<table>
<thead>
<tr>
<th>FALL SEMESTER FRESHMAN 2018</th>
<th>Credits</th>
<th>SPRING SEMESTER FRESHMAN 2019</th>
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<tr>
<td>CHEM 1035 General Chemistry Co: MATH 1025 or 1225</td>
<td>3</td>
<td>ENGL 1106 First-Year Writing (C-) Pre: ENGL 1105</td>
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<td>CHEM 1045 General Chemistry Lab Co: CHEM 1035</td>
<td>1</td>
<td>MATH 1226 Calculus of a Single Variable Pre: MATH 1225</td>
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<td>ENGL 1105 First-Year Writing</td>
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<td>PHYS 2305 Foundations of Physics I Co: PHYS 2325 or MATH 1206 or MATH 1206H or MATH 1226 Pre: MATH 1205 or MATH 1205H or MATH 1225 or MATH 1206 or MATH 1206H or MATH 1226</td>
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<tr>
<td>MATH 1225 Calculus of a Single Variable (C-) Pre: Math Ready</td>
<td>4</td>
<td>ENGE 1216 Foundations of Engineering (C-) Pre: ENGE 1215</td>
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<tr>
<td>Pathways</td>
<td>3</td>
<td>ECE 1004(1) Introduction to ECE Concepts (C) Pre: ENGE 1215 or ENGE 1414</td>
<td>3(3,5)</td>
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<tr>
<td><strong>TOTAL</strong> 16</td>
<td><strong>TOTAL</strong> 19</td>
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<tr>
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<tr>
<td>MATH 2214 Introduction to Differential Equations (C-) Pre: 1114 or 1114H or 2114 or 2114H, (1206 or 1226)</td>
<td>3</td>
<td>MATH 2204 Introduction to Multivariable Calculus (C-) Pre: MATH 1226</td>
<td>3</td>
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<td>PHYS 2306 Foundations of Physics I (C-) Pre: (MATH 1206 or MATH 1206H or MATH 2214, PHYS 2305</td>
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<td>ECE 2214(1) Physical Electronics (C) Pre: 2024, 2544</td>
<td>3(3,5)</td>
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<tr>
<td>ECE 2024(1) Circuits and Devices (C) Pre: 1004, (MATH 2114 or MATH 2114H or MATH 2405H); Co: 2514, 2544, MATH 2214, PHYS 2306</td>
<td>3(3,5)</td>
<td>ECE 2564(1) Embedded Systems (C) Pre: 2514, 2544</td>
<td>3(3,5)</td>
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<tr>
<td>ECE 2514(1) Computational Engineering (C) Pre: 1004; Co: 2024, 2544</td>
<td>3(3,5)</td>
<td>ECE 2714(1) Signals and Systems (C) Pre: 2024, 2514, 2544; Co: 2564</td>
<td>3(3,5)</td>
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<tr>
<td>ECE 2544(1) Fundamentals of Digital Systems (C) Pre: 1004, ENGL 1106 or ENGL 1204H; Co: 2024, 2514</td>
<td>3(3,5)</td>
<td>ECE 2804(1) Integrated Design Project (C) Pre: 2024, 2514, 2544; Co: 2214, 2564, 2714</td>
<td>2(2,5)</td>
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<td>Pathways</td>
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<td>3</td>
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<tr>
<td><strong>TOTAL</strong> 16</td>
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<tr>
<th>FALL SEMESTER JUNIOR 2020</th>
<th>Credits</th>
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<tr>
<td>ECE 3004 AC Circuit Analysis(2) Pre: 2704 or 2714, 2804</td>
<td>3(3,5)</td>
<td>ECE 3204(2) Analog Electronics (C) Pre: 2204 or 2214, 2704 or 2714</td>
<td>3(3,5)</td>
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<tr>
<td>ECE 3074(2) AC Circuit Analysis Laboratory (C-) Pre: 2074 or 2804; Co: 3004</td>
<td>1(3,5)</td>
<td>ECE 3274(2) Electronic Circuit Laboratory II Pre: 2274 or 2804, 3074; Co: 3204</td>
<td>1(3,5)</td>
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<tr>
<td>ECE 3105(2) Electromagnetic Fields Pre: PHYS 2306, (MATH 2204 or MATH 2204H or MATH 2406H), ECE 2004 or 2024</td>
<td>3(3,5)</td>
<td>Secondary Focus Area course (see list)</td>
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<tr>
<td>ECE 3214(2) Semiconductor Device Fundamentals Pre: 2204 or 2214 or MSE 3204</td>
<td>3(3)</td>
<td>Secondary Focus Area course (see list)</td>
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<td>STAT 4714 Probability &amp; Statistics for Electrical Engineers (C-) Pre: (MATH 2204 or MATH 2224)</td>
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<tr>
<td>Secondary Focus Area course (see list)</td>
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<td><strong>TOTAL</strong> 16</td>
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<th>SPRING SEMESTER SENIOR 2022</th>
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<tr>
<td>ECE 4805(1) Senior Design Project (C-) See timetable for prerequisites</td>
<td>3(3,5)</td>
<td>ECE 4806(1) Senior Design Project Pre: 4805</td>
<td>3(3,5)</td>
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<tr>
<td>Micro/Nanosystems Elective(2) choose from: (4205, 4220, 4234, 4235)</td>
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<td>Micro/Nanosystems Elective(2) choose from: (4205, 4220, 4234, 4235)</td>
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<td>ECE 3614(2) Introduction to Communication Systems Pre: 2704 or 2714, STAT 4714</td>
<td>3(3,5)</td>
<td>Math Elective from list</td>
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<td>Pathways</td>
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<td>3</td>
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<tr>
<td>Free Elective</td>
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**General Information about Checksheet:** Superscripted annotation after the course number (1) indicates core course of the degree while (2) indicates courses associated with the major. Additionally, (F, S, SI, SII) in credits column indication terms when a course is expected to be offered. Course offerings are subject to change and the availability of sufficient resources. Students should confirm course offerings in advance with their department.

**Pathways to General Education**
Consult the Pathways Course listing (https://www.pathways.prov.vt.edu/about/table.html) for more information. Pathways courses must be completed prior to graduation.

| Pathways 1F: Discourse (6 hrs) | ENGL 1105 | (3) | ENGL 1106 | (3) |
| Pathways 1A: Discourse (3 hrs) | ECE 4805 | (3) |
| Pathways 2: Critical Thinking in the Humanities (6 hrs) | (3) | (3) |
| Pathways 3: Reasoning in the Social Sciences (6 hrs) | (3) | (3) |
| Pathways 4: Reasoning in Natural Sciences (6 hrs) | PHYS 2305 | (4) | PHYS 2306 | (4) |
| Pathways 5F: Quantitative and Computational Thinking (6 hrs) | MATH 1225 | (4) | MATH 1226 | (4) |
| Pathways 5A: Quantitative and Computational Thinking (3 hrs) | MATH 2214 | (3) |
| Pathways 6D: Critique and Practice in Design and Arts (6 hrs) | ENGE 1215/1216 | (2/2) |
| Pathways 6A: Critique and Practice in Design and Arts (3 hrs) | (3) |
| Pathways 7: Critical Analysis of Identity and Equity in the United States | (3) |

Pathways 7 can be double-counted with another core concept. In this case, additional free elective credits must be taken to maintain a minimum of 132 credits.

**Electives**
The Micro/Nanosystems major requires 3 hours of math electives from list and 8 hours of free electives. Free electives only may be taken under the P/F grading option. Students are encouraged to use free electives to provide depth in their major or secondary focus.

**Secondary Focus**
The Micro/Nanosystems major requires 9 credits from a single focus area. All 9 credits must be from one ECE focus area from the attached list. At least 3 credits must be at the 4xxx level.

**Change of Major Requirements:** For Change of Major requirement, please see: http://www.enge.vt.edu/undergraduate-changing-majors.html

**Foreign Language Requirements:** Students must have had 2 years of a foreign language in high school or one year at the college level (6 credit hours) of the same language. College-level credits used to meet this requirement do not count towards the degree.

**Satisfactory Progress Towards Degree:** University Policy 91 outlines university-wide minimum criteria to determine if students are making satisfactory progress towards the completion of their degrees. The ECE Department fully supports this policy. Specific expectations for satisfactory progress for BS Electrical Engineering (all majors) are as follows:

- Each student must meet the minimum University-wide criteria as described in Policy 91 and summarized in the Undergraduate Catalog (under Academic Policies)
- Additionally, upon attempting 60 credits, BS Electrical Engineering students must have satisfactorily completed ECE 2024, ECE 2514, ECE 2544, MATH 2214, and PHYS 2306
- Upon attempting 90 credits, BS Electrical Engineering students must have successfully completed 33 credits of in-major courses and have 2.0 overall and in-major GPAs. (In determining the BS Electrical Engineering in-major GPA, all ECE courses, including repeats, are used).

**Grade Requirement:** Students must earn a C or higher in the following ECE courses: ECE 1004, ECE 2024, ECE 2214, ECE 2514, ECE 2544, ECE 2564, ECE 2714, ECE 2804.

**Statement of Prerequisites:** Pre-requisites for each course are listed after the course title. In general, all ECE courses require a C- or better in prerequisite courses. Students must earn a C or higher in the ECE courses listed above. There are no hidden prerequisites in this program of study. Prerequisites may change from what is indicated. Be sure to consult the Timetable of Classes or check with your advisor for the most current requirements.

**Graduation Requirements:** Each student must complete at least 132 semester credit hours with a minimum overall GPA of 2.00 and a minimum in-major GPA of 2.00. In determining the Micro/Nanosystems in-major GPA, all ECE courses, including repeats, are used.
The courses listed below have been approved for the ECE focus areas. Students must choose 3 courses from a single focus area which DO NOT DUPLICATE major requirements. At least one course must be at the 4xxx level. Actual course offerings will be based on sufficient resources, including faculty availability and student demand. Refer to the University’s on-line timetable of classes for specific course availability information and prerequisite. Note: All ECE courses require a C- or better in prerequisite courses.

CHIP-SCALE INTEGRATION

ECE2500 (3) COMPUTER ORGANIZATION AND ARCHITECTURE, Pre: 2504 or 2544
ECE2574 (3) DATA STRUCTURES AND ALGORITHMS, Pre: 1574 or 2514
ECE3574 (3) APPLIED SOFTWARE DESIGN, Pre: 2574
ECE3004 (3) AC CIRCUIT ANALYSIS, Pre: 2704 or 2714
ECE3074 (1) AC CIRCUIT ANALYSIS LAB, Pre: 2074 or 2804; Co: 3004
ECE3544 (4) DIGITAL DESIGN, Pre: 2504 or 2544
ECE4514 (4) DIGITAL DESIGN II, Pre: 3544
ECE4520 (3) DIGITAL AND MIXED SIGNAL SYSTEM TESTING AND TESTABLE DESIGN, Pre: 2574, 3544
ECE4530 (3) HARDWARE-SOFTWARE CO-DESIGN, Pre: 2564, 3544
ECE4540 (3) VLSI CIRCUIT DESIGN, Pre: 2504 or 2544, 2204 or 2214

CONTROLS, ROBOTICS, AND AUTOMATION (CPE)

ECE2500 (3) COMPUTER ORGANIZATION AND ARCHITECTURE, Pre: 2504 or 2514
ECE2574 (3) DATA STRUCTURES AND ALGORITHMS, Pre: 1574 or 2514
ECE3574 (3) APPLIED SOFTWARE DESIGN, Pre: 2574
ECE3714 (3) INTRODUCTION TO CONTROL SYSTEMS, Pre:2704 or 2714
ECE4524 (4) ARTIFICIAL INTELLIGENCE AND ENGINEERING APPLICATIONS, Pre: 2574, STAT 4714
ECE4580 (3) DIGITAL IMAGE PROCESSING
ECE4704 (3) PRINCIPLES OF ROBOTICS SYSTEMS, Pre: (2704 or 2714) or (ME 3514, STAT 3704)

MACHINE LEARNING

ECE2500 (3) COMPUTER ORGANIZATION AND ARCHITECTURE, Pre: 2504 or 2544
ECE2574 (3) DATA STRUCTURES AND ALGORITHMS, Pre:1574 or 2514
ECE3574 (3) APPLIED SOFTWARE DESIGN, Pre: 2574
ECE4424 (3) MACHING LEARNING (CS 4824), Pre: 2574, (STAT 4604 or STAT 4705 or STAT 4714)
ECE4524 (4) ARTIFICIAL INTELLIGENCE AND ENGINEERING APPLICATIONS, Pre: 2574, STAT 4714
ECE4525 (3) VIDEO GAME DESIGN AND ENG, Pre: 3574
ECE4526 (3) VIDEO GAME DESIGN AND ENG, Pre: 4525
ECE4554 (3) INTRODUCTION TO COMPUTER VISION, Pre: 3574, (STAT 4705 or STAT 4714)
ECE4580 (3) DIGITAL IMAGE PROCESSING
NETWORKING AND CYBERSECURITY
ECE2500 (3) COMPUTER ORGANIZATION AND ARCHITECTURE, Pre: 2504 or 2544
ECE2574 (3) DATA STRUCTURES AND ALGORITHMS, Pre: 1574 or 2514
ECE3574 (3) APPLIED SOFTWARE DESIGN, Pre: 2574
ECE4560 (3) COMPUTER AND NETWORK SECURITY FUNDAMENTALS, Pre: (2504 or 2544) or CS 3214
ECE4564 (3) NETWORK APPLICATION DESIGN, Pre: 2504 or 2544, 2574
ECE4570 (3) WIRELESS NETWORKS AND MOBILE SYSTEMS, Pre: 4564
ECE4614 (3) TELECOMMUNICATION NETWORKS, Pre: 2504 or 2544, 2704 or 2714, STAT 4714
CS4264 (3) PRINCIPLES OF COMPUTER SECURITY, Pre: CS 3214 or (ECE 2500, ECE 3574)

SOFTWARE SYSTEMS
ECE2500 (3) COMPUTER ORGANIZATION AND ARCHITECTURE, Pre: 2504 or 2544
ECE2574 (3) DATA STRUCTURES AND ALGORITHMS, Pre: 1574 or 2514
ECE3574 (3) APPLIED SOFTWARE DESIGN, Pre: 2574
ECE4524 (4) ARTIFICIAL INTELLIGENCE AND ENGINEERING APPLICATIONS, Pre: 2574, STAT 4714
ECE4525 (3) VIDEO GAME DESIGN AND ENG, Pre: 3574
ECE4550 (3) REAL-TIME SYSTEMS, Pre: 3574 or CS 3214
ECE4574 (3) LARGE-SCALE SOFTWARE DEVELOPMENT FOR ENGINEERING SYSTEMS, Pre: 3574
CS3214 (3) COMPUTER SYSTEMS, Pre: (CS 2506, CS 2114) or (ECE 2524, ECE 2534)

COMMUNICATIONS AND NETWORKING
ECE3004 (3) AC CIRCUIT ANALYSIS, Pre: 2704 or 2714
ECE3074 (1) AC CIRCUIT ANALYSIS LAB, Pre: 2074 or 2804; Co: 3004
ECE3105 (3) ELECTROMAGNETIC FIELDS, Pre: 2004 or 2024, MATH 2204, PHYS 2306
ECE3614 (3) INTRODUCTION TO COMMUNICATION SYSTEMS, Pre: 2704 or 2714, STAT 4714
ECE3704 (3) CONTINUOUS AND DISCRETE SYSTEMS, Pre: 2704 or 2714
ECE4614 (3) TELECOMMUNICATION NETWORKS, Pre: 2504 or 2544, 2704 or 2714, STAT 4714
ECE4624 (3) DIGITAL SIGNAL PROCESSING AND FILTER DESIGN, Pre: 3704
ECE4634 (3) DIGITAL COMMUNICATIONS, Pre: 3614, STAT 4714
ECE4664 (1) ANALOG & DIGITAL COMM LAB, Pre: 3614; Co: 4634
ECE4684 (3) NETWORK SCIENCE, Pre: 2704 or 2714

CONTROLS, ROBOTICS, AND AUTONOMY (EE)
ECE2574 (3) DATA STRUCTURES AND ALGORITHMS, Pre: 1574 or 2514
ECE3004 (3) AC CIRCUIT ANALYSIS, Pre: 2704 or 2714
ECE3074 (1) AC CIRCUIT ANALYSIS LAB, Pre: 2074 or 2804; Co: 3004
ECE3105 (3) ELECTROMAGNETIC FIELDS, Pre: 2004 or 2024, MATH 2204, PHYS 2306
ECE3714 (3) INTRODUCTION TO CONTROL SYSTEMS, Pre: 2704 or 2714
ECE4524 (4) ARTIFICIAL INTELLIGENCE AND ENGINEERING APPLICATIONS, Pre: 2574, STAT 4714
ECE4580 (3) DIGITAL IMAGE PROCESSING
ECE4704 (3) PRINCIPLE OF ROBOTICS SYSTEMS, Pre: 2704 or 2714 or (ME 3514, STAT 3704)
MATH3144 (3) LINEAR ALGEBRA I, Pre: (MATH 3034 or MATH 2534), (MATH 2114 or 2114H or 2405H)

ENERGY AND POWER ELECTRONIC SYSTEMS
ECE3004 (3) AC CIRCUIT ANALYSIS, Pre: 2704 or 2714
ECE3074 (1) AC CIRCUIT ANALYSIS LAB, Pre: 2074 or 2804; Co: 3004
ECE3105 (3) ELECTROMAGNETIC FIELDS, Pre: 2004 or 2024, MATH 2204, PHYS 2306
ECE3204 (3) ANALOG ELECTRONICS, Pre: 2204 or 2214, 2704 or 2714
ECE3304 (3) INTRODUCTION TO POWER SYSTEMS, Pre: 3004
ECE3354 (1) POWER LAB, Co: 3304
ECE3704 (3) CONTINUOUS AND DISCRETE SYSTEMS, Pre: 2704 or 2714
ECE4224 (3) POWER ELECTRONICS, Pre: 3204
ECE4284 (1) POWER ELECTRONICS LAB, Co: 4224
ECE4304 (3) DESIGN IN POWER ENGINEERING, Pre: 3304
ECE4334 (3) POWER SYSTEM ANALYSIS AND CONTROL, Pre: 3304
ECE4344 (3) ELECTRIC POWER QUALITY FOR THE DIGITAL ECONOMY, Pre: 3304
ECE4354 (3) POWER SYSTEM PROTECTION, Pre: 4334
ECE4364 (3) ALTERNATE ENERGY SYSTEMS, Pre: STAT 4714
ECE4374 (1) POWER SYSTEM PROTECTION LAB, Pre: 4334; Co: 4354

MICRO/NANOSYSTEMS
ECE3004 (3) AC CIRCUIT ANALYSIS, Pre: 2704 or 2714
ECE3074 (1) AC CIRCUIT ANALYSIS LAB, Pre: 2074 or 2804; Co: 3004
ECE3105 (3) ELECTROMAGNETIC FIELDS, Pre: 2004 or 2024, MATH 2204, PHYS 2306
ECE3204 (3) ANALOG ELECTRONICS, Pre: 2204 or 2214, 2704 or 2714
ECE3274 (1) ELECTRONIC CIRCUITS LAB II, Pre: 2274 or 2804, 3074; Co: 3204
ECE3214 (3) SEMICONDUCTOR DEVICE FUNDAMENTALS, Pre: 2204 or 2214 or MSE 3204
ECE3614 (3) INTRODUCTION TO COMMUNICATION SYSTEMS, Pre: 2704 or 2714, STAT 4714
ECE4205 (3) ELECTRONIC CIRCUIT DESIGN, Pre: 3204
ECE4220 (3) ANALOG INTEGRATED CIRCUIT DESIGN, Pre: 3204
ECE4234 (3) SEMICONDUCTOR PROCESSING, Pre: 2204 or 2214 or 3054
ECE4235 (3) PRINCIPLES OF ELECTRONIC PACKAGING, Pre: 2204 or 2214 or 3054

PHOTONICS
ECE3004 (3) AC CIRCUIT ANALYSIS, Pre: 2704 or 2714
ECE3074 (1) AC CIRCUIT ANALYSIS LAB, Pre: 2074 or 2804; Co: 3004

ECE 2022 DRAFT CHECKSHEET
ECE3105 (3) ELECTROMAGNETIC FIELDS, Pre: 2004 or 2024, MATH 2204, PHYS 2306
ECE3106 (3) ELECTROMAGNETIC FIELDS, Pre: 3105
ECE3134 (3) INTRODUCTION OPTOELECTRONICS, Pre: 2204 or 2214
ECE3174 (1) OPTOELECTRONICS LAB, Pre: 2274 or 2804; Co: 3134
ECE3614 (3) INTRODUCTION TO COMMUNICATION SYSTEMS, Pre: 2704 or 2714, STAT 4714
ECE4134 (3) PHOTONICS, Pre: 3106
ECE4144 (3) OPTICAL SYSTEMS, Pre: 3105

**RADIO FREQUENCY AND MICROWAVE**

ECE3004 (3) AC CIRCUIT ANALYSIS, Pre: 2704 or 2714
ECE3074 (1) AC CIRCUIT ANALYSIS LAB, Pre: 2074 or 2804; Co: 3004
ECE3105 (3) ELECTROMAGNETIC FIELDS, Pre: 2004 or 2024, MATH 2204, PHYS 2306
ECE3106 (3) ELECTROMAGNETIC FIELDS, Pre: 3105
ECE3204 (3) ANALOG ELECTRONICS, Pre: 2204 or 2214, 2704 or 2714
ECE3274 (1) ELECTRONIC CIRCUITS LAB II, Pre: 2274 or 2804, 3074; Co: 3204
ECE3614 (3) INTRODUCTION TO COMMUNICATION SYSTEMS, Pre: 2704 or 2714, STAT 4714
ECE4104 (3) MICROWAVE AND RF ENGINEERING, Pre: 3106, 3204
ECE4114 (3) ANTENNAS, Pre: 3106
ECE4124 (3) RADIO WAVE PROPOGATION, Pre: 3106
ECE4224 (3) ANALOG INTEGRATED CIRCUIT DESIGN, Pre: 3204
ECE4605 (3) RADIO ENGINEERING, Pre: 3105, 3204, 3614
ECE4606 (3) RADIO ENGINEERING, Pre: 4605

**SPACE SYSTEMS**

ECE3004 (3) AC CIRCUIT ANALYSIS, Pre: 2704 or 2714
ECE3074 (1) AC CIRCUIT ANALYSIS LAB, Pre: 2074 or 2804; Co: 3004
ECE3105 (3) ELECTROMAGNETIC FIELDS, Pre: 2004 or 2024, MATH 2204, PHYS 2306
ECE3106 (3) ELECTROMAGNETIC FIELDS, Pre: 3105
ECE3154 (2) SPACE SYSTEMS – DESIGN, Pre: 3105; Co: 3104
ECE3614 (3) INTRODUCTION TO COMMUNICATION SYSTEMS, Pre: 2704 or 2714, STAT 4714
ECE4154 (3) INTRODUCTION TO SPACE WEATHER, Pre: 3106
ECE4164 (4) INTRODUCTION TO FLOBAL POSITIONING SYSTEMS (GPS) THEORY AND DESIGN, Pre: 3106 or AOE 4134
ECE4194 (3) ENGINEERING PRINCIPLES OF REMOTE SENSING, Pre: 3106
INDIVIDUALIZED PLAN (Must be preapproved by ECE Department)

Students are encouraged to work with a faculty member to design their own secondary focus. This focus can be within another department and must consist of 3 courses. Individualized plans must be approved by the ECE Department. See your academic advisor for more information.
Electrical Engineering majors are required to take one math elective course from the following list. Some courses may include prerequisite courses not required for the EE curriculum. It is the student’s responsibility to be aware of prerequisites and to ensure that all prerequisites are completed prior to enrolling in the chosen course. Note that courses may be restricted to specific majors during certain semesters.

Enrollment into courses will be based on sufficient resources, including faculty availability and student demand.

MATH 2534 (3) INTRO DISCRETE MATH, Pre: CS 1114 (minimum grade C) or ECE 1574 (minimum grade C-)
MATH 3034 (3) INTRODUCTION TO PROOFS, Pre: MATH 2114 or MATH 2114H or MATH 2405H.
MATH 3214 (3) CALCULUS OF SEVERAL VARIABLES, Pre: MATH 2224 or MATH 2224H or MATH 2204 or MATH 2204H or MATH 2406H or CMDA 2005.
MATH 3414 (3) NUMERICAL METHODS (CS 3414), Pre: (CS 1044 or CS 1705 or CS 1114 or CS 1124), MATH 2406H or (CMDA 2005, CMDA 2006) or (MATH 2214 or MATH 2214H), (MATH 2224 or MATH 2224H or MATH 2204 or MATH 2204H).
MATH 4445 (3) INTRODUCTION TO NUMERICAL ANALYSIS, Pre: MATH 2406H or (CMDA 2005, CMDA 2006) or (MATH 2214 or MATH 2214H), (MATH 2224 or MATH 2224H) or (MATH 2204 or MATH 2204H).
MATH 4446 (3) INTRODUCTION TO NUMERICAL ANALYSIS, Pre: MATH 2406H or (CMDA 2005, CMDA 2006) or (MATH 2214 or MATH 2214H), (MATH 2224 or MATH 2224H or MATH 2204 or MATH 2204H).
MATH 4564 (3) OPERATIONAL METHODS FOR ENGINEERS, Pre: (MATH 2214 or MATH 2214H) or MATH 2406H or CMDA 2006.
MATH 4574 (3) VECTOR AND COMPLEX ANALYSIS FOR ENGINEERS, Pre: MATH 2224 or MATH 2204 or MATH 2204H]