CSCH 503: Cybersecurity with Blockchain

UNIT I

Cyber Threat Landscape and Security Challenges : Current threat landscape, Defender perspectives, Live attack execution, Emerging security challenges, **Evolution of Security:** The security ecosystem, The zero-trust approach, The assume breach approach, Evolution at the foundation layer, **Introducing Blockchain and Ethereum :** Introduction to blockchain, Internet versus blockchain, How blockchain works, The building blocks of blockchain, Ethereum, Private vs Public Blockchain, Business adaptation

(16 hours)

UNIT II

Hyperledger, the Blockchain for Businesses : Technical requirements, Hyperledger overview, Blockchain-as-a-service (BaaS), Architecture and core components, Hyperledger Fabric model, Bitcoin versus Ethereum versus Hyperledger, Hyperledger Fabric capabilities, **Blockchain on the CIA Security Triad :** Understanding blockchain on confidentiality, Blockchain on integrity, Understanding blockchain on availability, **Deploying PKI-Based Identity with Blockchain :** PKI, Challenges of the existing PKI model, How blockchain can help, **Two-Factor Authentication with Blockchain:** Introduction to 2FA, Blockchain for 2FA

(16 hours)

UNIT III

Blockchain-Based DNS Security Platform : Understanding DNS components, DNS structure and hierarchy, DNS topology for large enterprises, Challenges with current DNS, Blockchain-based DNS solution, **Deploying Blockchain-Based DDoS Protection :** DDoS attacks, Types of DDoS attacks, Challenges with current DDoS solutions, How blockchain can transform DDoS protection, **Facts about Blockchain and Cyber Security:** Decision path for blockchain, Leader's checklist, Challenges with blockchain, The future of cybersecurity with blockchain

(16 hours)

TextBooks:

(1). "Hands-On Cybersecurity with Blockchain", Rajneesh Gupta, Packt Publishing, 2018

(2). "Blockchain A Practical Guide to Developing Business, Law, and Technology Solutions", Joseph J. Bambara Paul R. Allen, McGraw-Hill Education, 2018

(3). "Blockchain Enabled Applications", Vikram Dhillon, David Metcalf, Max Hooper, Apress, 2017

(4). "Blockchain Blueprint for a New Economy", Melanie Swan, O'Reilly Media, 2015

(5). "Blockchain Basics: A Non-Technical Introduction in 25 Steps", Daniel Drescher, Apress, 2017