Instructor Email:avishwanath@g.harvard.edu

Office Hours: 3:00pm - 4:00pm at Lyman 331.

Books:

1. Q is for Quantum: Terry Rudolph (Explains quantum mechanics with almost no mathematics). Pg 1-50
2. Sean Carrol - Something Deeply Hidden (popular book â€“ excellent exposition although we will not dwell on Many Worlds that makes up a big chunk of it) pg 1-106
3. Lenny Susskind and Art Friedman â€“ Quantum mechanics The theoretical minimum (parts of this elementary textbook) pg. 1-234
4. Chris Bernhardt - Quantum Computing for Everyone (Simple but Informative). Pg. 1-173

Videos:

1. Feynman Video:

2. Sean Carroll Video:

Course FAQs:

Who is this course intended for? Freshman seminars are designed for students to sample fields they might hesitate to explore in a letter grade course. While physical science majors are welcome, I envision a diverse class of students whose common denominator is a curiosity about quantum mechanics. You could be for example, a business or technology enthusiast, who wants to understand how a new idea from fundamental science could disrupt technology. Or a history of science aficionado wanting a closer look at basic concepts that shape our view of reality.

How much math do I need for this course? Much less than for a typical physics course. Mainly, you should be familiar with probability, basic arithmetic with complex numbers and with multiplying small matrices (two by two matrices and occasionally four by four matrices). Although the math is simple the implications of these simple calculations are profound, and some aspects of interpretation like `measurement' remain an enduring mystery.

What will a typical class be like? We will typically have a demonstration which is a live experiment performed in the Harvard labs, or a computer simulation which we will experiment with. Some weeks we will have guest lectures, usually live, but some maybe on video call. We will also have discussions on assigned readings. Group work will be encouraged.

What about evaluation? We want to encourage group work and student agency in this course. With this in mind, the course deliverables will be a mid-course group presentation and a final essay.