Course Search

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Campus	Term	Department/subject	Keyword Filter
IU Bloomington	Summer 2022	All	quantum

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5 results quantum ⊗ Clear All

CSCI-C 290 1–3 credits	PROGRAMMING QUANTUM COMPUTERS (TOPICS IN COMPUTER SCIENCE) View Scheduled Classes →
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PHYS-P 202 3–5 credits	GENERAL PHYSICS 2 View Scheduled Classes →
CHEM-T 570 3 credits	NUCLEAR CHEMISTRY View Scheduled Classes →

Class #	Meeting Time	Room	Instructor
14288 ⓘ Open	MTuWThF 8:45 AM–10:00 AM Six Week - Second 6/21/2022–7/29/2022	I 109	Dan-Adrian German

CSCI-C 290: Programming Quantum Computers

Primary Instructor: Adrian German
Teaching Assistant: Arpan Ojha

6W2 Summer 2022
(June 21 - July 29)

E-mail: dgerman@indiana.edu
Office Hours: 10:30-11:30am (daily)
also, by appointment
Office: Luddy Hall 2010

Web: www.cs.indiana.edu/classes/c290-quantum/
Class Hours: MTWRF 8:45-10:00am
Class Room: Myles Brand Hall (I) 109

Take this class because the area of quantum information science and technology (QIST) is experiencing a severe shortage of talent (workforce). Traditional engineers and computer scientists are especially in demand now across this field and that trend will only accelerate. The potential implications are broad; quantum technology may eventually underlie a whole new technological infrastructure much as the semiconductor revolution changed everything in the second half of the last century. A technological ecosystem is currently being shaped by massive public and private investment in North America, Asia and Europe. With this growth there has been a steady demand for QIST talent. You don't need an advanced degree; but you need to speak the language. QIST spans physics, CSCI, mathematics, engineering, chemistry, and materials science. Take this class to learn the basics. This class is only offered in summer.

Course Description

Quantum mechanics is more than a physical theory of nature. It is a quantitative philosophy that provides us with a set of general, overarching principles that describe the innermost workings of our world at its most fundamental level. There are two aspects of quantum mechanics: the "machinery" and the "spook". The machinery, epitomized by the Schrödinger equation and its various methods of solution, allows us to propagate the quantum state of a system deterministically forward in time. This aspect of quantum mechanics is not particularly "quantum"; we find it in similar form in all classical field theories. The "spook" are all those aspects of quantum mechanics that do not have a classical analogue, not even in principle. This part of quantum mechanics is connected with the theory of measurement and its implications.

Surprisingly, starting in the mid 1970s and early 1980s, questions about the foundations of quantum mechanics led to direct technological advances and applications, culminating in the possi-