

Electrical and Computer Engineering Department
ECE PhD Qualifying Examination
Spring 2023

This document provides students with the examination framework so that they may prepare for successful completion of this requirement of their doctoral degree.

The QE will be administered as follows:

1. The QE will be administered in Spring semesters only.
2. For Spring 2023, the QE will be administered on **Tuesday March 21, 2023**, from 9:30 am to 4:00 pm with a 90 minute break for lunch at 12:00 pm.
3. The QE will be comprised of two mandatory components, Section A and Section B. For Spring 2023, Section A and Section B each have five (5) different Topics as follows. Topical Questions are derived from a corresponding 3000-level or 4000-level course.

Section A Topics/Related Courses

- | | |
|---------------------------------|-------------------|
| 1. Electronics | (ECE 3200) |
| 2. Digital Design | (ECE 4525) |
| 3. Computer Architecture | (ECE 4570) |
| 4. Linear Systems | (ECE 3710) |
| 5. Probabilistic Methods | (ECE 3800) |

Section B Topics/ Related Courses

- | | |
|-------------------------------------|-------------------|
| 1. Power Electronics | (ECE 4200) |
| 2. Power Systems | (ECE 4300) |
| 3. Digital Electronics | (ECE 4500) |
| 4. Microcontrollers | (ECE 4510) |
| 5. Digital Signal Processing | (ECE 4550) |

4. Each student will answer questions from a total of two Topics: one selected from the 3000/4000 level “Junior” courses listed in Section A and the second selected from the 4000 level “Senior” courses listed in Section B.
5. Students must register for the exam by declaring their intended Topic for Section A and their intended Topic for Section B by 4 pm on the last day of Fall semester classes. **For Spring 2023 QE this deadline is Friday, December 16, 2022.**
6. Each Topical Question will be developed based on the typical content of the corresponding undergraduate course, and topical questions are roughly equivalent to the final examination problems of that course. Syllabi of these can be found on-line.
7. The duration of each Section is 2.5 hours. The QE will thus be 5 hours total, in two separate periods. Section A will be held from 9:30 am to 12:00 pm, and Section B will be held from 1:30 pm to 4:00 pm of the announced day of QE administration.
8. The QE will be closed-book, closed notes.
9. The Department will issue calculators and all writing materials. The students will not be allowed to bring calculators or other electronic devices with them to the examination room. The calculators provided for the QE are either a HP 35s or a TI 36X Pro. Please select and familiarize yourself with one of these calculators prior to the exam. Students will be allowed to check out a calculator for a period of 24 hours two weeks prior to the examination for practice
10. Students are strongly encouraged to discuss the exam in advance with their advisor.

Electrical and Computer QE Pass and Failure/Repeat Policy

1. A student earning a 67% or higher in both QE Sections A and B will receive a “Pass” result.
2. A student
 - A. Earning a score of 67% or higher on one QE Section and a score between 50-66% on the second,
or
 - B. Earning a score between 50-66% on both QE Sectionswill receive a “**conditional pass**”. This student will be allowed to move on with her/his doctoral dissertation work and has to remove the conditional pass by selecting item I or II as follows:
 - I. The student will be required to take the corresponding ECE course(s)* to the QE Section(s) on which he/she scored between 50 and 66% **and** must earn a B or better in the immediate offering of the course(s).

** If a student takes a specified course and fails to achieve a B or better, then the student will be required to retake that specific QE section in which he/she failed to earn at least 67% during the next offering of the QE. If the course is dual-listed (4000 and 5000 level) and the student has already passed one of those two courses, he/she may attempt to earn a B or better in the other course.*

-or-
 - II. The student may elect to simply retake the next offering of the QE and answer the QE Section on which he/she did not score at least 67%.
3. A student receiving less than 50% in Section A and in Section B will receive a “fail” result. He/she is required to take the QE again in the next offering.
4. Any other combination of scores will receive a “fail” result. The student must pass any QE Section on which he/she did not score a minimum of 50% at the next offering of the QE. For any QE Section on which the student scored between 50% and 66%,
 - A. The student will be required to take the corresponding ECE course(s)* to the Section(s) on which he/she scored between 50 and 66% **and** must earn a B or better in the immediate offering of the course(s).

** If a student takes a specified course and fails to achieve a B or better, then the student will be required to retake that specific QE section in which he/she failed to earn at least 67% during the next offering of the QE. If the course is dual-listed (4000 and 5000 level) and the student has already passed one of those two courses, he/she may attempt to earn a B or better in the other course.*

-or-
 - B. The student may elect to simply retake the next offering of the QE and answer any Section on which he/she did not score at least 67%.
5. A student failing the QE twice will be dismissed from the ECE PhD program.

**Department of Electrical and Computer Engineering
Spring 2023 Qualifying Examination Registration Form**

Student Name: _____

Signature: _____

WIN: _____

Email: _____

Due: 4 pm, Friday, December 16, 2022
Must be submitted to the ECE Office.

Section A Topics

CIRCLE ONE:

I intend to answer:

- | | |
|--------------------------|------------|
| 1. Electronics | (ECE 3200) |
| 2. Digital Design | (ECE 4525) |
| 3. Computer Architecture | (ECE 4570) |
| 4. Linear Systems | (ECE 3710) |
| 5. Probabilistic Methods | (ECE 3800) |

Section B Topics

CIRCLE ONE:

I intend to answer:

- | | |
|------------------------------|------------|
| 1. Power Electronics | (ECE 4200) |
| 2. Power Systems | (ECE 4300) |
| 3. Digital Electronics | (ECE 4500) |
| 4. Microcontrollers | (ECE 4510) |
| 5. Digital Signal Processing | (ECE 4550) |