Systems	3-0-0-3				
CS 4220 - Programming Embedded Systems	3-0-0-3				
ECE 4100 - Advanced Computer Architecture	3-0-0-3	X		X	X

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DEVICES	Credits	Spring 2023	Summer 2023	Fall 2023	Spring 2024
Required					
CS 2340 - Objects and Design	3-0-0-3				
CS 3251 - Computer Networking	3-0-0-3				
CS 3510 or CS 3511 - Design and Analysis of Algorithms	3-0-0-3				
Pick 1 of Building Devices					
CS 3651 - The Art of Building Intelligent Appliances	3-3-0-4				
ECE 4180 - Embedded Systems Design	3-0-3-4	X		X	X
Pick 1 of Devices in the Real World					
CS 3630 - Robotics and Perception	3-0-0-3				
CS 4261 - Mobile Applications & Services for Converged Networks	3-0-0-3				
CS 4476 - Intro to Computer Vision	3-0-0-3				
CS 4605 - Mobile and Ubiquitous Computing	3-0-0-3				

INFORMATION INTERNETWORKS	Credits	Spring 2023	Summer 2023	Fall 2023	Spring 2024
Required					
CS 2340 - Objects and Design	3-0-0-3				
CS 3510 or CS 3511 - Design and Analysis of Algorithms	3-0-0-3				
Pick 2 from Introduction to Information Management					
CS 4235 - Introduction to Information Security	3-0-0-3				
CS 3251 - Computer Networking 1	3-0-0-3				
CS 4400 - Introduction to Database Systems	3-0-0-3				
Pick 1 from Advanced Information Management					
CS 4237 - Computer and Network Security	3-0-0-3				
CS 4251 - Computer Networking 2	3-0-0-3				
CS 4255 - Introduction to Network Management	3-0-0-3				
CS 4261 - Mobile Applications and Services for Converged Networks	3-0-0-3				
CS 4270 - Data Communications Laboratory	3-0-0-3				
CS 4365 - Introduction to Enterprise Computing	3-0-0-3				
CS 4420 - Database System Implementation	3-0-0-3				
CS 4440 - Emerging Database Technologies and Applications	3-0-0-3				
CS 4675 - Internet Computing Systems, Services, and Applications	3-0-0-3				

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Electrical Engineering Threads					
Signal and Information Processing	Credits	Spring 2023	Summer 2023	Fall 2023	Spring 2024
Required					
ECE 3084 - Signals and Systems	3-0-0-3	X	?	X	X
ECE 4270 - Fundamentals of DSP	3-0-0-3	X		X	X
Pick 1 of Signal and Information Processing					
ECE 4271 - Applications of DSP	3-0-3-4				X
ECE 4260 - Random Signals and Applications	3-0-0-3			X	
ECE 4273 - Design Synthesis of Application Specific Signal Processors	2-0-3-3				
ECE 4122 - Advanced Programming Techniques for Engineering Applications	2-0-3-3			X	
ECE 4783 - Introduction to Medical Image Processing	3-0-0-3				
ECE 4180 - Embedded Systems Design	3-0-3-4	X		X	X
Robotics and Autonomous Systems	Credits	Spring 2023	Summer 2023	Fall 2023	Spring 2024
Required					
ECE 3550 - Feedback Control Systems	3-0-0-3	X		X	X
ECE 4550 - Control System Design	3-0-3-4	X	X	X	
Pick 1 of Robotics and Autonomous Systems					
ECE 3084 - Signals and Systems	3-0-0-3	X	?	X	X
ECE 4560 - Intro Automation&Robotic	3-0-3-4			X	
ECE 4580 - Computer Vision	3-0-0-3				
ECE 4570 - Modern System Theory	3-0-3-4				X
Telecommunications	Credits	Spring 2023	Summer 2023	Fall 2023	Spring 2024
Required					
ECE 2026 - Intro Signal Processing	2-0-3-3	X	X	X	X
Pick 1					
ECE 3600 - Computer Communications	3-0-0-3	X		X	X
CS 3251 - Computer Networking	3-0-0-3				
Pick 1					
ECE 4601 - Communication Systems	3-0-0-3			X	
ECE 4606 - Wireless Communications	3-0-0-3	X			X
Pick 1 of Telecommunication Topics					
ECE 3084 - Signals and Systems	3-0-0-3	X	?	X	X
ECE 4350 - Electromagnetic & Microwave Applications	3-0-0-3	X		X	?
ECE 4370 - Antenna Engineering	3-0-0-3			X	
ECE 4500 - Optical Engineering	3-0-0-3			X	
ECE 4601 - Communication Systems	3-0-0-3			X	
ECE 4606 - Wireless Communications	3-0-0-3	X			X
ECE 4607 - Mobile and Wireless Networks	3-0-0-3			X	
Electronic Devices (Electronic and Optoelectronic Devices)	Credits	Spring 2023	Summer 2023	Fall 2023	Spring 2024
Required					
ECE 3450 - Semiconductor Devices	3-0-0-3			X	
ECE 4452 - Integrated Circuit Fabrication	2-0-3-3	X	X	X	X
Pick 1 of Electronic Devices (Electronic and Optoelectronic Devices)					
ECE 4350 - Electromagnetic & Microwave Applications	3-0-0-3	X		X	?
ECE 4470 - Devices in Renewable Energy	3-0-0-3	X			X
ECE 4500 - Optical Engineering	3-0-0-3			X	
ECE 4751 - Laser Theory and Applications	3-0-0-3		X		
ECE 4460 - Introduction to Electronic Systems Packaging	3-0-0-3	X			X
ECE 4754 - Electronics Packaging Assembly, Reliability, Thermal Mgt, and Test	1-0-6-3	X			X
ECE 4755 - Electronic Packaging Substrate Fabrication	1-0-6-3			X	

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Circuit Technology	Credits	Spring 2023	Summer 2023	Fall 2023	Spring 2024
Required					
ECE 3400 - Analog Electronics	3-0-0-3	X		X	X
ECE 4452 - Integrated Circuit Fabrication	2-0-3-3	X	X	X	X
Pick 1 of Circuit Technology					
ECE 4043 - Analog Electronics Lab	1-0-3-2	X	X	X	X
ECE 4415 - RF Engineering I	3-0-0-3				
ECE 4420 - Digital Integrated Circuits	3-0-0-3				
ECE 4430 - Analog Integrated Circuits	3-0-0-3			X	
ECE 4435 - Operational Amplifier Design	2-0-3-3				X
ECE 4502 - Optical Fiber Communications	3-0-3-4	X			X
ECE 4370 - Antenna Engineering	3-0-0-3			X	
ECE 4391 - Electromagnetic Compatibility	3-0-0-3		X		

BioEngineering	Credits	Spring 2023	Summer 2023	Fall 2023	Spring 2024
Pick 1 of Bioengineering Foundation					
ECE 4781 - Biomedical Instrumentation	3-0-0-3			X	
ECE 4784 - Engineering Electrophysiology	3-0-0-3			X	
ECE 4782 - Biosystems Analysis	3-0-0-3	X			X
Pick 2 of Bioengineering Topics					
ECE 3084 - Signals and Systems	3-0-0-3	X	?	X	X
ECE 4781 - Biomedical Instrumentation	3-0-0-3			X	
ECE 4784 - Engineering Electrophysiology	3-0-0-3			X	
ECE 4782 - Biosystems Analysis	3-0-0-3	X			X
ECE 4350 - Electromagnetic & Microwave Applications	3-0-0-3	X		X	?
ECE 4435 - Operational Amplifier Design	2-0-3-3				X
ECE 4370 - Antenna Engineering	3-0-0-3			X	

Electric Energy Systems	Credits	Spring 2023	Summer 2023	Fall 2023	Spring 2024
Required					
ECE 3072 - Electrical Energy Systems	1-2-3-3	X		X	X
ECE 3300 - Electromechanical and Electromagnetic Energy Conversion	3-0-0-3	X		X	X
Pick 1 of Electric Energy Systems					
ECE 4320 - Power System Analysis and Control	3-0-0-3			?	
ECE 4321 - Power System Engineering	3-0-0-3	X			?
ECE 4325 - Electric Power Quality	3-0-0-3				
ECE 4330 - Power Electronics	3-0-0-3			?	
ECE 4335 - Electric Machinery Analysis	3-0-0-3				

Sensing & Exploration	Credits	Spring 2023	Summer 2023	Fall 2023	Spring 2024
Required					
ECE 4390 - Introduction to Radars and Remote Sensing & Exploration	3-0-0-3	X		X	X
Pick 2 of Sensing & Exploration					
ECE 3084 - Signals and Systems	3-0-0-3	X	?	X	X
ECE 4260 - Random Signals and Applications	3-0-0-3			X	
ECE 4350 - Electromagnetic & Microwave Applications	3-0-0-3	X		X	?
ECE 4370 - Antenna Engineering	3-0-0-3			X	
ECE 4580 - Computer Vision	3-0-0-3				
ECE 4781 - Biomedical Instrumentation	3-0-0-3			X	

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Other Undergraduate Electives	Credits	Spring 2023	Summer 2023	Fall 2023	Spring 2024
ECE 1750 - Intro to Bioengineering (<i>Cross-listed with BMED/CHBE/ME/MSE 1750</i>)	3-0-0-3				
ECE 3077 - Probability & Statistics for ECE	3-0-0-3	X		X	X
ECE 3251 Optimization for Information Systems (<i>formerly ECE 3803 (OIS) or ECE 4803 (MDS)</i>)	3-0-0-3			X	
ECE 3893 - Heterogeneous Integration and Advanced Packaging	2-0-3-3	X			X
ECE 4053 - Research Methods	2-0-0-2	X			X
ECE 4371 Antenna Engineering Lab (<i>must be taken concurrently with 4370</i>)	0-0-3-1			X	
ECE 4418 - RF Engineering II	3-0-0-3	X			
ECE 4445 - Audio Engineering	3-0-0-3			X	
ECE 4446 - Audio Engineering Laboratory	0-0-3-1			X	
ECE 4448 - Guitar Amplification and Effects (<i>formerly ECE 4803 GAE</i>)	2-0-3-3				
ECE 4450 - Analog Circuits for Music Synthesis	2-0-3-3	X			X
ECE 4575 - Numerical Methods for Optimization and Optimal Control	3-0-0-3				
ECE 4612 - Telecom Systems Lab (<i>formerly ECE 4602</i>)	0-0-3-1	X			X
ECE 4803 (FML) - Fundamentals of Machine Learning	3-0-0-3	X			X

School-Wide Electives	Credits	Spring 2023	Summer 2023	Fall 2023	Spring 2024
ECE 2001 - ECE Seminar	1-0-0-1			X	
ECE 2002 - ECE Seminar	1-0-0-1	X			X
ECE 4053 - Research Methods	2-0-0-2	X			X
Vertically Integrated Projects Program	varies	X		X	X

Service Courses (non-ECE majors)	Credits	Spring 2023	Summer 2023	Fall 2023	Spring 2024
ECE 3710 - Circuits & Electronics	2-0-0-2	X	X	X	X
ECE 3741 - Instrumentation & Electronics Lab	0-0-3-1	X	X	X	X