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New York University
Center for Cyber Security
370 Jay St.
Brooklyn, NY 11201
www.nyu.edu

CORE PILLARS

1. Talent

The **Master of Science in Cybersecurity Risk and Strategy** **(MS-CRS)** is offered jointly by NYU School of Law and NYU Tandon School of Engineering. The one-year program is intended for experienced professionals from a range of backgrounds who seek to deepen their understanding of cybersecurity risk and strategy. This program will create managers with the integrated expertise needed to play a leadership role in the field.

The MS-CRS program is a 30-credit professional MS management degree incorporating both online courses and blended-learning modules. Over a 12-month period, participants attend three residential sessions consisting of five and one half days per session. Between residential periods, students are expected to study 10-15 hours per week in online and blended-learning formats. Semesters are divided into three phases: online introduction, in-class residency, and online implementation.

In order to ensure a common foundation for students from widely disparate backgrounds, MS-CRS students must, before starting their credit-bearing courses, pass on-line “bridge” courses in U.S. Law and in the technical Foundations of Cybersecurity. Each semester includes a 3 credit, core engineering course (Information Systems Security Engineering and Management, Network Security, and Emerging Innovations in Cybersecurity) and two law or policy courses (such as Information Privacy Law, Cybersecurity Governance and Regulation, Cyber Crime, and Innovation Policy) bearing a total of 5 credits. Spanning all three semesters is a 6 credit, team-based “Integrative Cybersecurity Management” Capstone Project.

MS-CRS faculty are full faculty members of the Tandon School and the Law School supplemented by accomplished cybersecurity practitioners serving as adjunct faculty. Biographies of the MS-CRS faculty can be found here. In addition, each Capstone Project Team has the benefit of guidance by a distinguished Capstone Mentor, whose biographies are available here.

Students in the MS-CRS cohorts of 2019-2021 have an average age of 40 and an average of 18 years of work experience. Forty-seven percent of these cohorts already have an advanced

degree; 33% have served in the military. Students hail from around the world. Countries of birth and/or current residency for the 2019-2021 cohorts include Azerbaijan, Brazil, Canada, China, Côte d'Ivoire, Dominican Republic, France, India, Jamaica, Philippines, Singapore, South Korea, Switzerland, Thailand, United Arab Emirates, United Kingdom and the United States. A snapshot of the companies and organizations from these cohorts include: Amazon, Apple, Bank of America, Cisco, Facebook, Goldman Sachs Google, Intel, JP Morgan Chase, Lockheed Martin, Microsoft, McAfee, Salesforce and the United States Department of Justice.

Nearly all of the MS-CRS students are employed upon entry into the program, so post-graduate employment gains generally are difficult to measure. Anecdotally, a number of graduates have attributed post-graduate promotions to the skills and knowledge imparted learned in the MS-CRS program.

Current tuition for the MS-CRS program is $85,500. NYU provides financial aid to MS-CRS students and participates in the Yellow Ribbon program which provides education benefits to military veterans who have served on active duty since September 11, 2001.

In addition to the MS in Cybersecurity Risk and Strategy, NYU's Tandon School of Engineering offers several other cybersecurity programs, including:

Cyber Fellows (CF): In partnership with New York City Cyber Command (NYC3) and elite NYC employers we launched a unique, affordable online cybersecurity master's degree program to address the acute shortage of highly trained technical professionals. Scholarships of 75% reduce tuition to $17,000 for the entire program. Sample courses include Information Security and Privacy, Network Security and Management, Applied Cryptography, Application Security, Digital Forensics, Penetration Testing and Vulnerability Analysis, Biometrics, Binary Analysis (Reverse Engineering), Offensive Security, and more.

Management of Technology (MoT): Courses in the MoT cyber security management track include Business of Information Security Management, Fundamentals of Information Security Management and Practice in Information Security Management.

The Bridge to Tandon provides students with a degree in liberal arts or similar an affordable ($1800) one-course online program that provides them the knowledge needed to upgrade their math, science or engineering background in preparation for your application to an NYU Tandon School of Engineering graduate program, including the MS in cyber security. Over the last two years, the program has provided opportunities to hundreds of students and almost 75 of them have been admitted to NYU Tandon's MS in Computer Science and MS cyber security programs.

MOOC / Online courses: We've recently expanded our MOOC offerings to include the edX MicroBachelors in Cybersecurity and Coursera Introduction to Cybersecurity, both available free for all to view with credentialing at a very low cost. We have tens of thousands of learners taking these courses.

2. Research

Over the last decade, our research activities in cyber security have grown tremendously. We currently have more than 40 PhD students pursuing funded research in a cyber security related topic. Over the past fifteen years we have received more than 35 million dollars in funding for cyber security related research and education and graduated more than 30 PhDs.

In 2009 NYU established the Center for Cybersecurity (CCS) as an interdisciplinary research institute dedicated to training the current and future generations of cybersecurity professionals and to shaping the public discourse and policy, legal, and technological landscape on issues of cybersecurity. This center includes faculty from Tandon (Engineering), Law, Steinhardt (Ethics, Philosophy, Education), Wagner (Public Policy), Stern (Business and Economics) and NYU Abu Dhabi (Engineering). In 2010 the founding members of CCS won an NSF IGERT award (INSPIRE) to fund two-year traineeships for approximately 24 interdisciplinary PhD students.

In its short history, CCS has logged a number of significant accomplishments, including:

- Established the largest student-run cybersecurity conference, with tens of thousands of participants across sites in 6 countries.
- Lead research projects that have an immediate and profound impact on society as whole. Recent such initiatives include providing transparency on who is placing political ads on social media and how to identify photos that have been digitally manipulated,
- Deployed security systems that protect millions of Linux systems, automobiles, git servers and clients, and cloud computing instances
- Underwritten the education of “a new generation of technology lawyers” who can analyze the most complex technology law and policy issues, but have also “mastered the technical understandings of the discipline” through the Latham & Watkins Award in Technology and Law.
- Created research projects that work across engineering disciplines, such as an in-development graduate level course on cybersecurity in additive manufacturing that is designed to “provide a security mindset to mechanical engineers and materials scientists.”
- Established successful working relationships with both for profit and open source companies.
- Cultivated ties to the cybersecurity industry and government agencies in NYC.

Research:
Collectively, the CCS faculty can boast of 4 NSF CAREER awards, 3 Jacobs Excellence in Education awards (NYU Tandon faculty honor), 2 “Brilliant 10 under 30” awardees from Popular Science magazine, and 2 IEEE fellows. In collaboration with a cadre of gifted graduate students, the faculty routinely present at top-level conferences on topics ranging from privacy protection to securing hardware elements and software supply chains. The Center boasts a number of Best Paper awards, most recently at ISSRE 2019. By participating in the work of research labs affiliated with CCS, including the Secure Systems Laboratory, Laboratory for Agile and Resilient

Complex Systems (LARX) and the Energy-Aware, Secure, and Reliable Computing Research Group (EnSuRe), students have numerous opportunities to learn by doing, and to contribute directly to the growth of the field.

Specializations include:

- Cybercrime
- Cyber Governance
- Cyber Strategy
- Security of Cyberphysical Systems
- Software and System Security
- Digital Forensics
- Supply Chain Security

Additional Publication information can be found here.

3. Engagement

NYU Tandon has a distinguished history of research and education in the field of cybersecurity, and our classes are taught by internationally known experts. We've been designated an NSA Center of Excellence in Information Assurance, a Center of Excellence in Research, and a Center of Excellence in Cyber Operations.

SFS: NYU (previously as Polytechnic University) has run the SFS program since September 2002 with over 100 graduates working at the NSA, DHS, FRB, CIA, FBI, NIST and other federal, state, and city agencies. Key activities and forums include Computer Security Club (CSC), Hack Night, CTF, Hackers-In-Residence, and the Women Leaders in Cybersecurity Conference.

CSAW (the moniker originally stood for Cyber Security Awareness Week but the event has outgrown that description) was founded in 2003 to provide an engaging forum for experiential learning and to inspire students to pursue education and careers in cyber security. CSAW has grown into the largest student-run event of its kind, attracting the brightest students - ranging from high school to doctoral candidates - who compete in six distinct cyber security challenges, all developed by NYU students with very strong SFS participation. These are Capture the Flag, Applied Research Best Paper, Security Quiz, Embedded Systems Security, High School Forensics Challenge, a Policy Competition, Hack3D, and a Cyber Security Journalism Award.

OSIRIS: NYU-Tandon's cyber security program started in 1999 with an NSF CCLI grant to establish an Information Systems Security Lab (ISIS and now renamed as OSIRIS) and develop a sequence of undergraduate courses in computer and network security.