

## **Fundamentals of Blockchain Technologies - Course Justification**

The Internet is designed and implemented as a tool of communication with the purpose of transferring information between smart devices. In the second era of the Internet, humans need blockchain to trade values online and place secure online transactions to do business electronically.

Blockchain technology has a fast-growing list of real-world applications including money transfers and cryptocurrencies, supply chain monitoring, digital identification, data marketplaces for the purpose of sharing or selling data, digital identification tools for the purpose of authentication in social and mobile platforms, securing database systems by creating immutable data backups, tracking prescription drug abuse patterns in federal level as well as state levels, tax regulation and compliance, medical recordkeeping, tracking weapons, etc.

Considering the aforementioned applications, there is a critical need to a course that describes the principles of blockchain technologies, distributed consensus protocols, cryptocurrency technologies, smart contracts and other applications that require robust trust establishment between parties. This undergraduate-level course will thoroughly equip students with the tools and ideas required to understand a large variety of blockchain technologies crucial for the development of next-generation of computing and information systems.

There are many industrial, and academic positions available in high-tech companies, national labs, and universities requiring people with CS-related degrees who have solid understanding of blockchain technologies. This course can pave the way for the students who seek such positions.