

# BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING - ROBOTICS & AUTONOMOUS SYSTEMS AND TELECOMMUNICATIONS

Code	Title	Credit Hours
<b>Wellness</b>		
APPH 1040	Scientific Foundations of Health	2
	or APPH 10 The Science of Physical Activity and Health	
	or APPH 10 Flourishing: Strategies for Well-being and Resilience	
<b>Core A - Essential Skills</b>		
ENGL 1101	English Composition I	3
ENGL 1102	English Composition II	3
MATH 1552	Integral Calculus <sup>2</sup>	4
<b>Core B - Institutional Options</b>		
CS 1301	Introduction to Computing <sup>2</sup>	3
<b>Core C - Humanities</b>		
Any HUM <sup>1</sup>		6
<b>Core D - Science, Math, &amp; Technology</b>		
PHYS 2211	Introductory Physics I <sup>2</sup>	4
PHYS 2212	Introductory Physics II <sup>2</sup>	4
MATH 1551	Differential Calculus <sup>2</sup>	2
MATH 1554	Linear Algebra <sup>2</sup>	4
<b>Core E - Social Sciences</b>		
Select one of the following:		3
HIST 2111	The United States to 1877	
HIST 2112	The United States since 1877	
INTA 1200	American Government in Comparative Perspective	
POL 1101	Government of the United States	
PUBP 3000	American Constitutional Issues	
Select one of the following:		3
ECON 2100	Economic Analysis and Policy Problems	
ECON 2101	The Global Economy	
ECON 2105	Principles of Macroeconomics	
ECON 2106	Principles of Microeconomics	
Any SS <sup>1</sup>		6
<b>Core F - Courses Related to Major</b>		
MATH 2551	Multivariable Calculus <sup>2</sup>	4
MATH 2552	Differential Equations <sup>2</sup>	4
CHEM 1310	Principles of General Chemistry for Engineers	4
	or CHEM 12 Chemical Principles I	
Science Elective <sup>3</sup>		3
Ethics Requirement <sup>1</sup>		
Probability/Statistics <sup>6,10</sup>		3
<b>Major Requirements</b>		
ECE 1100	ECE Discovery Studio	1

ECE 2020	Digital System Design <sup>2</sup>	3
ECE 2026	Introduction to Signal Processing <sup>2</sup>	3
ECE 2031	Digital Design Laboratory <sup>2</sup>	2
ECE 2035	Programming for Hardware/Software Systems <sup>2</sup>	4
	or ECE 2036 Engineering Software Design	
ECE 2040	Circuit Analysis <sup>2</sup>	3
ECE 3005	Professional and Technical Communications for ECE	1
ECE 3025	Electromagnetics <sup>2</sup>	3
ECE 3040	Microelectronic Circuits <sup>2</sup>	4
ECE 3043	Measurements, Circuits, and Microelectronics Laboratory <sup>2</sup>	2
<b>Robotics &amp; Autonomous Systems<sup>10</sup></b>		
ECE 4550	Control System Design	4
ECE 3550	Feedback Control Systems	3
Select one of the following: <sup>2,8</sup>		3
ECE 3084	Signals and Systems	
ECE 3251	Optimization for Information Systems	
ECE 4560	Introduction to Automation and Robotics	
ECE 4570	System Theory for Communication and Control	
ECE 4580	Computational Computer Vision	
<b>Robotics &amp; Autonomous Systems Electives</b>		
ECE 3000/4000-level Elective <sup>4</sup>		3
<b>Telecommunications<sup>10</sup></b>		
Select one of the following: <sup>2,8</sup>		3
ECE 3600	Computer Communications	
CS 3251	Computer Networking I	
Select one of the following: <sup>2,8</sup>		3
ECE 4601	Communication Systems	
ECE 4606	Wireless Communications	
Select one of the following: <sup>2,8</sup>		3
ECE 3084	Signals and Systems	
ECE 4350	Electromagnetic and Microwave Applications	
ECE 4370	Antenna Engineering	
ECE 4500	Optical Engineering	
ECE 4502	Optical Fiber Communications	
ECE 4601	Communication Systems	
ECE 4605	Topics in Networks	
ECE 4606	Wireless Communications	
ECE 4607	Mobile and Wireless Networks	
<b>Telecommunications Electives</b>		
ECE 3000/4000-level Elective <sup>4</sup>		3
<b>Culminating Senior Design Options (Capstone)</b>		
Culminating Senior Design <sup>7</sup>		3
<b>Free Electives<sup>5,9</sup></b>		<b>10</b>
<b>Total Credit Hours</b>		<b>129</b>

Pass-fail only allowed for Humanities Electives, Social Sciences Electives, Free Electives, ECE 1100, and ECE 3005.

Courses that are cross-listed with ECE must be taken under the ECE number.

<sup>1</sup> Students must complete one Ethics course during their program. For a complete list of Ethics courses, please click here.

<sup>2</sup> Minimum grade of C required.

<sup>3</sup> Please select any academic course from the Schools of Biological Sciences, Chemistry, Earth and Atmospheric Sciences, or Physics. Research credits may not apply to this requirement.

<sup>4</sup> ECE electives are subject to School approval and must satisfy the following constraints:

1. All ECE courses at the 3000-level or higher, including approved special topics course. Exclusions: Junior Design Fundamentals Course (prerequisite for single-semester capstone) and ECE 3077 (used to satisfy Probability and Statistics requirement).
2. Special problems, undergraduate research, and similar courses may not be included, except for three credit hours for one ECE Undergraduate Research sequence, either ECE 3951+ ECE 3952 or ECE 4951+ ECE 4952. For students completing the Research Option but not an ECE UROP sequence, three credit hours for ECE 4699 may be included.

<sup>5</sup> The following courses are not allowed: ECE 3710, ECE 3741, HPS 1XXX, LMC 2661, LMC 2662, LMC 3661, LMC 3662, MATH 1113, and PHYS 2XXX (AP Credit). Maximum of six credit hours of Special Problems or research may be applied toward the degree

<sup>6</sup> CEE 3770 or ISYE 3770 or MATH 3670 or ECE 3077 (must be taken for Letter Grade basis)

<sup>7</sup> Senior Design requirements may be satisfied in the following ways:

1. ECE two semester 4000 level ECE Culminating Design I + ECE Culminating Design II
2. Approved single-semester capstone (requires completion of the prerequisite ECE Design Fundamentals junior course, which counts as a free elective)

NOTE: Students may be able to use a VIP project in one of the above options to satisfy Senior Design provided they meet the requirements as outlined at the following VIP page. (see <https://vip.gatech.edu/how-vip-credits-count>)

<sup>8</sup> No single course may be used to satisfy requirements in both selected threads.

1. If a course is **required** in both threads, it must be satisfactorily completed once and the second occurrence shall be replaced by an equivalent number of ECE 3000/4000 elective hours (excluding courses used to satisfy senior design or probability & statistics requirements).
2. If a course is **required** in one thread and **optional** (elective or pick list) in the second thread, it must be completed as required and may not be used to satisfy any element of the second thread.
3. If a course is **optional** (elective or pick list) in both threads, it may be counted once toward either thread, but not toward both.

<sup>9</sup> The total number of available free elective hours will depend on choices made in the thread as well as the choice to fulfill Senior Design requirements according to note (7)