

## QUANTUM INFORMATION SCIENCES CERTIFICATE

A certificate in Quantum Information Science will allow students from a broad range of disciplines to receive formal recognition of their skills, training, and knowledge in the burgeoning field of quantum information science, including quantum computing, quantum communication, and quantum sensing. Students are required to take two courses in quantum information science. Courses under the Freshman Research Initiative (FRI) program will be open to all students, with consent of the instructor. Please contact the course instructor of the FRI course to request permission to join the course. Supplementary courses may be selected to emphasize different focus areas in physics, mathematics, and computer science.

Admission to the certificate is by application only. Admission to the program does not guarantee admission to the courses listed for the certificate. Prerequisites for the courses must be met to gain access to the courses for the certificate. Due to the course prerequisites, this certificate is most appropriate for students studying Physics, Mathematics, Computer Science and Engineering. The certificate program requires 18 semester hours of coursework with a grade of at least C- in each course. Courses that appear in multiple approved course lists may be used to satisfy only one requirement.

### How to Apply for the Quantum Information Science Certificate

**Step 1:** Apply for the Quantum Information Science certificate: [Minor/Certificate Application](#)

**Step 2:** Select "NSC Natural Sciences" in the dropdown menu, and then "QUANTUM INFORMATION SCIENCE (CTENSC08)"

**Step 3:** When you are admitted to the certificate, you will receive a confirmation SAN. Please contact your academic advisor and ask that the Quantum Information Science certificate be attached to your degree profile.

### Course Requirements

Six hours selected from the following courses:

- C S 309: Topics in Computer Science (Topic 1: Quantum Computing I)
- C S 378: Undergraduate Topics in Computer Science (Topic 1: Quantum Computing II)
- C S 358H: Introduction to Quantum Information Science: Honors

Twelve hours selected from among the following supplementary courses:

- PHY 373: Quantum Physics I: Foundations
- PHY 362K: Quantum Physics II: Atoms and Molecules
- C S 331: Algorithms and Complexity or C S 331H: Algorithms and Complexity: Honors or ECE 360C: Algorithms
- C S 358: Introduction to Quantum Information Science: Honors\* or M 375T: Introduction to Quantum Information Science: Honors (M 375T can be taken by non-honors students)
- M 340L: Matrices and Matrix Calculations or M 341: Linear Algebra and Matrix Theory or SDS 329C: Practical Linear Algebra I
- M 346: Applied Linear Algebra
- Independent Research Project; this may be taken, for example, as one of the following courses<sup>1</sup>
  - PHY 371C: Individual Study in Physics

- C S 370: Undergraduate Reading and Research
- M 375C: Conference Course (Computer-Assisted)

**Please Note:**

With the approval of the certificate program faculty, other appropriate courses may be counted toward the certificate requirements.

\*C S 358H Introduction to Quantum Information Science: Honors may only be counted toward one of the certificate requirements.

<sup>1</sup> The student conducts independent research on some aspect of quantum information science and completes a final report describing their work. The topic must be approved by a university faculty or research staff member and will be conducted under their supervision.

Students outside FRI, should contact the Quantum Computing FRI staff to gain access to the FRI courses: <https://fri.cns.utexas.edu/research-streams/quantum-computing>.

**For any inquiries related to the QIS certificate and courses, email [mpaadv@austin.utexas.edu](mailto:mpaadv@austin.utexas.edu) with your name and EID.**