# COMPUTER SCIENCE & SECURITY

CURRICULUM UPDATES

# EECS DEPARTMENTAL POLICIES

- Core Sequence:

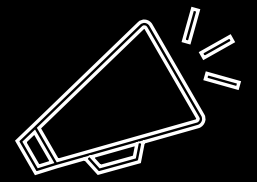
EECS 1012 3.00 (or EECS 1015 3.00 for Computer Science), EECS 1022 3.00, EECS 2030 3.00, and EECS 2011 3.00 (EECS 2101 3.00 effective Fall 2023) are core EECS major courses and should be completed in the first 4 terms of study in order to progress. Note that EECS 2030 3.00 must be successfully completed prior to EECS 2011 3.00 (EECS 2101 3.00 effective Fall 2023).

- 4.50 EECS GPA Pre-requisite:

Most 2000-, 3000-, and 4000-level EECS courses require a cumulative GPA of 4.50 or better over all EECS major courses in addition to other course-specific prerequisites. Note: "Major" courses are all EECS courses with second digit other than 5 and include LE/EECS 1028 3.00 (cross-listed to: SC/MATH 1028 3.00) and LE/EECS 1019 3.00 (cross-listed to: SC/MATH 1019 3.00).

- Course Limits:

To ensure students can get access to the EECS courses they need and to ensure that students' course loads are reasonable, students are ordinarily restricted to taking at most three EECS courses per term. If the student is in their last semester (F,W,S) and can graduate with an extra course then EECS will permit enrolment in the additional course, space permitting. If the student has an OCGPA >= 7 and is not graduating, EECS will allow an extra course, space permitting. The only courses not counted toward the Department’s course limits: all 0.0/1.0 credit EECS courses, MATH 1090, EECS 3000, EECS 4070/80, EECS 4088, EECS 4480, and EECS 4090. Because of limited course availability in Summer terms, the limit is reduced to two.



***Know before you enrol 1.0***

# EECS DEPARTMENTAL POLICIES

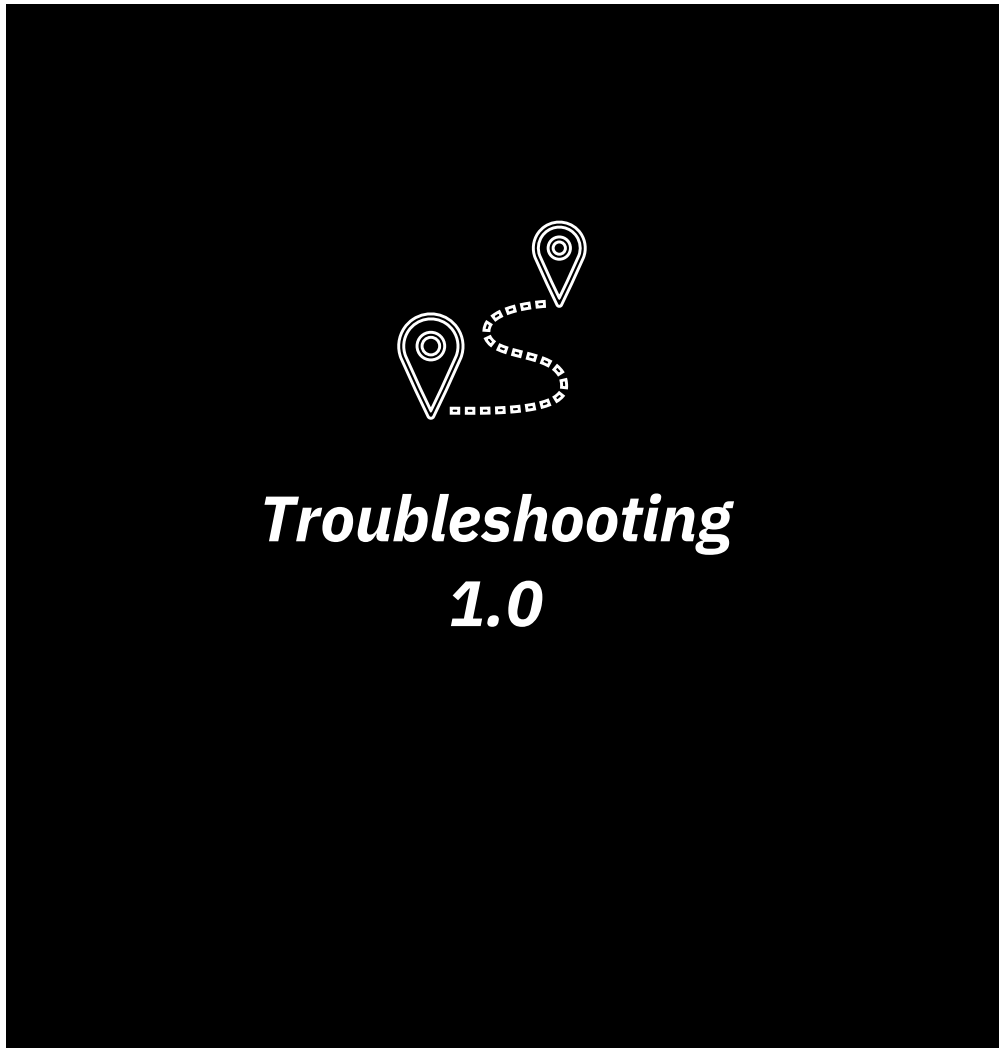
- Enrollment:

Leading up to and at the beginning of each term, the EECS department checks pre-requisites and de-enrolls students who do not satisfy them to make space for students who do. This means we must freeze all enrollments in EECS courses a few weeks before the beginning of the term (so that de-enrolled students do not re-enroll themselves). An unfortunate side-effect of this freezing is that you are not able to transfer between sections or labs of a course. So:

- Enroll in your EECS courses early;
- Choose the section and lab you want before enrolments are frozen; and
- Carefully check that you satisfy the pre-requisites for your courses so that you do not get de-enrolled.
- If an EECS course is full, you can continue trying to add the course via REM, in case some spaces in the course become available.

- NEW Reserved Spaces:

Sometimes, spaces in courses are reserved for certain groups of students. For example, some spaces in E/F/G/H/I/V/X/Y/Z sections of courses are reserved for Engineering students, since they must enrol in those sections, whereas Computer Science, Computer Security, and Digital Media students are allowed to enrol in any section where there is space. Similarly, some spaces in Computer Security courses are reserved for Computer Security students who must take the course in order to graduate. If you get a message that all remaining spaces are reserved, you can contact the EECS undergraduate office for more information.

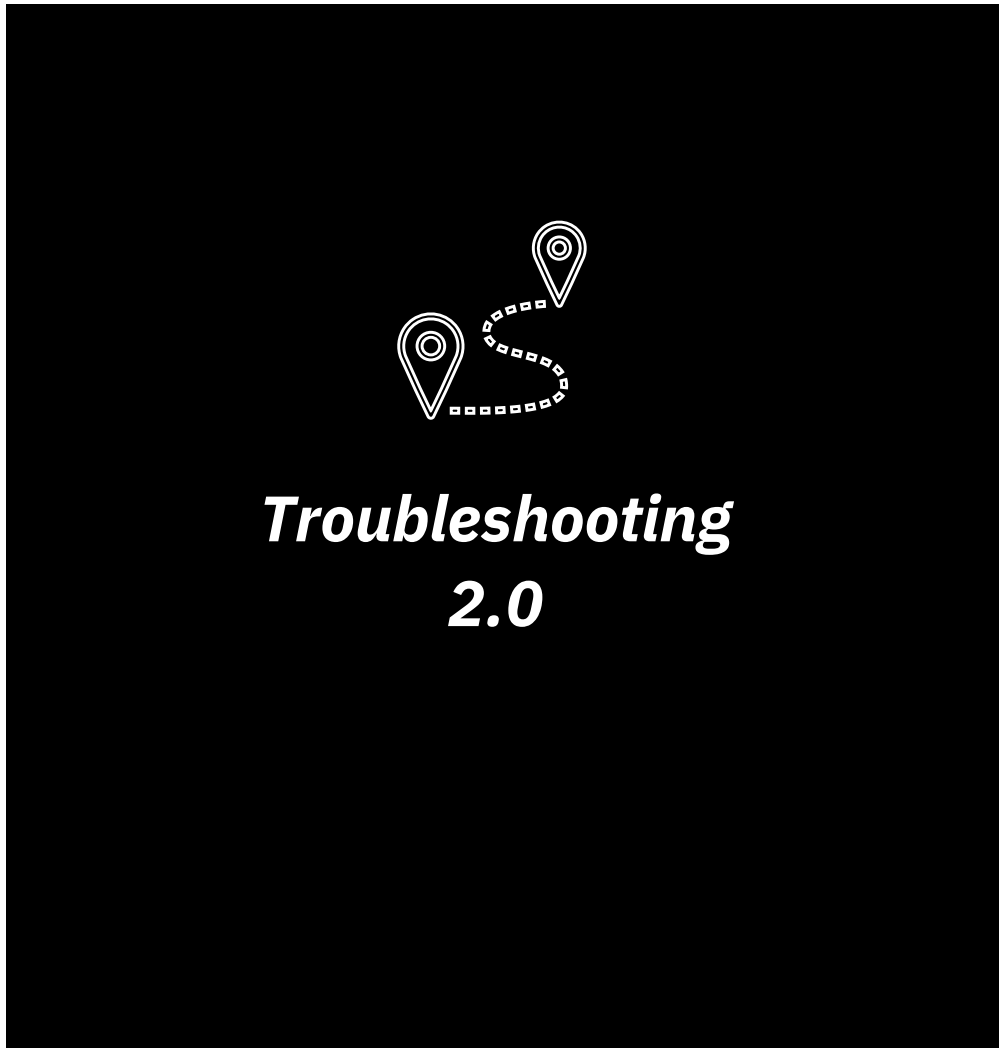


# EECS DEPARTMENTAL POLICIES

- Waiting List:

If you are unable to enroll in an EECS course, visit the EECS Department "Announcements" web page a few weeks before the beginning of the term to enter a waiting list request. The department will do its best to ensure that the students who need a course to make progress towards their degree get access to that course.

- What to do if your EECS GPA falls below 4.50:
  - Identify the issues that caused you to receive a grade below the minimum 4.50 (C to C+) threshold.
  - Do you need to improve your study skills? Explore "GPA Requirements and Additional Support".
  - Repeat EECS courses where your grades are low (especially courses where you earned a grade of E or F).
  - Use resources available in your courses: ask TAs questions in labs, go to instructors' office hours for extra help, make use of supplementary readings or course resources, etc.
  - If you are unsure about what courses you should repeat, connect with an Academic Advisor.



# COMPUTER SCIENCE, COMPUTER SECURITY

NEW

**EECS 4171 3.00 “Advanced Topics in Algorithms”** is a new course and will be offered beginning Fall 2024.

This course will cover two or three topics selected from the following list. - Approximation algorithms for NP-hard problems, which may not find optimal solutions, but are guaranteed to be close to optimal. - Online algorithms, where the input arrives piece by piece and irrevocable decisions about the output must be made before the entire input is known. - Randomized algorithms, which make use of random choices and can sometimes be simpler than their deterministic counterparts while solving the problem with high probability or with good expected resource usage. - Parametrized algorithms, whose complexity is studied in finer detail to see how it depends on multiple parameters, rather than just input size, which can lead to good performance for certain classes of inputs. - Concurrent algorithms, where several processes cooperate to solve a problem and must deal with the difficulties of asynchrony, failures and partial knowledge of the system-wide state. - Parallel algorithms, where many processes operate synchronously on data in shared memory to solve a problem much more quickly than a single process can solve it. - Algorithmic game theory and mechanism design, where algorithms must be designed for multiple agents who have different goals. - Computational geometry, where the goal is to solve problems related to geometric objects such as points, lines, polygons and solid figures. - Combinatorial optimization algorithms for maximizing or minimizing some objective function over a finite set of objects.

**Prerequisites:** Cumulative GPA of 4.50 or better over all major EECS courses (without second digit "5"); LE/EECS 3101 3.00 ; SC/MATH 2030 3.00

**Computer Science students:** EECS 4171 3.00 is optional. If completed, EECS 4171 3.00 will count towards your upper level degree requirements as stated in your Academic Calendar.

**Computer Security students:** EECS 4171 3.00 is optional. If completed, EECS 4171 3.00 will count as an elective credit.

# COMPUTER SCIENCE, COMPUTER SECURITY

RECAP

**EECS 2011 3.00 is renumbered to EECS 2101 3.00 effective Fall 2023:**

The course title remains:

"*Fundamentals of Data Structures*".

The pre-requisites remain:

- Cumulative GPA of 4.50 or better over all major EECS courses (without second digit "5"), AND
- LE/EECS1019 3.00 or LE/EECS1028 3.00 or SC/MATH1019 3.00 or SC/MATH1028 3.00, AND
- LE/EECS1030 3.00 or LE/EECS2030 3.00

**EECS 4484 3.00 "Malware Analysis"** is a new course and will be offered in the future.

This course provides a comprehensive coverage of the construction and development of modern malicious code, the methods employed by malware to exploit weaknesses in systems, as well as the techniques and tools that can be utilized to defend and recover from malware attacks. The course also examines different methods for the identification, investigation, and analysis of malicious code. Prerequisites: LE/EECS 2011 3.00; LE/EECS 3221 3.00; LE/EECS 3482 3.00.

**Computer Security students following the 2022-2023 Academic Calendar:** EECS 4484 3.00 is required as part of the program core.

**Computer Security students following the 2021-2022 Academic Calendar or prior:** EECS 4484 3.00 is optional. If completed, EECS 4484 3.00 will count towards your upper level degree requirements as stated in your Academic Calendar.

**Computer Science students:** EECS 4484 3.00 is optional. If completed, EECS 4484 3.00 will count towards your upper level degree requirements as stated in your Academic Calendar.

# COMPUTER SCIENCE, COMPUTER SECURITY

RECAP

**Foundational Science Requirement (6.00 credits):** PHYS 1010 6.00, PHYS 1410 6.00, and PHYS 1420 6.00 are no longer offered effective Fall/Winter 2020-2021. Instead, BSc and iBSc Computer Science and Computer Security students may select from PHYS 1011 3.00, PHYS 1012 3.00, PHYS 1411 3.00, PHYS 1412 3.00, PHYS 1421 3.00, and/or PHYS 1422 3.00, in addition to the BIOL and CHEM course options already listed in your Academic Calendar.

If transferring *from* Engineering *to* Computer Science or Computer Security:

| If you successfully completed this course while in Engineering: | You are exempt from this course for Computer Science or Computer Security: |
|---|---|
| EECS 1011 3.00 | EECS 1012 3.00 (or EECS 1015 3.00 if pursuing Computer Science)* |
| EECS 1021 3.00 | EECS 1022 3.00* |
| EECS 1028 3.00 | EECS 1019 3.00 |
| EECS 2032 3.00 | EECS 2031 3.00* |
| EECS 3216 3.00 | EECS 3215 4.00* |
| PHYS 1800 3.00, PHYS 1801 3.00, and/or CHEM 1100 4.00 | Count toward 6.00 credit foundational science lab requirement for BSc/iBSc |
| ENG 2003 3.00, ENG 3000 3.0, and/or MECH 2112 3.00 | Count toward 12.00 credit non-science requirement for BSc/iBSc |

**These exemptions do not work in reverse. For example, if you successfully completed EECS 1012 3.00 and/or 1015 3.00 and/or EECS 1022 3.00 while in Computer Science or Computer Security and then subsequently change your program to Engineering, you must still successfully complete EECS 1011 3.00 and EECS 1021 3.00 for Engineering.*