WELCOME to the Department of Electrical and Computer Engineering!
PEOPLE TO KNOW

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Dept. Chair haix@clemson.edu
Resources for Creating Your Academic Plan

1. Degree Works (in iROAR) – shows what you have taken, are taking, and still need to take
Bachelor of Science Degree

Credits required: 127  Credits applied (includes In-progress): 51  Catalog year: 2020-2021

At least 37 of the last 43 credits presented toward the degree must be completed through instruction from Clemson.

- **GENERAL EDUCATION MINIMUM CREDIT REQUIREMENT (31 Credits) - CAUTION:**
  See General Education coursework requirements.

- **MINIMUM CREDITS REQUIRED FOR THIS DEGREE**
  Still needed: A minimum of 127 credits is required. You currently have 51 credits applied (includes In-progress courses).

- **ENGINEERING COURSES: C or better**

- **2.0 GPA REQUIREMENT**

- **GENERAL ENGINEERING CORE REQUIREMENTS**
  Still needed: See General Engineering Core and General Education section

- **MAJOR REQUIREMENTS**
  Still needed: See Major in Electrical Engineering section
## General Engineering Core and General Education

**NOTES:** 1) Social Science courses must be selected from two different fields. AGRB and ECON are considered the same field. 2) For STS and CCA, try to select a course that also fulfills another requirement.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Grade</th>
<th>Credits</th>
<th>Term</th>
<th>Repeated</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENERAL EDUCATION - Natural Science with Lab</td>
<td>CH 1010 General Chemistry</td>
<td>A</td>
<td>4</td>
<td>Fall 2020</td>
<td></td>
</tr>
<tr>
<td>ENGL 1030 English Composition - ENGL 1030</td>
<td>Composition and Rhetoric</td>
<td>B</td>
<td>3</td>
<td>Fall 2020</td>
<td></td>
</tr>
<tr>
<td>Engineering Disciplines and Skills (2 Cr)</td>
<td>ENGR 1020 Engineering Discipl &amp; Skills</td>
<td>A</td>
<td>2</td>
<td>Fall 2020</td>
<td></td>
</tr>
<tr>
<td>GENERAL EDUCATION - Mathematics - MATH 1060</td>
<td>MATH 1060 Calculus of One Variable I</td>
<td>A</td>
<td>4</td>
<td>Fall 2020</td>
<td></td>
</tr>
<tr>
<td>PHYS 1220 Physics with Calculus I (3 Cr)</td>
<td></td>
<td>A</td>
<td>3</td>
<td>Spring 2021</td>
<td></td>
</tr>
<tr>
<td>Course</td>
<td>Credits</td>
<td>Prerequisite</td>
<td>Grade</td>
<td>Units</td>
<td>Semester</td>
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<tr>
<td>Programming and Problem Solving (3 Cr)</td>
<td></td>
<td>ENGR 1410 - Programming and Problem Solving</td>
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<td>3</td>
<td>Spring 2021</td>
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<tr>
<td>MATH 1080 - Calculus of One Variable II</td>
<td>4</td>
<td></td>
<td>A</td>
<td></td>
<td>Spring 2021</td>
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<tr>
<td>STS 1010 - Survey Sci &amp; Techn in Society</td>
<td>3</td>
<td></td>
<td>A</td>
<td></td>
<td>Fall 2020</td>
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<tr>
<td>GENERAL EDUCATION - Arts and Humanities (Non-Literature) (3 Cr)</td>
<td></td>
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<tr>
<td>Still needed: 3 Credits in @ @ with attribute = LIT</td>
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<tr>
<td>PSYC 2010 - Intro to Psychology</td>
<td>3</td>
<td></td>
<td>A</td>
<td></td>
<td>Spring 2021</td>
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<tr>
<td>Still needed: 3 Credits in @ @ with attribute = SOSC</td>
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<tr>
<td>GENERAL EDUCATION - Oral Communication - COMM 1500 or 2500 (3 Cr)</td>
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<tr>
<td>Still needed: 1 Class in COMM 1500 or 2500</td>
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<tr>
<td>GENERAL EDUCATION - Cross Cultural Awareness (0-3 Cr)</td>
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<tr>
<td>Still needed: 1 Class in @ @ with attribute = CCA</td>
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<tr>
<td>GENERAL EDUCATION - Science and Technology in Society (3 Cr)</td>
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<td></td>
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<tr>
<td>STS 1010 - Survey Sci &amp; Techn in Society</td>
<td></td>
<td></td>
<td>A</td>
<td>3</td>
<td>Fall 2020</td>
</tr>
</tbody>
</table>
# Major in Electrical Engineering

**Catalog year:** 2020-2021

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Grade</th>
<th>Credits</th>
<th>Term</th>
<th>Repeated</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Chemistry (4 Cr)</td>
<td>CH 1020 General Chemistry</td>
<td>A</td>
<td>4</td>
<td>Spring 2021</td>
<td></td>
</tr>
<tr>
<td>Introduction to Programming in C (3 Cr)</td>
<td>CPSC 1110 Intro to Programming in C</td>
<td>IP</td>
<td>(3)</td>
<td>Fall 2021</td>
<td></td>
</tr>
<tr>
<td>Logic and Computing Devices (3 Cr)</td>
<td>ECE 2010 Logic and Computing Devices</td>
<td>IP</td>
<td>(3)</td>
<td>Fall 2021</td>
<td></td>
</tr>
<tr>
<td>Electric Circuits I (3 Cr)</td>
<td>ECE 2020 Electric Circuits I</td>
<td>IP</td>
<td>(3)</td>
<td>Fall 2021</td>
<td></td>
</tr>
<tr>
<td>Logic and Computing Devices Lab (1 Cr)</td>
<td>ECE 2090 Logic &amp; Computing Devices Lab</td>
<td>IP</td>
<td>(1)</td>
<td>Fall 2021</td>
<td></td>
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<tr>
<td>Electrical Engineering Laboratory I (1 Cr)</td>
<td>ECE 2110 Electrical Engineering Lab I</td>
<td>IP</td>
<td>(1)</td>
<td>Fall 2021</td>
<td></td>
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<tr>
<td>Calculus of Several Variables (4 Cr)</td>
<td>MATH 2060 Calculus of Several Variables</td>
<td>IP</td>
<td>(4)</td>
<td>Fall 2021</td>
<td></td>
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<tr>
<td>Physics with Calculus II (3 Cr)</td>
<td>PHYS 2210 Physics with Calculus II</td>
<td>IP</td>
<td>(3)</td>
<td>Fall 2021</td>
<td></td>
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</tbody>
</table>

- **Still needed:** 1 Class in ECE 2120 with grade >= C
- **Still needed:** 1 Class in ECE 2620 with grade >= C
- **Still needed:** 1 Class in ECE 2720 with grade >= C
- **Still needed:** 1 Class in ECE 2730
- **Still needed:** 1 Class in MATH 2080 with grade >= C

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**Additional sections:**
- Minor, Excess
- Electives
- Insufficient, In-progress (includes current and future registrations)
## Resources for Creating Your Academic Plan

### 2. 8-semester plans

https://www.clemson.edu/cecas/departments/ece/resources/undergrad_resources/curriculum.html
### Freshman Year

**EE**
- ENGR 1020: Displ & Skills
- CH 1010: Chem 1
- ENGL 1030: Comp & Rhet
- MATH 1060: Calc I
- HSS 1

**CH 1020: Chem 2**

**ENGR 1410: Prog & Prob Solv**
- MATH 1080: Calc II
- PHYS 1220: Mechanics
- HSS 2

**HSS 3**

**CpE**
- HSS 1
Junior Year

EE 3210/3120: Electronics II
EE 3600: Power
EE 3810: Fields & Waves
EE 3800: Electromagnetics

ECE 3200/3110: Electronics I
ECE 3300: Signals & Systems
ECE 3710/3720: Microcontroller Interfacing

ECE 3170: Random Signals

ECE 2230: Computer Systems Engr
Math 3110: Linear Algebra
CpE

ENGL 3140: Technical Writing
ECE 3220: Operating Systems
ECE 3270: Digital Computer Design
ECE 3520: Programming Systems
MATH 4190: Discrete Math
Senior Year

EE

EE Tech 1
ECE 4270: Communications Systems

EE Tech 2
EE Tech 3

ECE 4090: Control Systems
ECE 4950: Senior Design I
COMM Requirement

ECE 4960: Senior Design II
Special Requirement
HSS 4

CPE Tech 1
CPE Prob & Stats Req
ENGL 3140: Technical Writing
CpE

CPE Tech 2
CpE Tech 3
Resources for Creating Your Academic Plan

3. Flowcharts

https://www.clemson.edu/cecas/departments/ece/resources/undergrad_resources/curriculum.html
## Resources for Creating Your Academic Plan

4. **Technical requirement lists**


### CpE Technical Requirements

Courses that satisfy CpE technical electives are shown below. Four courses (12 credits) must be taken, one of which must meet the Probability and Statistics requirement.*

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Course</th>
<th>Course Title</th>
<th>Semester Offered$^1$</th>
<th>Pre-requisites$^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Architecture</strong></td>
<td>ECE 4680/4681</td>
<td>Embedded Computing</td>
<td>Spring</td>
<td>ECE 2230$^2$ and ECE 3710$^2$</td>
</tr>
<tr>
<td></td>
<td>ECE 4290</td>
<td>Organization of Computers</td>
<td>Fall</td>
<td>ECE 2720$^2$</td>
</tr>
<tr>
<td></td>
<td>ECE 4730</td>
<td>Introduction to Parallel Systems</td>
<td>Fall or Spring</td>
<td>ECE 3220$^2$ or ECE 3290$^2$</td>
</tr>
<tr>
<td><strong>Biomedical Systems</strong></td>
<td>BIOE 3700/3701$^3$</td>
<td>Bioinstrumentation and Bioimaging</td>
<td>Fall &amp; Spring</td>
<td>MATH 2080 and ECE 2020 or ECE 2070; Co-req BIOE 3701</td>
</tr>
<tr>
<td></td>
<td>BIOE 4310/4311$^3$</td>
<td>Medical Imaging</td>
<td>Spring</td>
<td>MATH 2080 and ECE 2020 or ECE 2070; Prereq or concurrent enrollment BIOE 3700; Co-req BIOE 4311</td>
</tr>
<tr>
<td></td>
<td>BIOE 4350$^3$</td>
<td>Computer Modeling of Multiphysics Problems</td>
<td>Spring</td>
<td>MATH 2080</td>
</tr>
<tr>
<td></td>
<td>BIOE 4710$^3$</td>
<td>Biophotonics</td>
<td>Check w/ Dept.</td>
<td>MATH 2080, PHYS 2210 and ECE 2070 or ECE 3200</td>
</tr>
<tr>
<td><strong>Communication Systems &amp; Networks</strong></td>
<td>ECE 4270</td>
<td>Communications Systems</td>
<td>Fall, Spring &amp; Summer</td>
<td>ECE 3170$^2$ and ECE 3300$^2$</td>
</tr>
<tr>
<td></td>
<td>ECE 4300</td>
<td>Digital Communications</td>
<td>Fall or Spring</td>
<td>ECE 3170$^2$, ECE 3300$^2$ and consent of instructor</td>
</tr>
<tr>
<td></td>
<td>ECE 4380</td>
<td>Computer Communications</td>
<td>Spring &amp; Spring</td>
<td>Senior standing in CpE or EE</td>
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<tr>
<td></td>
<td>ECE 4400</td>
<td>Performance Analysis of Local Computer Networks</td>
<td>Spring</td>
<td>ECE 2720$^2$ and ECE 3170$^2$</td>
</tr>
<tr>
<td></td>
<td>ECE 4490/4491</td>
<td>Computer Network Security</td>
<td>Fall</td>
<td>Senior standing in CpE or EE; Co-req ECE 4491</td>
</tr>
<tr>
<td><strong>Electronics</strong></td>
<td>ECE 3210$^3$</td>
<td>Electronics II</td>
<td>Fall, Spring &amp; Summer</td>
<td>ECE 3200$^2$</td>
</tr>
<tr>
<td></td>
<td>ECE 4590$^3$</td>
<td>Integrated Circuit Design</td>
<td>Fall</td>
<td>ECE 3200$^2$; Co-req ECE 4591</td>
</tr>
<tr>
<td></td>
<td>ECE 4100</td>
<td>Industrial Control and Automation in ECE</td>
<td>Spring</td>
<td>ECE 4090$^2$</td>
</tr>
</tbody>
</table>
WEBSITES TO KNOW

http://www.clemson.edu/ces/departments/ece/resources/undergrad_resources/curriculum.html
Curriculum pages, coreq/prereq list, Gen Ed Req.

http://www.clemson.edu/ces/departments/ece/resources/undergrad_resources/forms.html
Forms for academic forgiveness, creative inquiry, design project approval, variance approval forms, honors research, permission to take graduate courses, approval for courses taken abroad, etc.
COURSE AVAILABILITY

- All REQUIRED ECE classes are offered every fall and spring semester.
- All required EE classes (except senior design) and most CpE classes are offered online every summer. Cost: 10% over in-state rates.
- ECE technical electives are usually available once per year. Some are also available in summer. Online are tentative projections of when they are available. Be sure to check you have the prerequisites.
- We make every effort to get every ECE student in required courses when they need to take them.
HUMANITIES AND SOCIAL SCIENCE DETAILS

3 hours LITERATURE
3 hours NON-LIT HUMANITIES
6 hours SOCIAL SCIENCE (in different depts/subjects)

Must also satisfy STS and CCA requirements (can be with one/two of the above)

SPECIAL ELECTIVE
An additional HSS course (see EE and CpE curriculum sheets for a link to the list), an additional 4XXX from the EE or CpE technical elective list (see respective lists), an additional 4XXX math course from a list (see the EE and CpE curriculum sheets), or ELE 3010.
CURRICULAR RULES OF PROGRESS

1. A student is only allowed to enroll in a given ECE class when ALL pre-requisites have been passed with a grade of C or higher.

Students enrolled in classes for which deficiencies are found will be dropped from the class roll.
2. No student may exceed a maximum of two attempts, excluding a W, to successfully complete any ECE course.

Academic forgiveness does not give you an additional attempt. This rule is the most common reason students are prevented from finishing the ECE program and are forced to change majors. If a course is required in both EE and CpE, this rule prevents completion of both programs. A variance request may lead to permission to have a third attempt in some cases.
CURRICULAR RULES OF PROGRESS

3. An overall GPR and an overall EGPR of at least 2.0 are required for graduation and for enrollment in junior and senior level engineering/ECE courses.

A variance request is required to obtain permission to take 3XXX and 4XXX ECE courses if GPR or EGPR is below 2.0. Only a limited number of such courses will be permitted.
Lists of students and their faculty advisors plus advising worksheets.
GET ACADEMIC HELP!

PEER & WISE
https://www.clemson.edu/cecas/departments/peer-wise/index.html
Tutoring for selective courses & test bank; study spaces

ACADEMIC SUCCESS CENTER
https://www.clemson.edu/asc
Tutoring for selective sophomore courses
Study effectiveness classes

ETA KAPPA NU
Tutoring for most ECE courses
ADDITIONAL OPPORTUNITIES

ECE Creative Inquiry

https://www.clemson.edu/cecas/departments/ece/document_resource/undergrad/CI_Approval_Form.pdf

ECE 2990, 3990, or 4990
3 hours of 4990 (or research classes) can satisfy one ECE technical elective
Approval form required to sign up

More information: http://www.clemson.edu/academics/programs/creative-inquiry/

Search for projects:
http://www.clemson.edu/academics/programs/creative-inquiry/projects/current-projects.html

Hint: Under “Current Projects” in the search box, choose College of Engineering, Computing and Applied Sciences, then enter “electrical” or “computer”
ADDITIONAL OPPORTUNITIES

**CO-OP** – [https://career.sites.clemson.edu/cooperative_education/](https://career.sites.clemson.edu/cooperative_education/)
Enter as sophomores or juniors; minimum GPA 2.5
2 semesters, 1 summer

**Internship** – [https://career.sites.clemson.edu/internship_programs/](https://career.sites.clemson.edu/internship_programs/)
Off-campus and on-campus (UPIC)

**Calhoun Honors** – [http://www.clemson.edu/cuhonors/](http://www.clemson.edu/cuhonors/)
Minimum GPA 3.5 for admission
General honors: See Honors Handbook at CU Honors website
ECE Departmental Honors: At least 5 credits from H2010, H2020, H2620, H3170, H3200, and H3300, of which 3 must be H3300 or H3170. Also H3000 (Jr. Honors Seminar-1 credit); 4 additional credits and a research project.
[http://www.clemson.edu/cecas/departments/ece/academics/undergrad/honors.html](http://www.clemson.edu/cecas/departments/ece/academics/undergrad/honors.html)

**Study Abroad** – [http://www.clemson.edu/studyabroad/](http://www.clemson.edu/studyabroad/)
MINORS

catalog.clemson.edu  In general: At least 15 hrs, 9 at 3xxx or 4xxx

Electrification in Transportation Minor: ECE 4710 plus 12 additional credits from a list including certain ECE tech electives, AUE, ME, and CE courses.

Math Minor: Math 2080 plus 12 hrs 3xxx or 4xxx from list
EE: 9 extra hours; CpE: 6 extra hours (3 can be special elective)

Cybersecurity Minor: 15 hours, Path II for ECE
CpE: 17 extra hours if technical electives chosen appropriately
CPSC 4200, CPSC 4620, ECE 4490, ECE 4380 or 4400, course from list
Plus prereqs CPSC 1020, 2120, 2150.
Email Dr. Russell harlanr@clemson.edu for personal guidance.

Computer Science Minor: 16 hours
EE: 16 extra hours; CPE: 10 extra hours
CPSC 2120 plus 9 hours 3xxx or 4xxx plus prereq CPSC 1020
Email Dr. Russell harlanr@clemson.edu for personal guidance.
FE EXAM

http://ncees.org/exams/fe-exam/

A necessary step to becoming a licensed professional engineer (PE)
Best to take while still in school (senior year)
Must take at approved testing center (nearest is Greenville)
There is an Electrical & Computer FE exam

BS TO GRAD PROGRAM

http://www.clemson.edu/cecas/departments/ece/resources/grad_resources/grad_handbook.html

Minimum GPA: 3.4
Use up to 9 semester hours to simultaneously satisfy tech electives and some of the requirements of a graduate degree.
See the ECE Graduate Handbook or email Dr. Russell at harlanr@clemson.edu for more details.
GET INVOLVED!

IEEE Student Branch – Institute of Electrical and Electronics Engineers
CLUG – Clemson Linux Users and GNU
SHPE – Society of Hispanic Professional Engineers
IEEE PES Student Chapter – Power Engineering Society
Amateur Radio Club
IEEE HKN – Eta Kappa Nu (honor society)
TBP – Tau Beta Pi (honor society)
Theta Tau – co-ed engineering fraternity
WISE – Women in Science and Engineering
NSBE – National Society of Black Engineers
ECE Undergraduate Ambassadors – departmental tour guides

See main ECE website for additional opportunities
http://www.clemson.edu/ces/departments/ece/student_org/
Questions?