

Quantum Information Science 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. Supplementary courses may be selected to emphasize different focus areas in physics, mathematics, and computer science.

Admission to the certificate is by application only.

Total Hours Required: 18

Requirements

Requirements are listed in the table below. Additional requirements may follow the table, so be sure to read the entire page. Some required courses listed below may also satisfy [General Education](#) requirements, including [Core Curriculum](#). Students should also review the [University's Undergraduate Minor and Certificate Requirements and Policies](#).

Code	Title	Hours
Hours chosen from:		6
C S X09.1	Quantum Computing I	
C S X78.1	Quantum Computing II	
C S 358H	Introduction to Quantum Information Science: Honors	
Hours chosen from:		12
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	
C S 358H	Introduction to Quantum Information Science: Honors	
M 340L	Matrices and Matrix Calculations	
or M 341	Linear Algebra and Matrix Theory	
M 346	Applied Linear Algebra	
Independent Research Project. This may be taken, for example, as one of the following courses:		
PHY 371C	Individual Study in Physics	
C S 370	Undergraduate Reading and Research	
M 375C	Topics in Conference Course: Computer-Assisted	
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.		
College Requirements - Natural Sciences		
Undergraduate Minor and Certificate Requirements and Policies		
Total Hours		18

Additional Requirements and Policy

- C S 358H may only be counted toward one of the certificate requirements. With the approval of the certificate program faculty,

other appropriate courses may be counted toward the certificate requirements.

- A grade of at least C- in each course is required.
- Courses that appear in multiple approved course lists may be used to satisfy only one requirement.