CYBER SECURITY

College of Natural and Behavioral and Sciences
Department of Computer Science

Program Description

The Master of Science in Cyber Security program is designed to provide professional preparation for private, public and non-profit sector professionals in the field of cyber security. The curriculum delivered in an accelerated 18-month cohort model, requires completion of six (6) core and four (4) elective courses. The program culminates with a cyber-security research project supervised by a faculty member. The purpose of the Master of Science in Cyber Security program is to prepare students for professional careers in cyber security. The program aims to provide a learning experience for the students to develop technical skills in protecting IT infrastructures, operating system, and networks from intentional and unintentional information security breaches.
The curriculum learning outcomes are designed for the acquisition of advanced expertise in the area of cyber security, including the protection of computers, networks, programs form unauthorized access, alternation or damage of data. The program's strengths include a robust academic curriculum, high quality expert instructors, accelerated format (18-month model); and affordability. The Master of Science I Cyber Security will position its graduates to become leaders in the field of cyber security. Classes are scheduled to accommodate late afternoon, evening, and weekend classes.

Admission Procedures

The following materials are required for admission review by the submission deadline:

Please note that the cut-off dates for Admission to the Fall Term is July 1, with the complete package of materials (application, transcripts and other required documents) due by August 1. For the Spring Term, the deadline for completed applications is November 15, and the deadline for materials is December 1. If you do not meet these deadlines, you will need to re-apply with a new application for the next term.

- Apply via Cal State Apply #
- Contact your previous college(s) to request official transcripts. Applicants must provide an official transcript from each postsecondary institution attended (post-baccalaureate course work included) be sent to the Admissions Office at admit@csudh.edu. If the institution providing the transcript can only mail the transcript, mail it to:
  Admissions Office CSU Dominguez Hills
  1000 E. Victoria Street
  Carson, CA 90747
- Send two letters of support and a Statement of Purpose (why you want to be in the program) for your application to the program coordinator at: MSCY@csudh.edu.

Admission Requirements

The following general requirements must be met to be admitted to the program:

- A bachelor's degree from a regionally accredited college or university
- Good standing at the last institution
- A grade point average (GPA) of at least 2.5 on the last degree completed or at least 2.5 in the last 60 semester (90 quarter) units attempted.
- International Students must provide an evidence of one of the following:
  - A minimum score of 80 on the internet-based TOEFL exam (iBT)
  - A minimum score of 213 on the computer-based TOEFL exam
  - A score of 6.5 or higher on the IELTS, or
  - A score of 53 or higher on the Pearson Test of English (PTE) Academic Depending on the type of the undergraduate degree held, the applicants may be admitted with either a classified or conditional admission status.

Who can apply for this graduate program? Minimum requirement: Bachelor degree with a GPA of 2.5 or higher

1. Full Admission: Bachelor degree in Computer Technology from CSUDH or an equivalent program; or,
2. Conditional Admission: Bachelor degree other than computer technology. Students with no background may need to take some leveling courses before admission to the program.

Contact Information

Application/Admission Questions
msprogram@csudh.edu
424-205-5270

Academic Questions
Mohsen Beheshti
mbeheshti@csudh.edu
310-243- 3398

Computer Science Department (CSC) (Curriculum, Advising, Admission)
310-243-3398
mscy@csudh.edu
csc.csudh.edu (http://csc.csudh.edu)

College of International and Extended Education (CIEE) (Registration, Payment, Application Process)
310-243- 3741
https://www.csudh.edu/ceie/registration/

Full Admission

In order to be admitted with a classified status, the applicant must meet all general admission requirements and hold a bachelor's degree in Computer Technology (CT), Information Technology (IT), Computer Science(CS) or a related subject.

Conditional Admission

The applicants holding bachelor's degrees in the fields not related to Computer Science, may be considered for a conditional admission. Conditionally admitted students may have to fulfill additional requirements before they attain a classified status. These additional requirements, which will be determined by evaluating applicant's transcripts and work-related experience, include an evidence of mastery of the key concepts in the following topic areas:

- Computer Hardware and Tools
- Computer Programming
- Operating System and Networking
- Dynamic Web Programming

- Network Security
- Introduction to Statistics

Or take the Cyber Security Certificate of Completion at CSUDH: (three 2-unit courses)

- IT Fundamentals,
- Network and Hardware, and
- CyberSecurity

Advancement to Candidacy

Advancement to candidacy recognizes that the student has demonstrated the ability to sustain a level of scholarly competency commensurate with successful completion of degree requirements. Upon advancement to candidacy, the student is clear for the final stages of the graduate program which, in addition to any remaining course work, will include the project. Following are the requirements for Advancement to Candidacy:

1. A minimum of 15 resident units
2. Classified standing
3. An approved Program of Study
4. Successful completion of GWAR
5. A cumulative of 3.0 in all courses taken as a graduate student
6. No grade lower than a "B" in the degree program

Student Organizations

Contact departmental office for membership information, or visit the websites:

Association for Computing Machinery (ACM) ACM@csudh.edu
Institute of Electrical and Electronics Engineers (IEEE) IEEE@csudh.edu
Cyber Security CyberSec@csudh.edu
Computing Alliance of Hispanic-Serving Institutions (CAHSI) CAHSI@csudh.edu

Graduate Programs

Master

- Cyber Security, Master of Science (https://catalog.csudh.edu/academics/cyber-security/cyber-security-ms/)

Faculty

Mohsen Beheshti, Department Chair
Jianchao (Jack) Han, Marek Suchenek, Bin Tang, Amlan Chatterjee, Liudong Zuo, Allireza Izaddoost, Brad Hollister, Khondaker Salehin

Emeriti Faculty

William B. Jones, Kazimierz Kowalski

Staff

Violeta Diaz, Administrative Assistant
Ken Leyba, IT Consultant
Department Office: NSM A-132, (310) 243-3398
http://csc.csudh.edu

Courses

CYB 501. Foundation of Information Security. (3 Units)
An overview of information security concepts; a basic introduction to information assurance principles and information security systems and specific issues pertaining to risk assessment and cyber threats; a brief examination of the laws governing information security including public policy and ethical standards.
Offered Fall, Spring

CYB 505. Practical Cyber Security. (3 Units)
Prerequisite: Restricted to majors. To understand and deal with real-world cyber threats, this course explores the latest development in the area of cyber security, and provides theory and hands-on practice in playing with cyber security software and network systems in a laboratory environment.
Offered Fall, Spring, Summer

CYB 525. Cybersecurity System Analytics and Automation. (3 Units)
Provides theory and hands-on practice in data analytics and threat intelligence in cybersecurity systems. Explores way to perform analytical tasks automatically, and solve cryptography, intrusion detection, automation, log creation, log management and other problems in cybersecurity.
Offered Fall, Spring, Summer

CYB 528. Foundations of Cyber Forensics. (3 Units)
Presents a high level introduction of Cyber Forensics including the different approaches in computer forensics investigation. Covers the ethics as it is mapped to the objectives of the Center of Academic Excellence in Cybersecurity.
Offered Spring

CYB 529. Advanced Cyber Forensics. (3 Units)
Prerequisite: CYB 528 is required. Provides advanced case examples in digital forensics. Provides understanding of everyday issues in real investigations such as technical, logistical, and legal challenges. Presents advanced methodologies and proven practices applied in digital investigations.
Offered Infrequent

CYB 535. CyberOps and Cloud DevSecOps. (3 Units)
Prerequisite: restricted to majors. Provides theory and hands-on practice on day-to-day, tactical knowledge and skills that Security Operations Center teams need to detect and respond to cybersecurity threats. Main topics include security monitoring, host-based analysis, intrusion analysis, and security policies and procedures.
Offered Fall, Spring, Summer

CYB 538. Information Security Policy and Procedure. (3 Units)
Examines the legal concepts, principles and theories of public policy as they apply to information technology. A review of the American system with its federal and state levels will be studied to provide students with the necessary legal background in which the world of Information Technology functions. A special emphasis will be placed on compliance issues, Cyber laws, and regulations.
Offered Fall

CYB 548. Advanced OS Security. (3 Units)
A study of the challenges involved in the design and implementation of a secure operating system. Identify security threats and monitor operating system security implementations; learn how to configure operating systems to meet security standards using best practices.
Offered Summer

CYB 551. Data Communications and Computer Networks. (3 Units)
A comprehensive survey of the computer communication and field including data communication concepts and categories, communications switching and routine, network configuration and management. Topics also include layered network models and protocol.
Offered Spring

CYB 552. Advanced Hacking Prevention. (3 Units)
To evaluate advanced hacks and methods of defense fortification. Provides more advanced network defense concepts and techniques. Covers more detailed theoretical concepts in networking. State-of-the-art techniques and tools will be used to learn how to protect network.
Offered Fall

CYB 555. Information Assurance and Network Security. (3 Units)
Students will examine the concepts and topics in network security and information assurance. Through this course, students will conduct a CRT (Capture The Flag) exercise, and learn more about security threats, secure socket layer, SSH, Tunneling, PGP, encryption algorithm, vulnerabilities and other related topics.
Offered Spring

CYB 562. Advanced Communication System Security. (3 Units)
The course covers more advanced security life-cycle of products and services; it will go beyond requirements and policy development and progressing through the actual development, deployment an operations. This course will also provide advanced methods regarding the issues associated with protecting information assets.
Offered Infrequent

CYB 572. Secure Cloud Computing. (3 Units)
Students will learn four cloud service models: IaaS-Infrastructure as a Service, PaaS-Platform as a Service, SaaS-Software as a Service and BpaaS-Business Process as a Service. This course will also cover topics related to big data, and challenges resulting from the implementation of high computing performances.
Offered Summer

CYB 584. Software Project Planning and Management. (3 Units)
Students will learn to build a software project and manage it professionally. Additionally, they will be expected to devise a plan with a schedule of finished products, a tracking system to monitor the building process of the project, and a risk management assessment.
Offered Fall

CYB 590. Graduate Project. (3 Units)
Capstone course. Students are required to submit and present a semester long project. Students will develop their own cyber security project, devise hypotheses related to their study, gather data to support their hypotheses, and present the results.
Offered Fall, Spring

CYB 595. Special Topics in Cyber Security. (3 Units)
Advanced topics in cyber security not covered by current course offerings. May be used for elective credit in departmental programs. Subject to approval. Consent required.
Offered Fall, Spring

CYB 600. Graduate Continuation Course. (1 Units)
Prerequisite: Signature of graduate program coordinator required. Graduate students, who have completed their course work but not their thesis, project, or comprehensive examination, or who have other requirements remaining for the completion for their degree, may attain continuous enrollment by enrolling in this course.
Offered Fall, Spring