WELCOME to the Department of Electrical and Computer Engineering!

Contents

People to Know

Patty McNulty: Academic Advisor – 102A Riggs
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Dr. Carl Baum:
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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. You will receive an email from Patty and from your advisor when it is time to begin advising.

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

Email Patty McNulty any time in the semester for questions related to significant 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.

DegreeWorks and Catalog Year

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 EE or CpE Advising Form.

If you are officially an EE or CpE major: 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 work from the correct Catalog Year, or you are likely to be misadvised. Use the advising form that matches your catalog year.

If you are still in General Engineering or in another major, you will be advised within that major.

The Curriculum
Freshman Year 2023-2024 and 2024-2025

Semester 1	Semester 2
ENGR 1020 Engr. Disc. & Skills (3)	ENGR 1410 Prog. & Prob. Solving (3)
CH 1010 General Chemistry (4)	MATH 1080 Calculus II (4)
ENGL 1030 Comp. & Rhetoric (3)	PHYS 1220 Physics with Calc. I (3)
MATH 1060 Calculus I (4)	A&H/SS Req. #2 (3)
A&H/SS Req. #1 (3)	A&H/SS Req. #3 (3) – CPE ONLY
	CH 1020 General Chem. (4) – EE ONLY

A&H/SS Requirements

ARTS AND HUMANITIES: LITERATURE (3 credits)
Choose from ENGL 2020, 2120, 2130, 2140, 2150, 2160 or selected courses in CHIN, FR, GER, HON, ITAL, JAPN, RUSS, SPAN.

ARTS AND HUMANITIES: NON-LITERATURE (3 credits)
Choose from selected courses in AAH, ART, ASL, CHIN, ENGL, FR, GER, GW, HIST, HON, HUM, JAPN, LANG, MUSC, PHIL, PRTM, REL, RUSS, SPAN, STS, THEA, WCIN, WS.

SOCIAL SCIENCES (6 credits) – TWO courses with different prefixes. Choose from selected courses in AGRB, ANTH, COMM, ECON, GEOG, HIST, HON, POSC, PRTM, PSYC, SOC. (AGRB and ECON together count as one prefix.)

The lists of courses above are likely not complete. In each case, see DegreeWorks and click on the requirement to see what courses are currently being offered to fulfill that requirement. Or go to the Catalog (https://catalog.clemson.edu/index.php), go to the latest undergraduate catalog, and chose General Education to see the latest master list of courses that meet the requirements.

REACH Requirement

REACH Requirement: HIST 1010, POSC 1010, or POSC 1030, taken at Clemson. This can double count as a SS course if SS rules are followed. Transfer courses generally do not meet this requirement (unless they meet the REACH requirement at another SC school). Passing an AP, IB, or dual enrollment course in US govt or history exempts one from this requirement. For AP & IB, it is the course grade that matters, not the test score. See DegreeWorks for your status.

Sophomore Year 2023-2024 and 2024-2025

Semester 1

CPSC 1110 Intro Prog. in C (3) ('23-'24)
or ECE 2210 Python Prog. (3) ('24-'25)

ECE 2010 Logic & Comp. Dev. (3)
ECE 2090 Logic & Comp. Dev. Lab (1)

ECE 2020 Electric Circuits I (3)
ECE 2110 Electrical Eng. Lab I (1)

MATH 2060 Calc. of Several Var. (4)

PHYS 2210 Physics with Calc. II (3)

Semester 2

ECE 2000 Intro to ECE (1) ('24-'25)

ECE 2620 Electric Circuits II (3)
ECE 2120 Electrical Eng. Lab II (1)

ECE 2720 Computer Org. (3)
ECE 2730 Computer Org. Lab (1)

MATH 2080 Intro to Ord. Diff. Eq. (4)

ECE 2220 C & Unix Prog. (3) – CPE ONLY
A&H/SS Req. #3 (3) – EE ONLY

ECE 2220 for EE Majors

EE majors are strongly encouraged to take ECE 2220, especially if they took ECE 2210 rather than CPSC 1110, as EEs are generally expected to know the C programming language. ECE 2220 for EE majors counts as one of your EE Technical Electives (more on Technical Electives later), so it is not an "extra" course.

EE majors taking ECE 2220 are encouraged to do so in the second semester of the Sophomore year (along with the CpEs) and putting off the third A&H/SS requirement until the senior year.

CPSC 1110 vs. ECE 2210

Beginning Fall 2024, CPSC is no longer offering CPSC 1110. So regardless of one's catalog year, students going forward will be required to take ECE 2210.

Going forward, CPSC 1010 will *not* be accepted as a substitution for ECE 2210.

ECE 2090

Going forward (effective Fall 2025), regardless of catalog year, ECE 2090 will have ECE 2010 as a *prerequisite*, not as "prerequisite or concurrent enrollment." You cannot take ECE 2090 until you have completed ECE 2010 with a C or better.

Students taking ECE 2090 in Fall 2025 or later should delay taking ECE 2730 until they have completed ECE 2090 with a C or better.

Junior Year 2023-2024 and 2024-2025

Semester 1	Semester 2
ECE 3200 Electronics I (3)	ECE 3170 Rand. Signal Analysis (3)
ECE 3110 Electrical Engr. Lab III (1)	
	ECE 3220 Intro Oper. Syst. (3) – CPE ONLY
ECE 3300 Signals, Syst. & Transf. (3)	ECE 3210 Electronics II (3) – EE ONLY
	ECE 3120 Elec. Engr. Lab IV (1) – EE ONLY
ECE 3710 Micro. Interfacing (3)	
ECE 3720 Micro. Interfacing Lab (1)	ECE 3270 Dig. Comp. Des. (3) – CPE ONLY
	ECE 3600 Elec. Power Engr. (3) – EE ONLY
MATH 3110 Linear Alg. (3) – CPE ONLY	
Adv. Math. Req. (3) – EE ONLY	ECE 3520 Prog. Syst. (3) – CPE ONLY
	ECE 3810 Fields, Wav., Ckts (3) – EE ONLY
ECE 2230 Data Str./Alg. (3) – CPE ONLY	
ECE 3800 Electromag. (3) – EE ONLY	MATH 4190 Dsc. Math St. (3) – CPE ONLY
	PCID 3140 Tech. Comm. (3) – EE ONLY

EE Advanced Math Requirement

Select from MATH 3650, MATH 4190, MATH 4340, MATH 4400, MATH 4410, and STAT 4110. (MATH 4190 and MATH 4400 require MATH 3110 as a prerequisite.)

Note that STAT 4110 will not continue to be offered going forward. Students who had hoped to take a statistics course for this requirement can file a variance request to substitute STAT 4110 with MATH 3020.

ENGL 3140 Change

Beginning Fall 2024, ENGL 3140 is no longer available to non-English majors. Instead, students should take PCID 3140. A cluster of courses from AS is an additional option.

Senior Year

Semester 1

ECE 4090 Controls (3)

ECE 4950 Int. Syst. Design I (2)

Oral Comm. Req. (3)

CPE Prob./Stats. Req. (3) – CPE ONLY

ECE 4270 Comm. Sys. (3) – EE ONLY

CPE Tech. Req. #1 (3) – CPE ONLY

EE Tech Req. #1 (3) – EE ONLY

PCID 3140 Tech. Comm (3) – CPE ONLY

Semester 2

ECE 4960 Int. Syst. Design II (2)

A&H/SS #4 (3)

GLCH/Special Req. (3)

CPE Tech. Req. #2 (3) – CPE ONLY

EE Tech Req. #2 (3) – EE ONLY

CPE Tech. Req. #3 (3) – CPE ONLY

EE Tech Req. #3 (3) – EE ONLY

Global Challenges/Special Requirement (3 credits)

The university requires six credits (two courses) of Global Challenges (GLCH). One must be 3000 level or higher; both must be different prefixes. ENGR 1020, if taken at Clemson, meets three credits of the requirement. You will need an additional 3 credits of GLCH otherwise. If you transferred ENGR 1020 or had a transfer course substitution, check DegreeWorks to see if it meets one of the GLCH requirements.

GLCH and the REACH requirements are the ONLY requirements that can be double counted within a major. Effective Fall 2025, ECE 4960 (a required ECE course) will count as a GLCH. So most ECE students going forward will meet all GLCH requirements with ENGR 1020 and ECE 4960.

The Special Requirement must be taken by all students even if they have met all GLCH requirements. If the six GLCH credits are already satisfied, then this requirement can be met with any of the following: A course from a list of Humanities and Social Sciences for Engineering Curricula; an additional EE technical requirement course; ECE 4310, 4490, 4740, MATH 3110, 4120, 4190, 4340, 4350, 4400, 4410, 4530, 4540.

EE Technical Elective Requirement

Nine credits selected from BIOE 3700, 4310, 4350, 4710, ECE 2220, 4040, 4050*, 4060, 4080, 4100, 4160, 4180, 4190, 4200, 4210, 4220, 4290, 4300, 4320, 4330, 4340, 4350, 4360, 4370, 4380, 4400, 4420, 4460, 4550, 4570, 4580, 4590, 4600, 4610, 4670, 4680, 4700, 4710, 4730, 4910*, 4920*, 4930*, 4980*, 4990*, and ME 3100. A maximum of three credits of courses marked with an asterisk may be used to satisfy this requirement.

CPE Technical Elective Requirement

Nine credits selected from BIOE 3700*, 4310*, 4350*, 4710*, ECE 3210*, 4050+, 4100, 4160*, 4270, 4290, 4300, 4310, 4380, 4400, 4420, 4490, 4550, 4590*, 4600, 4670, 4680, 4730, 4740, 4780, 4910+, 4920+, 4930+, 4980+, and ECE 4990+. A maximum of six credits of courses marked with a * and a maximum of three credits of courses marked with a + may be used to satisfy this requirement.

CPE Probability/Statistics Requirement

ECE 4270, 4300, or 4400.

Double Counting

A single course cannot count for two requirements within the EE or CPE major. For example, in the CPE curriculum, ECE 4270 is on the list of choices for the CPE Probability/Stats Requirement and on the list of choices for the CPE Technical Requirements. However, ECE 4270 can only be chosen to count for one requirement or the other. You must take four different 3-credit courses, one Prob./Stats requirement course and three technical requirement courses.

Double counting IS permitted for minors. For example, if you are a CPE student and add the Math minor, MATH 3110 and MATH 4190 will each double count for the CPE major and the MATH minor.

Triple counting is never permitted.

Oral Communications Requirement (3 credits)

Select from COMM 1500, COMM 2500, HON 1950, HON 2230, or an approved cluster of courses from AS or ML (and some other options not available to ECE students).

Curriculum Changes

Curriculum changes made in later catalog years do NOT normally affect what courses you take in your current catalog year unless a course is no longer offered. Some changes may be too sudden to show up as changes to curricular requirements.

Examples:
1. The 2024-2025 curriculum requires taking ECE 2000. Students on the 2023-2024 curriculum are encouraged but not required to take ECE 2000.
2. The 2024-2025 curriculum requires taking ECE 2210 in place of CPSC 1110. CPSC 1110 is no longer offered, so 2023-2024 students must now also take ECE 2210.
3. ENGL 3140 has been "moved" to PCID 3140. Students who have not already taken ENGL 3140 must take PCID 3140 instead.

For most students, your EE or CPE major catalog year should be either 2023-2024 or 2024-2025. Apart from exceptions #2 and #3 above, you must follow the requirements of the catalog year to which you are assigned.
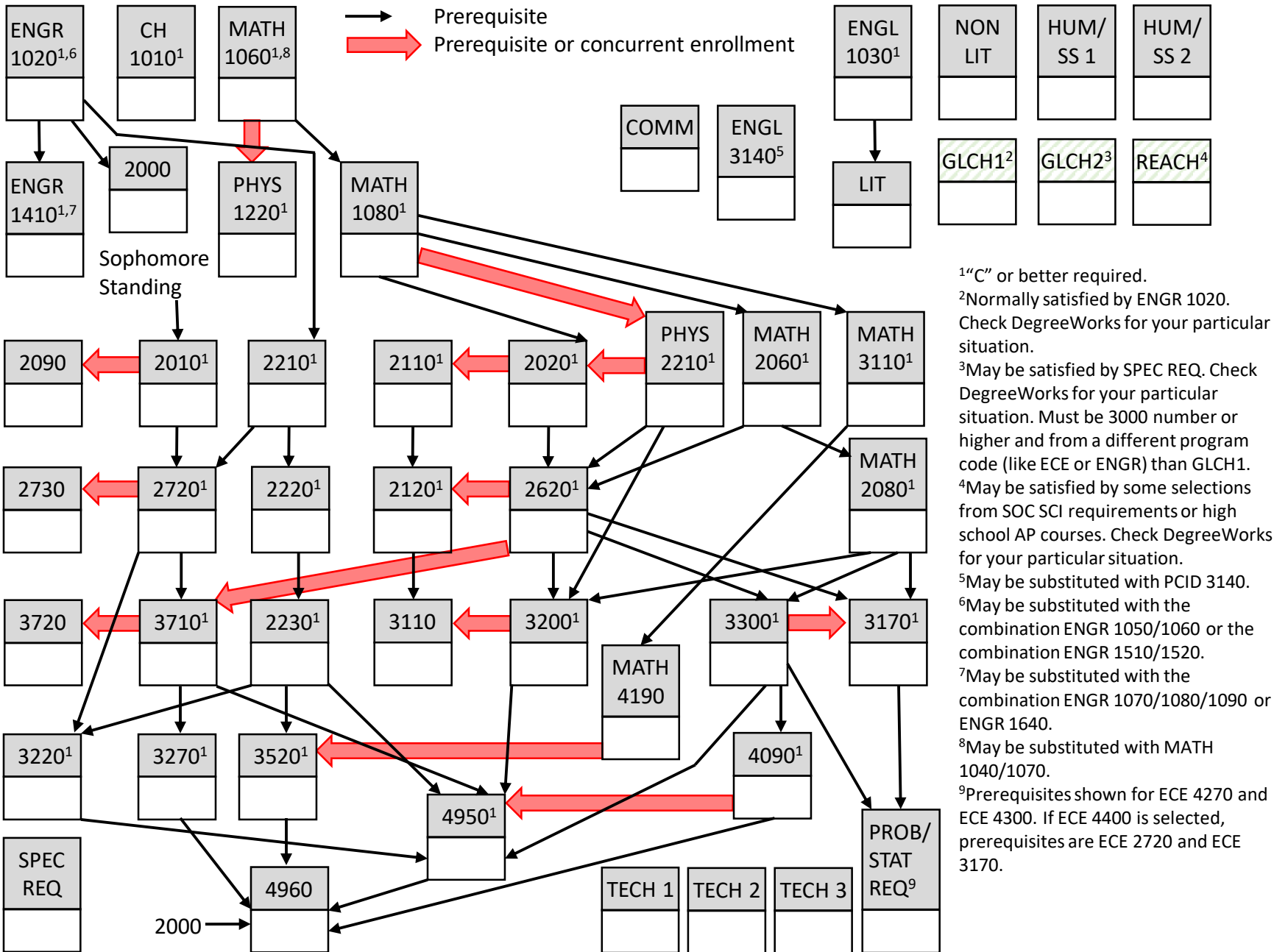
Prerequisites and Prerequisite Changes

A student is only allowed to enroll in a given ECE course when ALL prerequisites have been passed with a grade of C or higher. Students who do not meet these requirements will be dropped from that course.

If course A lists course B as "Prerequisite or concurrent enrollment" and you drop course B, then you must also drop course A.

In contrast to curriculum changes, prerequisite changes DO affect all students when they take place. Prerequisite changes are NOT tied to catalog year. However, ECE will "grandfather" in students on older curriculum years when appropriate. For example, ECE 2720 now lists ECE 2210 as a prerequisite rather than CPSC 1110. But students who took CPSC 1110 will still be allowed to take ECE 2720 despite the change in prerequisites.
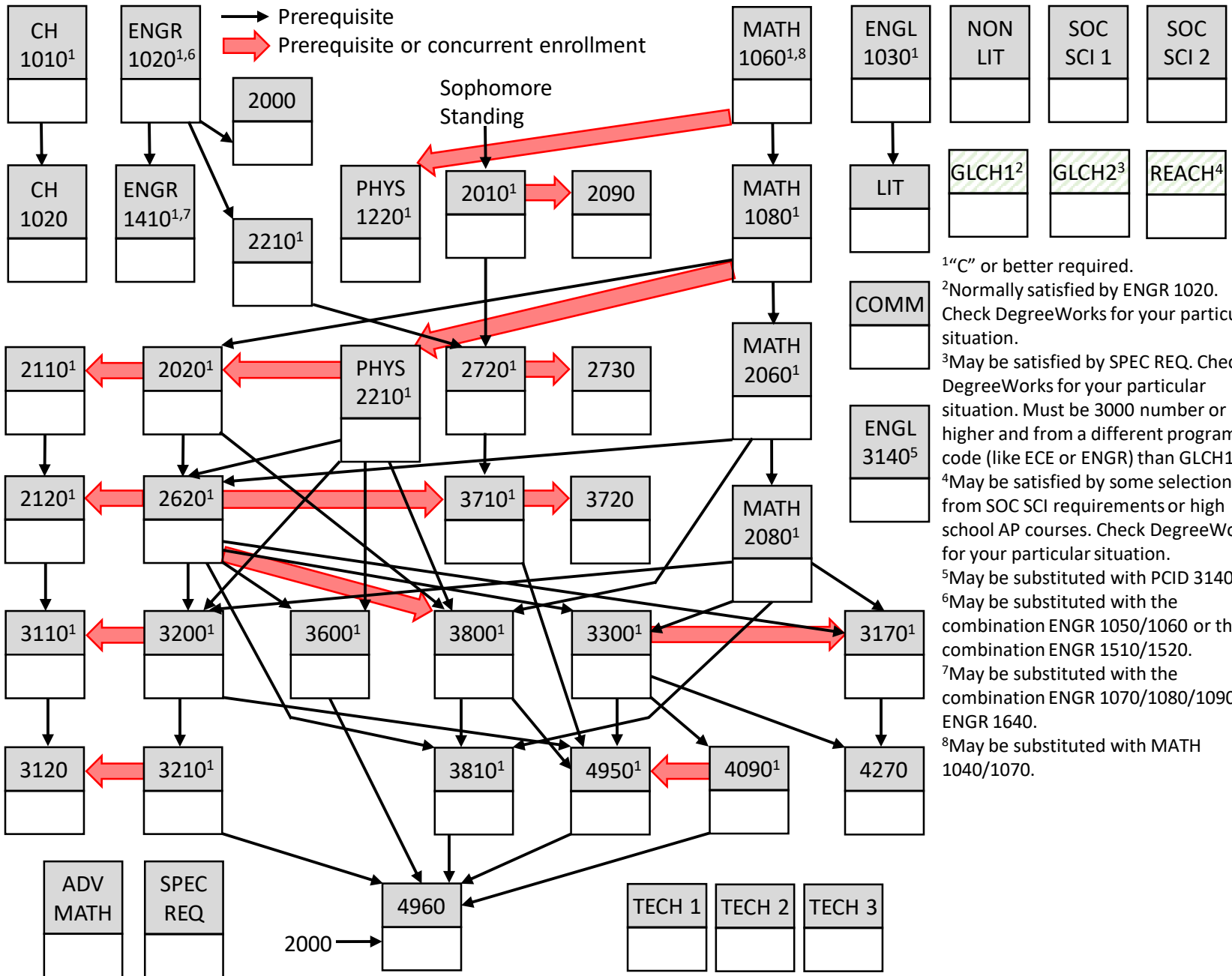
In most such cases, a special holding section will be used for you to sign up for your desired course. After final grades come out, you will be moved into the desired course provided you received a satisfactory grade on the old prerequisite (as well as any other prerequisites that did not change).

Clemson Computer Engineering Curriculum Catalog 2024-2025

Legend:
- → Prerequisite
- ⇒ (red) Prerequisite or concurrent enrollment

Course boxes:

- ENGR 1020[1,6]
- CH 1010[1]
- MATH 1060[1,8]
- ENGL 1030[1]
- NON LIT
- HUM/SS 1
- HUM/SS 2
- COMM
- ENGL 3140[5]
- ENGR 1410[1,7]
- 2000
- PHYS 1220[1]
- MATH 1080[1]
- LIT
- GLCH1[2]
- GLCH2[3]
- REACH[4]

Sophomore Standing

- 2090
- 2010[1]
- 2210[1]
- 2110[1]
- 2020[1]
- PHYS 2210[1]
- MATH 2060[1]
- MATH 3110[1]
- 2730
- 2720[1]
- 2220[1]
- 2120[1]
- 2620[1]
- MATH 2080[1]
- 3720
- 3710[1]
- 2230[1]
- 3110
- 3200[1]
- 3300[1]
- 3170[1]
- MATH 4190
- 3220[1]
- 3270[1]
- 3520[1]
- 4090[1]
- 4950[1]
- 4960
- SPEC REQ
- 2000
- TECH 1
- TECH 2
- TECH 3
- PROB/ STAT REQ[9]

Notes:

[1] "C" or better required.

[2] Normally satisfied by ENGR 1020. Check DegreeWorks for your particular situation.

[3] May be satisfied by SPEC REQ. Check DegreeWorks for your particular situation. Must be 3000 number or higher and from a different program code (like ECE or ENGR) than GLCH1.

[4] May be satisfied by some selections from SOC SCI requirements or high school AP courses. Check DegreeWorks for your particular situation.

[5] May be substituted with PCID 3140.

[6] May be substituted with the combination ENGR 1050/1060 or the combination ENGR 1510/1520.

[7] May be substituted with the combination ENGR 1070/1080/1090 or ENGR 1640.

[8] May be substituted with MATH 1040/1070.

[9] Prerequisites shown for ECE 4270 and ECE 4300. If ECE 4400 is selected, prerequisites are ECE 2720 and ECE 3170.

Clemson Electrical Engineering Curriculum Catalog Year 2024-2025

Legend:
- → Prerequisite
- ⇒ (red) Prerequisite or concurrent enrollment

Courses shown:
CH 1010[1], ENGR 1020[1,6], 2000, MATH 1060[1,8], ENGL 1030[1], NON LIT, SOC SCI 1, SOC SCI 2

Sophomore Standing

CH 1020, ENGR 1410[1,7], 2210[1], PHYS 1220[1], 2010[1], 2090, MATH 1080[1], LIT, GLCH1[2], GLCH2[3], REACH[4]

COMM

2110[1], 2020[1], PHYS 2210[1], 2720[1], 2730, MATH 2060[1]

ENGL 3140[5]

2120[1], 2620[1], 3710[1], 3720, MATH 2080[1]

3110[1], 3200[1], 3600[1], 3800[1], 3300[1], 3170[1]

3120, 3210[1], 3810[1], 4950[1], 4090[1], 4270

ADV MATH, SPEC REQ, 4960, TECH 1, TECH 2, TECH 3

2000 → 4960

Footnotes:

[1] "C" or better required.

[2] Normally satisfied by ENGR 1020. Check DegreeWorks for your particular situation.

[3] May be satisfied by SPEC REQ. Check DegreeWorks for your particular situation. Must be 3000 number or higher and from a different program code (like ECE or ENGR) than GLCH1.

[4] May be satisfied by some selections from SOC SCI requirements or high school AP courses. Check DegreeWorks for your particular situation.

[5] May be substituted with PCID 3140.

[6] May be substituted with the combination ENGR 1050/1060 or the combination ENGR 1510/1520.

[7] May be substituted with the combination ENGR 1070/1080/1090 or ENGR 1640.

[8] May be substituted with MATH 1040/1070.

Eight-Semester Plans

Use these to determine what to take each semester. If you get out of sequence, use the flowcharts (at the same link) to determine what you can take. Technical elective lists are also here.

Computer Engineering
Bachelor of Science Degree
Curriculum Year 2024-2025
FRESHMAN YEAR

First Semester		Cr	Term Completed		Second Semester		Cr	Term Completed	
CH 1010/1011	General Chemistry and Lab[1]	4			ENGR 1410/1411	Programming and Problem Solving[1,5]	3		
ENGL 1030	Composition and Rhetoric[1]	3			MATH 1080	Calculus of One Variable II[1]	4		
ENGR 1020/1021	Engineering Disciplines and Skills[1,2]	3			PHYS 1220	Physics with Calculus I[1]	3		
MATH 1060	Calculus of One Variable I[1,3]	4				Arts & Humanities/Social Science Req.[4]	3		
	Arts & Humanities/Social Science Req.[4]	3				Arts & Humanities/Social Science Req.[4]	3		
		17					16		

SOPHOMORE YEAR

First Semester		Cr	Term Completed		Second Semester		Cr	Term Completed	
ECE 2010	Logic and Computing Devices[1]	3			ECE 2000	Introduction to ECE	1		

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.

https://www.clemson.edu/registrar/registration-degreeworks/degree-works.html
DegreeWorks

Course Availability

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 2230, ECE 3270, ECE 4950, and ECE 4960 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. However, we have no control over availability of non-ECE courses. It is important to meet with your advisor in a timely fashion and sign up for courses at your time slot.

Two-Attempt Rule

No student may exceed a maximum of two attempts, excluding a W, to successfully complete any ECE course.

"Successful completion" means a C or better if the course is a prerequisite to a required course in the curriculum. It means a D or better if the course is not a prerequisite to a required 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. A variance committee considers all requests. Variance request forms are available on the Forms page of the ECE website.

GPR Requirement

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.

ECE Creative Inquiries

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.

To see what sections are currently offered, use iROAR (e.g. search for ECE 2990).

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.
EE: 6 extra credits

Math Minor: Math 2080 plus 12 hrs 3xxx or 4xxx from list
EE: 9 extra credits; CpE: 6 extra credits

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.

Double Majors

A student may be awarded a single baccalaureate degree with a double major. The two majors may be within a single college or may involve two colleges, but both must be either Bachelor of Arts or Bachelor of Science degree programs. In that a second major is comparable to extended instruction in a minor area, a minor is not required. Otherwise, all major requirements for both programs must be satisfied. (One ceremony – one diploma. If one separates into two diplomas, on different semesters, then additional hours are required.)

EE and CpE Double Major:
EE courses (taking two common technical electives, treating ECE 3210 as an CPE technical elective, taking ECE 2220 as an EE technical elective, and taking MATH 4190 as the advanced math requirement) plus ECE 2230, ECE 3220, ECE 3270, ECE 3520, MATH 3110. 15 credits.

Email Dr. Russell harlanr@clemson.edu for personal guidance.

Co-ops and Internships

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

Internships
https://career.sites.clemson.edu/internship_programs/
Off-campus and on-campus (UPIC)

Honors and Study Abroad Programs

Honors College

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

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.

FE Exam and BS-to-Grad Program

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
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 and email Dr. Russell at
harlanr@clemson.edu for more details.

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Questions?