

Updated April 11 2020

Hello dear incoming ECE Freshmen,

Welcome to the UIUC ECE department. This recommended plan is suggested because many seniors have found this workload more suited if you wish to:

1. Graduate in 3/3.5 years
2. Gain access to more interesting classes early on

Here are the recommended (please take them for your own sake) courses for your first year. Many seniors feel it manageable because of the rigor we received in Singapore.

- ECE 110 – Introduction to Electronics (3 hours)
- ECE 120 – Introduction to Computing (4 hours)
- ECE 210 – Analog Signal Processing (4 hours)
- ECE 220 – Computer Systems & Programming (4 hours)
- PHYS 211 – Univ. Physics: Mechanics (4 hours)
- PHYS 212 – Univ. Physics: Elec & Mag (4 hours)
- PHYS 213 – Univ. Physics: Thermal Physics (2 hours)
- PHYS 214 – Univ. Physics: Quantum Physics (2 hours)
- MATH 220/221 – Calculus I (5 hours/ 4 hours)
- MATH 231 – Calculus II (3 hours)
- MATH 241 – Calculus III (4 hours)
- MATH 286 – Introduction to Differential Equations Plus (4 hours)
- RHET 105 – Principles of Composition (4 hours)
- CHEM 102/103 – General Chemistry I (3 hours)/ General Chemistry Lab I (1 hour)

Notes (as of Fall 2019):

1. It is assumed that you have some of the above credits coming in (or via proficiency testing¹). Or else, it is not realistic to complete all of the above in 1 year.
2. You can get credits for MATH 220 if you have H2 Mathematics (A-levels) or have gotten 4 or 5 on AP Calculus AB. You can get credits for MATH 220 and MATH 231 with 4 or 5 on AP Calculus BC.
3. It is highly recommended to take proficiency tests for MATH 231 (Calc 2) and start with MATH 241 (Calc 3), in order to be able to take ECE 210 in your freshman year. ECE 210 requires credits or concurrent enrolment in MATH 286, which has MATH 241 as a prerequisite. The Math department does not check for prerequisite fulfilment in for MATH 241.
4. You can get credits for PHYS 211 & PHYS 212 if you have taken H2 Physics (A-levels) or have gotten 5 on Physics C AP test. Proficiency tests are available for PHYS 211-214. Only 1 exam can be taken per semester. PHYS 212 and 213 might check for credits or concurrent registration with MATH 241. (in case you find yourself unable to register for them)
5. You only need to take RHET 105 if you have not scored 700 or above for the EBRW section of your SAT².
6. Credits for CHEM 102 are available for people who haven't taken H2 Chemistry (A-Levels) or have gotten 3 and above on AP Chemistry. Only the former gives credits for CHEM 103, but it is not necessary to take 103 if you have AP credit for 102³. Passing the proficiency test for CHEM 102 waives the need for CHEM 103 (Please verify with an ECE advisor)
7. Refer to the school's websites for latest updates.

The norm for the university is to split half the students to take ECE 110 for the first semester and the other half to take ECE120⁴. CompEs start with ECE 120, while EEs start with ECE 110. By right, concurrent enrolment is not allowed but this has not been enforced by the online registration system (as of Fall 2019).

Note: Due to the department being increasingly strict about getting students to follow the school's designed ECE curriculum, it might not be possible to take both. This only sets you back for some classes by one semester - which isn't actually that big of a deal.

Usually, when you go for advising during your orientation, speak to your advisor about your tight schedule (you have to complete by 3 years due to tight budget, commitments, scholarship requirements, etc.) and they will usually let you take BOTH ECE 110 and ECE 120 together during the first semester. It can be done and has been done many times before by many seniors. Also, speak to Professor Schmitz⁵ if you're not scheduled to take it during your first semester. Professor Schmitz is quite a good lecturer for the course. Professor Levchenko⁶ is a very good lecturer for ECE 120.

NOTE: Your advisor will definitely suggest a very light course load for your first semester. It is up to you to choose your intended course load. We recommend you take a heavier course load at the beginning so that you have less harder classes to take together later on.

¹ For updated information, refer to <https://citl.illinois.edu/citl-101/measurement-evaluation/placement-proficiency/proficiency-testing>. Also refer to the cutoff scores to see what credits you would have.

² Other ways to get proficiency for RHET 105: <https://citl.illinois.edu/citl-101/measurement-evaluation/placement-proficiency/proficiency-testing/subjects-with-proficiency-exams/rhetoric-proficiency>

³ https://ece.illinois.edu/academics/ugrad/freshmen/advice_course

⁴ This is primarily due to a demand-supply issue, hence the ECE department came up with this idea.

⁵ <https://www.ece.illinois.edu/directory/profile/cdschmit>

⁶ <https://ece.illinois.edu/about/directory/faculty/klevchen>

Next is RHET 105. The school normally splits half the freshman based on their University Identification Number (UIN) by even or odd. You could try to appeal or take it the second semester. It will not affect your education path greatly, so take it when convenient.

PHYS 213 and PHYS 214 are half semester courses, and many people take them together in one semester. PHYS 214 is offered in the first half and PHYS 213 in the second. The first half of PHYS 214 is basic physics: waves and superposition - which you'll find quite familiar as it is similar to 'A' Level physics. The second half will cover more unfamiliar areas such as quantum physics. More often, PHYS 213 will prove to be harder due to its bad course structure and it being offered during the second half of the semester, where all your other classes get harder and more time-consuming. 213/214 might not have available slots during your first semester as there will be many non-freshmen taking the course.

Important courses to watch out for in the first few semesters:

ECE 110/120: These are your introductory courses for all ECEs. They are best taken early as they are prerequisites to all ECE 210/220 respectively.

ECE 210: This is a prerequisite for classes on the EE side. (Semiconductors, RF, Electric Machinery, Circuits etc.) This requires MATH 286 taken concurrently or as a prerequisite. Make sure to plan for this course.

ECE 220: This is a prerequisite for classes on the CompE side (OS, Data Structures, Computer Architecture etc.)

CS 225: Data structures. This is a prerequisite for most CS courses. This is a very useful course to take to get a software internship. Make sure to plan for this course. As programming skill is increasingly valuable even for EEs, EEs should consider taking this course as well, despite it not being mandatory.

A possible 1st year schedule will look like:

1st Semester	2nd Semester
ECE 110 (3 hours)	ECE 210 (4 hours)
ECE 120 (4 hours)	ECE 220 (4 hours)
MATH 241 (4 hours)	MATH 286 (4 hours)
RHET 105 (4 hours)/CHEM 102+103(4 hours)	PHYS 213 (2 hours)
Gen. Ed. of your choice (3 hours)	PHYS 214 (2 hours)
TOTAL: 18 hours	TOTAL: 16 hours

Notes:

- For people without credits in MATH 231, you may choose to take the Proficiency Test⁷ for it in the first semester when school starts. If you manage to pass it, you can take MATH 241 right away in your first semester. You should first register for MATH 231 and switch over to MATH 241 only after you have gotten the results of the Proficiency Test. If you're confident, you can register for MATH 241, so that you can register for PHYS 213.
- Also, some people also choose to take Proficiency Tests for PHYS 213 and PHYS 214⁸. If you want to do that, you can replace them with some Gen. Ed. Modules in your second semester.
- Lastly, for Computer Engineering majors, you might want to take CS 173/MATH 213 in your first year, as that will allow you to take CS 225 (Data Structures) as soon as possible. CS 225 is an important foundation course that will prepare you for internships and future coursework (on the CS side). Alternatively, the CS 173 proficiency test is known to be relatively easy as well. Another alternative is enrolling in MATH 213.
- With sufficient planning, it is possible to meet the Junior Eligibility rule and take 300 and 400 level ECE technical courses in your 3rd or 4th semester. (A more detailed discussion on this is included later in the document)

⁷ <http://www.math.uiuc.edu/UndergraduateProgram/profic.html>
<https://math.illinois.edu/resources/departement-resources/syllabus-math-231>

⁸ <http://physics.illinois.edu/courses/proficiency.asp>

Here is the list of classes you get credit for if you took the subjects in the ‘A’ Levels (Not all subjects listed)⁹:

- Biology – IB 150, MCB 150
- Math – MATH 220
- Physics – PHYS 211, PHYS 212
- Chemistry – CHEM 202, CHEM 203, CHEM 204, CHEM 205
- Economics – ECON 102, ECON 103

Literature, History and other subjects can give credits too. “X--” credits can only count as free electives. You need 128 hours to graduate. If you come in with about 32 hours, it is very possible to graduate in 3 years. Proper planning is needed to make your life easier without taking summer school or overloading (aka killing yourself).

Still, be prepared to work very hard because you are in one of the top engineering schools in the U.S. Nevertheless, don’t forget to relax, have some fun and mingle around with the Americans and other International students when you have the time. This is what overseas study is all about.

Good luck!!!

ECE SSA Seniors

⁹<https://citl.illinois.edu/citl-101/measurement-evaluation/placement-proficiency/cutoff-scores-archives/>

MORE ON SCHEDULE PLANNING

- The Junior Eligibility (2.25) Rule: To qualify for registration in 300 and 400 level technical ECE courses shown in third (junior) year of the curriculum, a student must have completed, with a combined GPA of 2.25, these technical core courses: MATH 221(220), 231, 241, 286; CHEM 102, 103; PHYS 211, 212, 213, 214; ECE 110, 120, 210, 220
- For CompE students, Math 213/CS 173 and CS 225 are also in this "technical core" – Allegedly not enforced
- In the calculation of the technical core GPA, only the best grades of repeated technical core courses are used. The ECE courses specified in the junior year that can only be taken after completing the Junior Eligibility Rule include the following: ECE 310, ECE 313, ECE 329, ECE 330, ECE 340, ECE 342, ECE 350, ECE 385, ECE 391, and all 400 level ECE classes. In addition, 300 and 400 level Technical elective courses are also only allowed after Junior Eligibility is attained.

1 st Semester	2 nd Semester	3 rd Semester
MATH 241 (4 Credits)	MATH 286 (4 Credits)	CS 225 (4 Credits)
ECE 110 (3 Credits)	ECE 210 (4 Credits)	300-level ECE courses
ECE 120 (4 Credits)	ECE 220 (4 Credits)	400-level ECE courses (for EE and possibly for CompE)
PHYS 213 (2 Credits)	MATH 213/CS 173 (3 Credits)	
PHYS 214 (2 Credits)	Gen Ed (3 Credits)	
Gen Ed (3 Credits)		
Total : 18 hours	Total: 18 hours	

Assumptions: Credits are obtained for MATH 220/221, MATH 231, CHEM 102, CHEM 103, PHYS 211, PHYS 212 and RHET 105

Notes: CS 173/MATH 213 and CS 225 are not compulsory for EE.

CS 173 requires a proficiency test in CS 125 if you want to take it in the same semester as ECE 220. CS 173 is generally regarded as slightly better than MATH 213 at providing a foundation for CS courses. If you want to take higher level Math courses, you can take MATH 347 instead and take a proficiency test for CS 173.

This is a schedule that allows for Junior Eligibility to be obtained on the 3rd semester (for EE, allegedly the case for CompE). It also allows for CS 225 to be taken in the 3rd semester, which is the earliest possible for ECE. CS 225(Data Structures) is a very useful course for job searching. This is a manageable schedule that makes rapid progress towards clearing the requirements for the degree. By having access to the higher level ECE courses earlier, the hardest courses can be spread out better. If you have more credits than this, a 3-year graduation is very feasible. An A-Level PCME student will find this schedule quite optimal.

1 st Semester	2 nd Semester	3 rd Semester	4 th Semester
MATH 231E (4 Credits)	MATH 241 (4 Credits)	MATH 286 (4 Credits)	ECE 210 (4 Credits)
ECE 110 (3 Credits)	ECE 220 (4 Credits)	CS 225 (4 Credits)	PHYS 214 (2 Credits)
ECE 120 (4 Credits)	CHEM 102 (3 Credits)	PHYS 212 (4 Credits)	300-level ECE courses etc
PHYS 211 (4 Credits)	RHET 105 (4 Credits)	CHEM 103 (1 Credit)	
Gen Ed (3 Credits)	MATH 213/CS 173 (3 Credits)	PHYS 213 (2 Credits)	
		Gen Ed (3 Credits)	
Total : 18 hours	Total: 18 hours	Total : 18 hours	Total:

Assumptions: Credits are obtained for MATH 220/221

Notes: CS 173/MATH 213 and CS 225 are not compulsory for EE.

CS 173 requires a proficiency test in CS 125 if you want to take it in the same semester as ECE 220. CS 173 is generally regarded as slightly better than MATH 213 at providing a foundation for CS courses. If you want to take higher level Math courses, you can take MATH 347 instead and take a proficiency test for CS 173.

MATH 231E: There is a special section for Calculus II for engineering students who are taking it in the first semester because they have Calculus I credit from A-Levels/IB/AP. Your advisor will probably tell you to enroll in MATH 299 on top of MATH 231.

The schedule lets you take 300 level ECE courses on the 4th semester and 400-level the semester after.

It would be advisable to clear some of these technical courses with proficiency tests in order to lighten workload with some Gen Eds and make planning easier. If there is no intention to graduate early, the courses can be spread out over 4 semesters with some additional Gen Eds cleared as well.

UNDERGRADUATE MINORS

If you would like to learn more about the undergraduate minors that are available and what the specific course requirements are for those minors, visit this website: <http://provost.illinois.edu/programs/advising/minors.html>

Some minors that ECE seniors have taken:

Business, Psychology, Computer Science (only for Electrical Engineering major)

TEXTBOOK LIST

(If the course is not listed here, it means either it doesn't require a textbook, OR you will need to buy the notes from the university, OR the textbook is only available in the US)

You can easily borrow textbooks from libraries if you want to save money. It can be renewed like 6 times so you can essentially loan it for the entire semester¹⁰. Also, many of us seniors have textbooks passed down from our predecessors. You can get your textbooks from us.

- ECE 120, ECE 220: Patt & Patel, Intro to Computing Systems, 2nd Ed (\$150 brand new)
- ECE 210: Kudeki and Munson, Analog Signal Processing

USEFUL LINKS

University Bookstores:

Illini Union Bookstore: <http://www.uofibookstore.uiuc.edu/>

- Generally very expensive, buy from here only if necessary. Buy from Amazon or get an international edition textbook if possible.

Website to see if the professor for your course is good: <http://www.ratemyprofessors.com/>

- Small number of reviewers

¹⁰ <https://vufind.carli.illinois.edu/all/vf/> Library loans are free. Also, book your loan early!