

WELCOME to the Department
of Electrical and Computer
Engineering!



PEOPLE TO KNOW

Patty McNulty: Academic Advisor – 104A Riggs
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Dr. Hai Xiao: 105 Riggs
Dept. Chair haix@clemson.edu

THE ADVISING PROCESS

All students are assigned a faculty advisor. Advising lists:

https://www.clemson.edu/cecas/departments/ece/resources/undergrad_resources/advising_list.html. Advising lists are updated in the middle of each semester.

A student's faculty advisor may change due to unavailability of the advisor, academic probation, and other factors but in most cases, a student's faculty advisor does not change from semester to semester.

Advising occurs roughly two weeks prior to the time that students can register for classes. Registration for Spring 2023 classes begins **Nov. 9.**

A student must completely fill out and email a pre-registration advising form prior to meeting with their advisor.

Email Patty McNulty any time in the semester for questions related to course selection, dropping courses, academic or personal challenges, etc. Patty McNulty does all student advising for a student's final semester; this advising includes a degree check to ensure that a student takes what they need to graduate.

Overview of the EE and CpE Curricula: Freshman Year

Fall

Spring

EE

CH 1020: Chem 2

ENGR 1020: Displ & Skills

CH 1010: Chem 1

ENGL 1030: Comp & Rhet

MATH 1060: Calc I

HSS 1

ENGR 1410: Prog & Prob Solv

MATH 1080: Calc II

PHYS 1220: Mechanics

HSS 2

HSS 3

CpE

Overview of the EE and CpE Curricula: Sophomore Year

Fall

Spring

EE

HSS 3

CPSC 1110: C Prog

ECE 2010/2090: Dig Logic

ECE 2020/2110: Circuits I

MATH 2060: Multivariable Calc

PHYS 2210: Electromagnetics

ECE 2620/2120: Circuits II

ECE 2720/2730: Computer Org

MATH 2080: Diff Eq

ECE 2220: Systems Prog

CpE

Overview of the EE and CpE Curricula: Junior Year

Fall

EE

Adv Math Req

ECE 3800: Electromagnetics

ECE 3200/3110: Electronics I

ECE 3300: Signals & Systems

ECE 3710/3720: Microcontrollers

ECE 2230: Computer Systems Engr

Math 3110: Linear Algebra

CpE

Spring

ENGL 3140: Technical Writing

ECE 3210/3120: Electronics II

ECE 3600: Power

ECE 3810: Fields & Waves

ECE 3170: Random Signals

ECE 3220: Operating Systems

ECE 3270: Digital Computer Design

ECE 3520: Programming Systems

MATH 4190: Discrete Math

Overview of the EE and CpE Curricula: Senior Year

Fall

Spring

EE

EE Tech 1

ECE 4270: Communications Systems

ECE 4090: Control Systems

ECE 4950: Senior Design I

COMM Requirement

CPE Tech 1

CPE Prob & Stats Req

ENGL 3140: Technical Writing

CpE

EE Tech 2

EE Tech 3

ECE 4960: Senior Design II

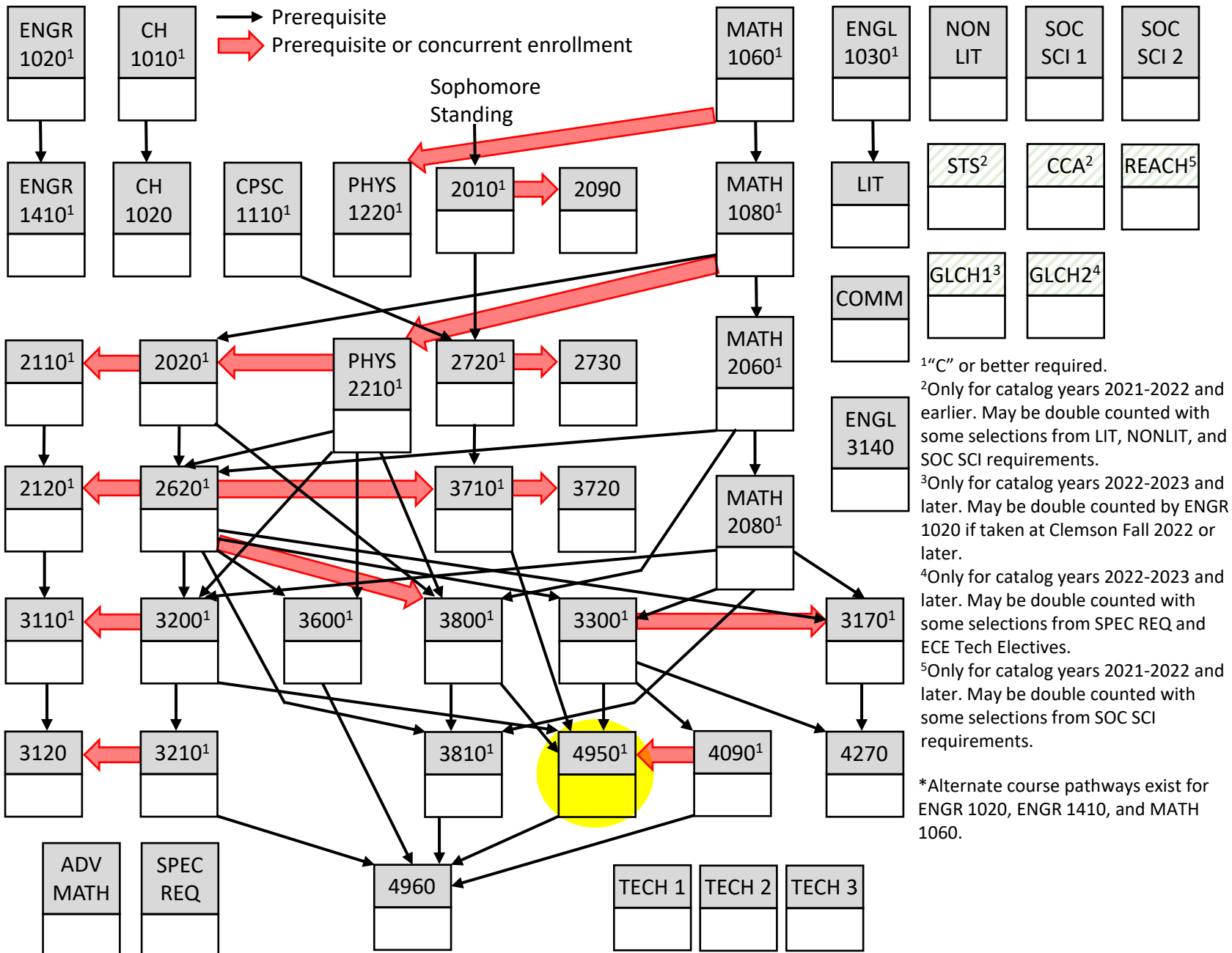
Special Requirement

HSS 4

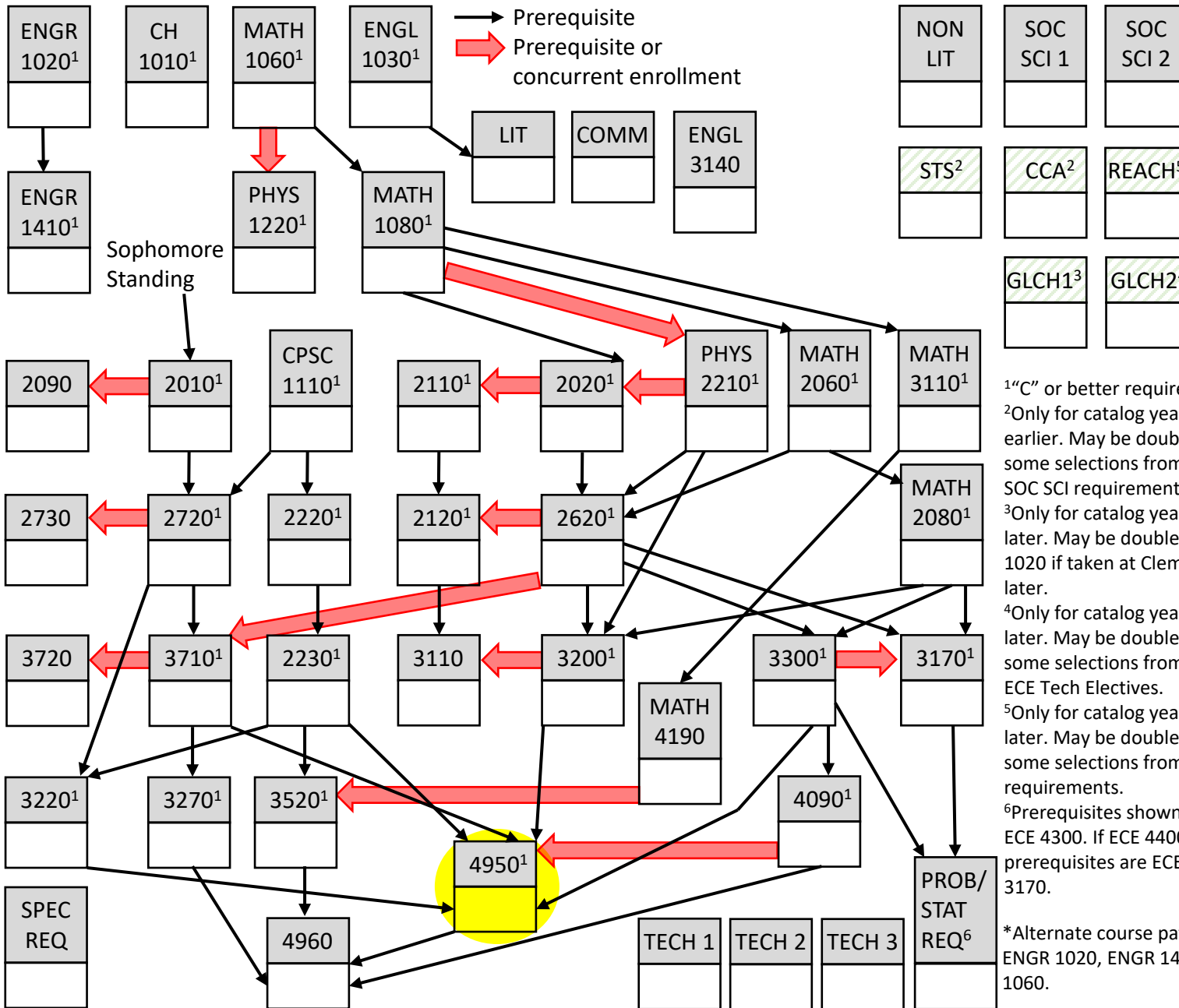
CPE Tech 2

CpE Tech 3

Clemson Electrical Engineering Curriculum



Clemson Computer Engineering Curriculum



¹"C" or better required.
²Only for catalog years 2021-2022 and earlier. May be double counted with some selections from LIT, NONLIT, and SOC SCI requirements.
³Only for catalog years 2022-2023 and later. May be double counted by ENGR 1020 if taken at Clemson Fall 2022 or later.
⁴Only for catalog years 2022-2023 and later. May be double counted with some selections from SPEC REQ and ECE Tech Electives.
⁵Only for catalog years 2021-2022 and later. May be double counted with some selections from SOC SCI requirements.
⁶Prerequisites shown for ECE 4270 and ECE 4300. If ECE 4400 is selected, prerequisites are ECE 2720 and ECE 3170.
 *Alternate course pathways exist for ENGR 1020, ENGR 1410, and MATH 1060.

8 SEMESTER PLANS

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

Use these to determine what to take each semester. If you get out of sequence, use the flowcharts to determine what you can take.

Electrical Engineering

Bachelor of Science

Curriculum Year 2022-2023

FRESHMAN YEAR

Fall Semester		Cr	Term Completed		Spring Semester		Cr	Term Completed	
ENGR 1020/1021	Engineering Disciplines and Skills ¹	3			ENGR 1410/1411	Programming and Problem Solving ⁴	3		
CH 1010/1011	General Chemistry	4			CH 1020/1021	General Chemistry II + Lab	4		
ENGL 1030/1031	Composition and Rhetoric	3			MATH 1080	Calculus II	4		
MATH 1060	Calculus I ²	4			PHYS 1220	Physics with Calculus I	3		
	Arts & Humanities/Social Science Req. ³	3				Arts & Humanities/Social Science Req. ³	3		
		17					17		

SOPHOMORE YEAR

Fall Semester		Cr	Term Completed		Spring Semester		Cr	Term Completed	
CPSC 1110/1111	Intro to Programming in C + Lab	3			ECE 2120	Electrical Engineering Lab II	1		

DEGREEWORKS

Clemson Degree Works - Worksheets



Data refreshed 08/27/2022 2:26 AM

Student ID

Name

Degree

<https://iroar.app.clemson.edu/dashboard/>

Choose Student Self Service, then DegreeWorks (in the Student Records section)

DegreeWorks shows what courses you have taken (and your grades) as well as what courses you still need to take.

Use DegreeWorks to help fill out your Advising Form.

In the main B.S. Degree block in DegreeWorks, in the upper right corner you will find your Catalog Year. This is very important. You must enter the correct Catalog Year on your advising form, or you may be misadvised.

Bachelor of Science Degree

INCOMPLETE

Credits required: 128 Credits applied (includes In-progress): 122 Catalog year: 2021-2022



WHAT IS MY CATALOG YEAR? WHAT SHOULD IT BE?

When you changed your major to EE or CpE, you had the opportunity to choose a catalog year.

For students who came to Clemson as Freshmen, the following table indicates what your catalog year should be. Contact Patty McNulty if your catalog year is incorrect.

Year student began taking courses at Clemson	Catalog Year
2022-2023	2022-2023
2021-2022	2021-2022
2020-2021	2020-2021 or 2021-2022
2019-2020	2019-2020 or 2020-2021 or 2021-2022

For transfer students attending their colleges continuously (without gaps), the same table can be used, except the choices are based on the first year they entered their first college.

WHY DOES THE CATALOG YEAR MATTER?

Clemson University implemented a major change in its General Education Requirements beginning with the 2022-2023 academic year.

Most students who began prior to 2022-2023 should use an earlier catalog year or they will fall under the new requirements and likely need more classes to graduate.

GENERAL EDUCATION REQUIREMENTS 2022-2023

See catalog for details at <https://catalog.clemson.edu>.

In the Clemson University Catalog System box select 2022-2023 Undergraduate Catalog. Then select General Education.

ENGLISH COMPOSITION (3 credits) – ENGL 1030

ORAL COMMUNICATION (3 credits)

- COMM 1500, COMM 2500, or approved honors/cluster

MATHEMATICS (min 3 credits) – satisfied by MATH 1060

NATURAL SCIENCES WITH LAB (min 4 credits) – satisfied by CH 1010

ARTS AND HUMANITIES: LITERATURE (3 credits)

- ENGL 2XXX or certain foreign language literature courses

ARTS AND HUMANITIES: NON-LITERATURE (3 credits)

- Select from list

SOCIAL SCIENCES (6 credits) – TWO courses with different prefixes

- Select two with different prefixes from list

GLOBAL CHALLENGES (6 credits) – TWO courses with at least one at 3xxx level or higher.

- CANNOT be transfer courses
- ENGR 1020 counts for 3 credits of Global Challenges ONLY if taken Summer 2022 or later, taken at Clemson
- For second course (both courses if needed), select from list
- CANNOT be combined with A&H/SS requirements

GENERAL EDUCATION REQUIREMENTS 2021-2022 AND EARLIER

See catalog for details at <https://catalog.clemson.edu>.

In the Clemson University Catalog System box select 2021-2022 Undergraduate Catalog (or desired year). Then select General Education.

ENGLISH COMPOSITION (3 credits) – ENGL 1030

ORAL COMMUNICATION (3 credits)

– COMM 1500, COMM 2500, or approved honors/cluster

MATHEMATICS (3 credits) – satisfied by MATH 1060

NATURAL SCIENCES WITH LAB (4 credits) – satisfied by CH 1010

MATH OR NATURAL SCIENCES (3 credits) – satisfied by MATH 1080

ARTS AND HUMANITIES: LITERATURE (3 credits)

– ENGL 2XXX or certain foreign language literature courses

ARTS AND HUMANITIES: NON-LITERATURE (3 credits)

– Select from list

SOCIAL SCIENCES (6 credits) – TWO courses with different prefixes

– Select two with different prefixes from list (not AGRB/ECON)

CROSS-CULTURAL AWARENESS (CCA) (3 credits)

and SCIENCE AND TECHNOLOGY IN SOCIETY (STS) (3 credits)

– Select from lists; can be combined with other requirements

SOUTH CAROLINA REACH ACT REQUIREMENT

All undergraduate students who enter the university during summer 2021 or afterward must pass one course that has been approved as meeting the South Carolina REACH Act requirement. Successful completion of coursework in compliance with the REACH Act is required for graduation.

- Transfer students are not required to meet the South Carolina REACH Act.
- Note that the REACH Act requirement is met by a student completing AP, IB or dual enrollment coursework, not as a result of their receiving college credit based on their AP/IP test scores.
- Students may request that a course taken at another institution be evaluated to determine if it satisfies the South Carolina REACH Act requirement.
- A student's REACH Act status can be found in DegreeWorks in the REACH Act block.
- Current courses meeting the requirement: HIST 1010, POSC 1010, POSC 1030.
- This course may count as a requirement in any part of the program of study, including the major, minor, general education or as a free elective.

TECHNICAL REQUIREMENTS

Also known as senior technical electives, these are chosen from lists specific to EE and to CpE available at https://www.clemson.edu/cecas/departments/ece/resources/undergrad_resources/curriculum.html

EE students must take 3 EE technical requirements.

CpE students must take 3 CpE technical requirements plus one application of probability requirement (4 courses). No double counting is permitted, even though the courses satisfying the application of probability requirement are also on the CpE technical requirement list.

Students are free to choose courses for the technical requirements from a specific focus area or from multiple areas. Students should seek guidance from their advisors if they are unsure of what to choose.

A group of courses have a limitation that at most one such course may be taken from this group. This group is indicated on the technical elective lists.

SPECIAL ELECTIVE (2022-2023 catalog year)

A global challenge 3xxx or higher course, an additional HSS course (see EE and CpE curriculum sheets for a link to the list), an additional course from the EE or CpE technical elective list (see respective lists), or an additional advanced mathematics course from a list (see the EE and CpE curriculum sheets). Note that two global challenge courses must be taken (normally one is ENGR 1020) whether the special elective uses this option or not.

SPECIAL ELECTIVE (2021-2022 and earlier years)

An additional HSS course (see EE and CpE curriculum sheets for a link to the list), an additional course from the EE or CpE technical elective list (see respective lists), an additional advanced mathematics course from a list (see the EE and CpE curriculum sheets), or ELE 3010.

Although the special elective can be chosen from technical elective lists, a single course cannot double count as the special elective and a technical elective. For EE students, the special elective also cannot double count as the advanced mathematics requirement.

WEBSITES TO KNOW

https://www.clemson.edu/cecas/departments/ece/resources/undergrad_resources/advising_list.html.

Advising lists.

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

Creative inquiry, design project approval, variance approval forms, honors research, permission to take graduate courses, etc.

COURSE AVAILABILITY

- All REQUIRED ECE classes are offered every fall and spring semester.
- Most required ECE classes are offered online in the summer. Offerings are enrollment dependent. ECE 4950, ECE 4960, and ECE 3270 are not available in the summer. See https://www.clemson.edu/cecas/departments/ece/document_resource/undergrad/Summer_Prog_Flyer.pdf for more information.
- ECE technical electives are usually available once per year. Some are also available in summer. The technical elective lists include tentative projections of when courses 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.

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.

CURRICULAR RULES OF PROGRESS

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 (GPA) of at least 2.0 is 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 is below 2.0. Only a limited number of such courses will be permitted. The variance committee will in most cases limit which courses a student can take.

A GPR below 2.0 also leads to academic probation – and the university will specify additional requirements on a student's performance in the following semester. Failure to meet these requirements can lead to suspension and ultimately dismissal.

THE PRE-REGISTRATION ADVISING FORM

Form is fillable. Use Adobe Acrobat (no other tool) to fill out.
Do not fill out on your phone.



ECE Advising Worksheet

Electrical Engineering

Name	
CID#:	C
Email:	@clemson.edu
Curric. Year (see DegreeWorks)	

Required Courses: Indicate “C” if completed; “P” if in progress; “R” if retaking.

Year 1 Sem 1 Courses

ENGR 1020 ¹ (3)	
CH 1010 (4)	
ENGL 1030 (3)	
MATH 1060 ² (4)	
A&H/SS ³ (3)	

Year 2 Sem 1 Courses

CPSC 1110 (3)	
ECE 2010 (3)	
ECE 2020 (3)	
ECE 2090 (1)	
ECE 2110 (1)	
MATH 2060 (4)	
PHYS 2210	

Year 3 Sem 1 Courses

ECE 3110 (1)	
ECE 3200 (3)	
ECE 3300 (3)	
ECE 3710 (3)	
ECE 3720 (1)	
ECE 3800 (3)	
ADV MATH ⁵ (3)	

Year 4 Sem 1 Courses

ECE 4090 (3)	
ECE 4270 (3)	
ECE 4950 (2)	
EE TECH ⁷ (3)	
COMM ⁸ (3)	

Year 1 Sem 2 Courses

ENGR 1410 ⁴ (3)	
CH 1020 (4)	
MATH 1080 (4)	
PHYS 1220 (3)	
A&H/SS ³ (3)	

Year 2 Sem 2 Courses

ECE 2120 (1)	
ECE 2620 (3)	
ECE 2720 (3)	
ECE 2730 (1)	
MATH 2080 (4)	
A&H/SS ³ (3)	

Year 3 Sem 2 Courses

ECE 3120 (1)	
ECE 3170 (3)	
ECE 3210 (1)	
ECE 3600 (3)	
ECE 3810 (3)	
ENGL 3140 ⁶ (3)	

Year 4 Sem 2 Courses

ECE 4960 (2)	
A&H/SS ³ (3)	
EE TECH ⁷ (3)	
EE TECH ⁷ (3)	
SPECIAL ⁹ (3)	

THE PRE-REGISTRATION ADVISING FORM

Requirement Checks: Give course and number (e.g., ENGR 1020) if requirement has already been met.

Lit ³		STS ^{3,10}		GLCH ^{1,12}		Tech ⁷	
Non-lit ³		CCA ^{3,10}		GLCH ^{9,12}		Tech ⁷	
SS ³						Tech ⁷	
SS ³		Reach ^{3,11}		Special ⁹			

Fall advising is for spring courses. Spring advising is for summer and fall courses.

Semester	Year

Course & No. (e.g. ENGR 1020)	Credits

Course & No. (e.g. ENGR 1020)	Credits
Total Credits	
<input type="text"/>	

Summer Courses	
Course & No. (e.g. ENGR 1020)	Credits
Summer Total Credits	
<input type="text"/>	

Sign digitally by simply clicking on the signature line and following the prompts. Do not use Adobe's other signature tools. Otherwise, the advisor will not be able to sign the form, modify selections, or enter the PIN.

I (the student) understand that I am solely responsible for satisfying the curricular requirements for my chosen field of study.

Required: Student Signature and Date

Required: Advisor Signature and Date

Registration PIN:

FINDING COURSES WITH DESIRED ATTRIBUTES WHEN SIGNING UP FOR CLASSES

1. Go to Browse Course Catalog from iROAR/Student/Registration.
2. Select the appropriate Term (semester).
3. Go to Advanced Search. Click on Attributes and select the attribute(s) you wish, such as:
 - Arts & Hum Lit Gen Ed Req
 - Arts & Hum Non-Lit Gen Ed Req
 - Social Sciences Gen Ed Req
 - CrossCultural Aware Gen Ed Req
 - Sci and Tech in Soc Gen Ed Req
 - GlobalChall Gen Ed Req

If you select multiple attributes, it will only find courses that simultaneously satisfy all of them. This feature is useful when looking for STS and CCA courses.
4. Click the search button on the bottom.

GET ACADEMIC AND OTHER 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 (IEEE Honor Society)

Tutoring for most ECE courses

CAPS (Counseling and Psychological Services)

<https://www.clemson.edu/campus-life/student-health/caps/>

Advice, in-person single and group counseling, online wellness videos, etc.

DO AN ECE CREATIVE INQUIRY (CI)!

<http://www.clemson.edu/centers-institutes/watt/creative-inquiry/>

ECE 2990, 3990, or 4990.

3 hours of ECE 4990 can satisfy one ECE technical elective
(part of the 3-hour limitation category)

Must complete ECE CI approval form to sign up.
Talk to CI professor before filling out form.

To learn more about current projects:

https://www.clemson.edu/centers-institutes/watt/creative-inquiry/about/current_projects.html

Choose *College of Engineering, Computing, and Applied Sciences* and in the search box enter "electrical" or "computer".

Can also look for current sections in iROAR.

CONSIDER A CO-OP OR INTERNSHIP!

CO-OP Program

https://career.sites.clemson.edu/cooperative_education/

Enter as sophomores or juniors; minimum GPA 2.5

2 semesters plus 1 summer

Hendrix Center, Suite 316

Contact early in fall for spring co-op; early in spring for summer or fall co-op

Internship

https://career.sites.clemson.edu/internship_programs/

Off-campus and on-campus (UPIC)

CALHOUN HONORS PROGRAM

<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 (only available fall) or H3170 (only available spring). Also H3000 (Jr. Honors Seminar-1 credit); 4 additional credits and a research project/honors thesis.

<http://www.clemson.edu/cecas/departments/ece/academics/undergrad/honors.html>

STUDY ABROAD PROGRAMS

<http://www.clemson.edu/studyabroad/>

Recommend going EARLY and not trying to take technical ECE classes because few transfer over. Better to take requirements for a minor or gen-ed classes.

POPULAR MINORS

See catalog for details. In general, minors are at least 15 credits, of which at least 9 are at the 3000 or 4000 level. Courses in the minor can be double counted with courses used for the major. Triple counting is not allowed.

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 credits; CpE: 6 extra credits (3 credits can be special elective)

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

Computer Science Minor: 16 credits
EE: 16 extra credits ; CPE: 10 extra credits
CPSC 2120 plus 9 hours 3xxx or 4xxx plus prerequisite 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/

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Questions?