EDUCATION**DIVE**

To keep up with blockchain, colleges look across disciplines

As fintech expands, institutions are adding classes in cryptocurrency and digital ledgers to equip students with practical skills.

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To tap into emerging industries, colleges often have to break through the walls that separate academic disciplines. One of the latest barriers they're addressing stands between their business and technology programs.

The emergence of artificial intelligence, big data, blockchain and cryptocurrency is changing how money moves between people and organizations. That's created a new industry — financial technology, or fintech — around which colleges are being asked to create new curriculum as employers seek hires with these specific skill sets.

As institutions evaluate how to approach fintech curriculum, one piece of it they've identified as evolving and in-demand is blockchain (a digital ledger for recording transactions) as well as cryptocurrency (an internet-based exchange medium that runs on blockchain technology).

"The technology didn't even exist 10 years ago, but it's now in great demand, so we are meeting the marketplace," said David Yermack, chair of the finance department at New York University's Stern School of Business.

MBA students at NYU can now specialize in fintech, an area the university entered in 2014 with a single course in bitcoin. That course has evolved to cover blockchains and cryptocurrency, said Yermack, who co-teaches the class with a law professor.

Over the last three years, NYU has graduated 50 students with the fintech specialization.

Beyond computer science

NYU isn't alone. It ranks third on an annual list of the top 10 institutions globally that offer courses and research in cryptocurrency and blockchain. Other U.S. institutions on the list include Cornell University, the Massachusetts Institute of Technology and Stanford University.

The ranking is compiled by cryptocurrency exchange Coinbase and based on U.S. News & World Report's top 50 global universities list. It found that 56% of those institutions are offering at least one such course this year, compared to 42% that did so in 2018.

"Universities are stretching themselves to figure out how to teach this new field, and it's not linear," said Nina Willdorf, director of content and editorial at Coinbase.

While demand is strong for students with a computer science background and blockchain skills, Coinbase found that seven in 10 classes offered by the institutions it ranked are based in other departments. Among them are economics, humanities and the law.

As companies and industries put technologies like blockchain to work, people in a range of roles will need to understand it. That's pushing colleges to take an interest, Yermack said.

Walmart, for instance, now requires certain suppliers to use blockchain to help trace food contamination. The shipping industry has picked it up for logistics and domestic and international governments are putting it to use. Facebook is planning to launch a digital currency. And colleges and universities are getting on board for record-keeping.

The range of real-world applications for a still-new technology requires an interdisciplinary approach in the classroom.

That's one reason the University of the Cumberlands, in Kentucky, chose to split the classes for its new master's degree in global business and blockchain between its business and information technology departments. It is offered online and in a residency-based executive education format.

"We wanted to expand what we were doing in IT and in business and certainly to add to the STEM programs we offer," said Lois McWhorter, chair of the university's business administration department. "We felt that in doing so, we would be more marketable to students across the U.S."

Designing a program

Bringing students from a range of academic disciplines into the same class requires forethought to ensure the content is approachable and engaging for everyone.

But keeping the curriculum current can be challenging in an industry that has rapidly developed in the last decade. Plus, publishing timelines and the pace of that change haven't quite lined up, leading to few textbooks from which to teach, McWhorter and Yermack said.

That hasn't been a deterrent. The need to dig into the research on the topic to build out a curriculum helps keep content fresh, McWhorter said. Yermack invites guest speakers to help his students understand the technology's growing range of uses, from medicine and logistics to the arts. However, it is necessary to update the syllabus and reconsider lecture topics each semester to follow advances in the sector, he said.

Cryptocurrency and blockchain classes by department
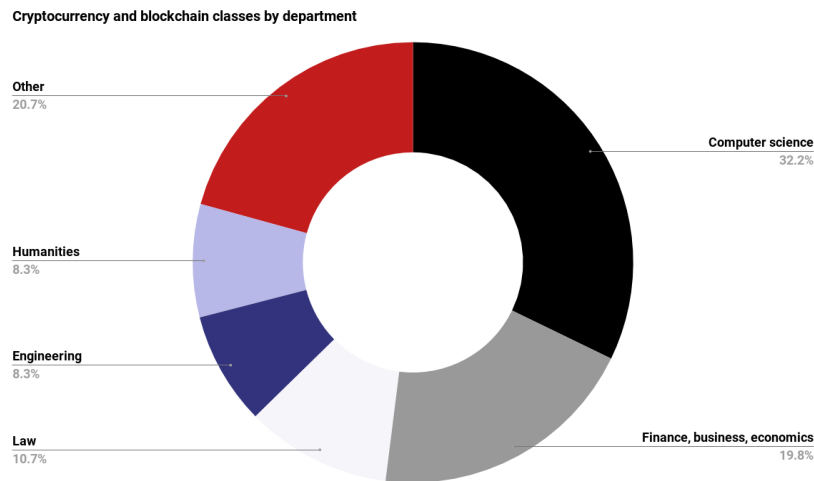
The majority of blockchain and cryptocurrency classes are housed outside of computer science departments, according to a review of programs at 50 institutions. | Credit: Source: Coinbase analysis from U.S. News and World Report Top 50 Global Universities

"To keep the attention of all these students from such diverse backgrounds is a challenge for sure," Yermack said. "It forces you as a professor to really think about, 'How am I going to explain this and make it seem universal enough that people from both a philosophy background and an engineering background should care about it?'"

That kind of interdisciplinary focus can help students after they graduate, said David Crosbie, a lecturer at the University of Pennsylvania who teaches a computer science class in blockchain. "It allows them to be able to work much (more) receptively with other members of their teams when they join a company."

Penn also offers a legal studies business course in blockchain. The two classes were initially taught as one, covering a mix of regulation, finance and technology, Crosbie said, but it became too much to cover.

Looking ahead

Yermack expects NYU and other business schools will eventually mandate that students arrive equipped with hard technology skills such as coding. That will allow the schools to offer more ambitious programming.

Similarly, NYU, Cumberland and other institutions have added or plan to add undergraduate courses to introduce students to blockchain and other elements of fintech earlier in their academic careers. Already, four in five campuses tracked by Coinbase offer student clubs, which give students at all levels some experience with the technology and help generate demand for further instructional options.

Alternative higher education providers, such as MOOCs, also could help expand the knowledge base around blockchain and cryptocurrency, the Coinbase report points out. Penn, for example, is offering a set of fintech courses through Coursera that include blockchain.

Yermack thinks this momentum will eventually spur colleges to offer more focused electives in the disparate finance and IT disciplines. But the barrier between them has been lowered in the meantime.

"The closer we look at one another's fields, the more we realize we're looking at the same problems but from very different lenses and that we have a lot to learn from one another," he said. "Universities often aren't good at this interdisciplinary stuff ... but this has been quite interesting."