

# Cybersecurity Certificate

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The need for Cybersecurity professionals is rapidly growing. Nearly every government, military, financial institution, medical establishment, and viable businesses collect, process, and store confidential information in databases. Cyber-attacks and digital spying can take many forms, including high visibility and very damaging offenses such as data breaches, phishing, and identity theft. Attacks can take place within databases, while data is processed, or when it is transmitted across networks. In the world of today, cyber-attacks may be a greater threat than terrorism.

The Graduate Certificate Program in Cybersecurity delivered cooperatively among North Dakota State University (NDSU), the University of North Dakota (UND), and Minot State University (MSU). Regardless of their home campus, enrolled students will take fully online courses from all three institutions. Students will learn best practices, new technology, and research in Cybersecurity.

Code	Title	Credits
<b>Core Courses</b>		<b>9</b>
EE 590	Emerging Threats and Defenses (University of North Dakota)	
CSCI 773	Foundations of the Digital Enterprise	
CSCI 558	Applied Cryptography (Minot State University)	
<b>Elective</b>		<b>3</b>
CSCI 774	Topics of the Digital Enterprise	
CSCI 783	Topics In Software Systems	
CSCI 796	(special topics project course in cyber security with a faculty mentor (available at NDSU, UND, and MiSU))	
EE 590	Information Security and Security Practices (University of North Dakota)	
<b>Total Credits</b>		<b>12</b>

## Department Faculty

### Anne Denton, Ph.D.

University of Mainz, 1996

Research Interests: Data Mining, Bioinformatics, Scientific Informatics, Databases, Geospatial Data, Cloud Computing

### Dean Knudson, Ph.D.

Northwestern University, 1972

Research Interests: Software Engineering, International Capstone Programs, University/Industry Relationships

### Jun Kong, Ph.D.

University of Texas, Dallas, 2005

Research Interests: Human Computer Interaction, Mobile Computing, Software Engineering

### Juan (Jen) Li, Ph.D.

University of British Columbia, 2008

Research Interests: Large-scale Distributed System ( P2P and Cloud Computing, Distributed Search, Routing Algorithms), Semantic Web Technologies, Social Networks, Information Retrieval, Knowledge Discovery

### Simone Ludwig, Ph.D.

Brunel University, 2004

Research Interests: Swarm Intelligence, Evolutionary Computation, Fuzzy Reasoning, Cloud Computing

### Kenneth Magel, Ph.D.

Brown University, 1977

Research Interests: Software Engineering, Human-Computer Interfaces, Software Complexity, and Software Design

### Kendall Nygard, Ph.D.

Virginia Polytechnic Institute and State University, 1978

Research Interests: Data Science, Optimization Modeling, Smart Grid, Sensor Networks, Agents, Artificial Intelligence, Security, Adaptive Systems, Swarm Intelligence

### Saeed Salem, Ph.D.

Rensselaer Polytechnic Institute, 2009

Research Interests: Bio-Informatics and Data Mining

### Brian Slator, Ph.D.

New Mexico State University, 1988

Research Interests: Artificial Intelligence, Educational Media

**Jeremy Straub, Ph.D.**

University of North Dakota, 2015

Research Interests: Multi-tier Mission Architecture & Control, Autonomous Data Link Reduction, Autonomous Vehicle Control, Machine Vision, Super Resolution

**Vasant Ubhaya, Ph.D.**

University of California-Berkeley, 1971

Research Interests: Algorithm Analysis, Approximation and Optimization

**Gursimran Walia, Ph.D.**

Mississippi State University, 2009

Research Interests: Empirical Software Engineering, Software Errors and Software Quality Improvement, Requirements Engineering, Human Cognition in Software Engineering, Managing and Estimating Software Quality

**Changhui Yan, Ph.D.**

Iowa State University, 2005

Research Interests: Bioinformatics, Computational Biology, Genomics, Machine Learning, Data Mining, Big Data, Cloud Computing

## Professors of Practice

**Oksana Myronovych, Ph.D.**

North Dakota State University, 2009

**Mark Pavicic, Ph.D.**

Columbia University, 1985

## Affiliate Faculty

**Otto Borchert, Ph.D.**

North Dakota State University, 2015

Research Interests: Artificial Intelligence, Educational Games, STEM Learning

**Hyunsook Do, Ph.D.**

University of Nebraska, 2007

Research Interests: Software Engineering, Software Testing, Regression Testing, Software Maintenance, Requirements Verification, Software Empirical Methodologies

**Hassan Reza, Ph.D.**

North Dakota State University, 2002

Research Interests: Software Architecture, Cloud Computing, Architectural Analysis & Description

**Xiaodong Zhang, Ph.D.**

Dalhousie University, Canada, 2001

Research Interests: Satellite Sensing, Geographic Information Systems