COLLEGE OF ENGINEERING
NEXUS
UNIVERSITY OF MICHIGAN

CYBERSECURITY PROFESSIONAL BOOTCAMP

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ABOUT
THE CYBERSECURITY PROFESSIONAL BOOTCAMP

Imagine the following scenario. You arrive at work, ready to start your day. You open a browser and navigate to your company's website, only to find that a hacker group's logo has replaced the content your team has worked so hard to build. The damage to your company's reputation doesn't stop with the obvious fact that it was vulnerable to a security breach. The trust that your company has built with its clients is gone in an instant, as any sensitive information that was stored in the website's database is now in the hands of the malicious attackers, and is most likely already on the dark web.

Information theft is continually on the rise and can cost businesses untold sums of hard-earned revenue, but another alarming target is our critical infrastructure. While many businesses are improving their ability to implement effective preventative measures, by the time they have caught up with the latest attacks, "in the shape-shifting world of cybersecurity, attackers have already moved on to indirect targets, such as vendors and other third parties in the supply chain," a recent report states. "It is a situation that creates new battlegrounds even before they have mastered the fight in their own backyard."[1] To add to the list of threats, cyber criminals also target the growing array of IoT devices, pacemakers, and automobiles, posing a threat not only to our finances and privacy, but also to our health and safety.

Now more than ever, we must address the growing shortage of qualified cybersecurity professionals, not only to protect our sensitive data and personal safety, but also to defend our livelihood and ensure the integrity of the systems we rely upon every day. The need for more qualified cybersecurity professionals is not only linked to the increase in the types of attacks, but also the sheer volume. According to the Herjavec Group, "2020 was the worst year on record in terms of the data breaches that occurred[...] A staggering 36 billion records were exposed, many of which were vulnerable due to poor hygiene, and a rise in social engineering threats."[2]

The cutting-edge **Cybersecurity Professional Bootcamp** was developed in partnership with thought leaders in the industry to address these needs. This bootcamp prepares you to enter the workforce in under a year as a highly qualified, entry-level professional with the in-demand experience employers are looking for to help defend our most vital assets.

The 430-hour program offers a fully immersive experience with comprehensive virtual training labs that allow you to benefit from hands-on, digital simulation exercises in online classes taught by cybersecurity professionals. Thought leaders and industry experts work together to develop state-of-the-art course materials to ensure that you always receive the most current information. Instructors are insiders with a wealth of industry knowledge and expertise who guide you through everything you need to know, preparing you to sit for top industry certification exams* and enter an exciting, fast-paced field that is constantly evolving.

A unique Introductory Course allows you to gain a foundational understanding of cybersecurity so you can determine whether or not it is the right career path for you before committing to the full program. This 30-hour course teaches the fundamentals of cybersecurity, and an assessment is provided at the end to determine your suitability for the field. At the culmination of the intro course, you will consult with your Admissions Advisor to determine whether or not you will continue to the full, 430-hour program.

You will also have access to a full suite of career services to help you build resumes, create professional online profiles, and develop interview skills and techniques. Integrated throughout the program, this valuable guidance prepares you to enter the workforce empowered with the knowledge you need to enter a rapidly growing, in-demand field and build a successful career.

* The program includes an extra four dedicated sessions for test preparation. Certification exams are not conducted as part of the program and require additional costs not included in tuition. While the curriculum provides the knowledge needed to perform well on industry exams, the Nexus at University of Michigan Engineering Cybersecurity Professional Bootcamp is not a test-preparation program, where the primary focus is the learner's performance on the exam. This program is designed to teach in-demand knowledge for today's workforce.

[1] *State of Cybersecurity Report 2020*, Accenture Security

[2] *2021 Cybersecurity Conversations for the C-Suite: Securing the Post-COVID Paradigm Shift*, Herjavec Group

PREPARING LEARNERS FOR CYBERSECURITY JOBS

Designed for beginners with little to no technical background, as well as those with some prior knowledge, the Nexus at University of Michigan Engineering Cybersecurity Professional Professional Bootcamp provides you with the skills and experience that hiring departments look for in qualified cybersecurity personnel. If you are a gifted problem-solver, good at puzzles, love figuring out how things work, or have a strong affinity for technology, cybersecurity could be the right field for you.

This program qualifies learners for a variety of cybersecurity and IT roles,* including:

- Network Security Engineers
- Network & System Security Administrators
- Systems Security Managers
- Systems Security Engineers
- Cyber Network Defenders
- Vulnerability Assessment Analysts
- Cybersecurity Operations Specialists
- Network Security Technicians
- Cybersecurity Crime Investigators
- Cybersecurity Analysts
- SOC Analysts
- IT Security Managers
- IT Support Engineers
- NOC Technicians

*Job titles listed do not necessarily reflect entry-level positions.

> **EXPERTS PREDICT THAT THE GLOBAL CYBERSECURITY MARKET WILL BE WORTH $300B BY 2024.**
>
> —Forbes

The accelerated programs powered by HackerU help reskill and upskill learners in today's fast-growing digital economy. With over a decade of experience as the world's premier digital skills and cybersecurity education provider, HackerU works with top-tier academic institutions, government organizations, and global enterprises to offer advanced workforce and professional development programs in digital technology.

WHAT YOU WILL LEARN

The Cybersecurity Professional Bootcamp provides you with the knowledge and skills that will prepare you to enter the cybersecurity workforce.

The Foundations

- Principles of cybersecurity research
- Networking and network attacks
- Installing and operating Windows and Linux Operating Systems (OS)
- Windows Client, Windows Server 2012, and Enterprise
- Domain name system (DNS)
- Shares and permissions
- Disk management
- iOS fundamentals
- File system and error handling

Mitigation, Tools & Security Measures

- Network security, traffic analysis, and communications
- Windows and Linux OS and security
- The cyberattack cycle, countermeasures, and defense techniques
- Active Directory (AD), PowerShell, group policy
- Endpoint security and switch security
- IPv4 and IPv6 static routing procedures
- Dynamic routing procedures
- Security policies and authentication
- Dynamic Host Control Protocol (DHCP), Internet Protocol (IP), routing, and subnetting
- VLAN and Trunk
- Cloud security and advanced cloud computing
- Virtualization and containers
- Command-line interface (CLI), bash scripting, host security
- Practical cryptography
- Firewalls and VPN technologies
- Intrusion Protection Systems (IPS) and Intrusion Detection Systems (IDS)
- Honeypots and data loss prevention
- Mail security
- Security Information and Event Management (SIEM) and Security Orchestration, Automation & Response (SOAR)
- Industrial Internet of Things (IIoT) and Industrial Control Systems (ICS)
- Secure architecture implementation
- Programming and scripting with Python
- Creating Python automations for security and operations
- Data types and conditions, loops, and functions
- Ethical hacking concepts
- Network scanning, cross-site scripting (XSS), and file inclusion
- Mitigating man-in-the-middle (MITM) attacks, brute-force attacks, social engineering, infrastructure attacks, structured query language (SQL) injection, and Windows and Linux privilege escalation
- Web application security

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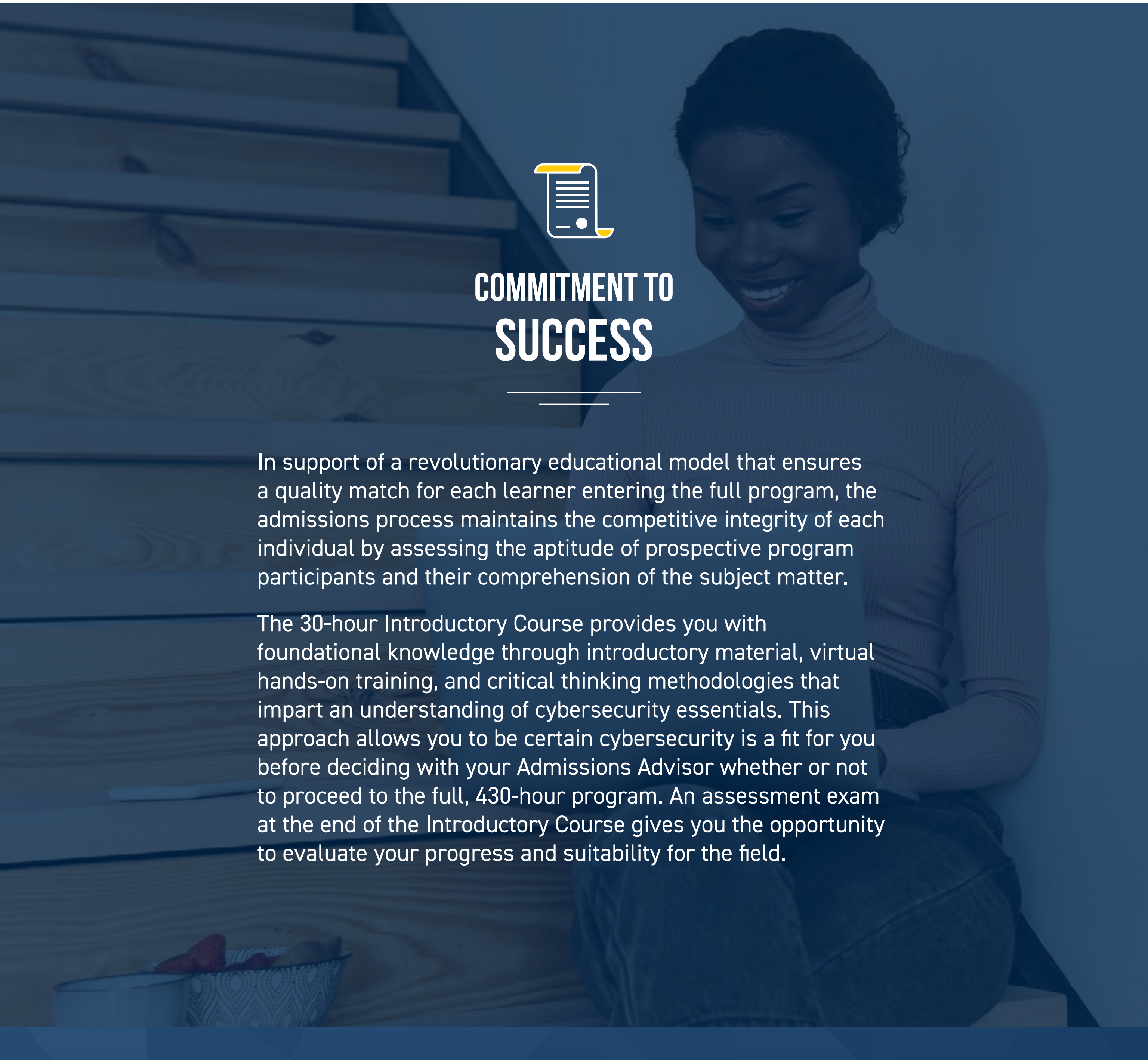
What You Will Learn »

Data Analysis and Forensics

- Digital forensics, incident response, and data acquisition
- Windows live and dead analysis
- Network forensics
- Linux forensics
- Memory analysis, log analysis, and timeline
- Digital Forensics and Incident Response (DFIR) simulation
- Threat hunting procedures
- Static and dynamic malware analysis
- Malware defense and persistence



COMMITMENT TO SUCCESS

In support of a revolutionary educational model that ensures a quality match for each learner entering the full program, the admissions process maintains the competitive integrity of each individual by assessing the aptitude of prospective program participants and their comprehension of the subject matter.

The 30-hour Introductory Course provides you with foundational knowledge through introductory material, virtual hands-on training, and critical thinking methodologies that impart an understanding of cybersecurity essentials. This approach allows you to be certain cybersecurity is a fit for you before deciding with your Admissions Advisor whether or not to proceed to the full, 430-hour program. An assessment exam at the end of the Introductory Course gives you the opportunity to evaluate your progress and suitability for the field.

PROGRAM STRUCTURE

Structured around evening and weekend course schedules, this intensive, 430-hour program is designed for working professionals.

The Nexus at University of Michigan Engineering Cybersecurity Professional Bootcamp teaches you everything you need to defend digital information, implement security measures, respond to cyberattacks, and protect business and consumer data. The curriculum provides a comprehensive education in the fundamentals of cybersecurity through virtual lectures and participation in virtual cyber labs, real-world digital simulations, and individual and group exercises.

The program provides you with the foundational understanding and the practical, immersive experience that will help you gain entry into the field of cybersecurity. You will put foundational theories and methodologies into practice through projects and virtual hands-on training exercises that are designed to provide you with the skill set and foundational understanding you need to succeed in the field of cybersecurity.

30-Hour Introductory Course

To allow you to determine your suitability for the field before committing to the full program, the 30-hour Introductory Course provides you with an understanding of the fundamental principles of cybersecurity. This approach also ensures classroom success by facilitating the advancementof only those who have the passion and skills that are necessary to ultimately succeed in a cybersecurity career.

Global Certification

The Cybersecurity Professional Bootcamp prepares you for the following IT and cybersecurity certifications*:

- CompTIA Network+
- AWS Certified Cloud Practitioner
- LPI Linux Essentials
- Cisco Certified CyberOps Associate
- CompTIA Security+
- CompTIA CySA+
- (ISC)^2 SSCP**

Cyber Labs

You will learn to identify vulnerabilities on web, server, mobile, and desktop platforms and create secure defenses that protect against a variety of threats through immersive cyber labs and real-world simulations. This virtual hands-on environment provides you with the knowledge, training, and experience that make you a highly qualified candidate who is prepared to enter the field of cybersecurity.

Career Services

Because education alone may not be sufficient to help you get the job you are looking for, the Cybersecurity Professional Bootcamp provides you with the knowledge, skills, and hands-on experience through digital simulations and virtual hands-on labs that prepare you for a successful career in cybersecurity. Career Services include three dedicated workshops that allow you to hone your interview skills, create and finesse a professional resume, and build a LinkedIn profile. You are provided with the opportunity to connect with our official hiring partners, and individualized career coaching and internship placement assistance are integrated into the program.

* The program includes an extra four dedicated sessions for test preparation. Certification exams are not conducted as part of the program and require additional costs not included in tuition. While the curriculum provides the knowledge needed to perform well on industry exams, the Nexus at University of Michigan Engineering Cybersecurity Professional Bootcamp is not a test-preparation program, where the primary focus is the learner's performance on the exam. This program is designed to teach in-demand knowledge for today's workforce.

*Learners must have a minimum of one year of cumulative work experience in one or more of the seven domains of the SSCP Common Body of Knowledge (CBK) in order to be certified.

TEACHING METHODOLOGIES

The program is nimble and adaptable, much like the cybersecurity industry itself. Classes are conducted in live, synchronous, virtual classroom environments. This innovative teaching style provides you with the opportunity to learn in an environment that is aligned with the profession and allows you to balance your education with your other responsibilities. We have applied foundational elements from our advanced teaching methodologies that include:

Advanced Remote Education Technologies

You can take advantage of industry-leading remote technologies that increase the comprehension level of course material. The ability to instantly message instructors, virtually raise your hand during class, and collaborate with peers via remote workspaces ensures you have the tools you need to master even the most intricate concepts.

Synchronous, Virtual, Live Classrooms

Expert instructors lead online classes, which are structured on real-time interactions and are held on a regular basis. Lessons stem from top-tier instructional methodologies and are enhanced with cloud-based chat software that allows live, virtual, hands-on interaction between you and your instructors.

Live, Hands-on Practice Labs

Hundreds of real-time, monthly lab exercises allow you to practice the skills you learn in the virtual classroom by yourself and alongside your instructor to ensure in-depth comprehension. Virtual lessons provide you with the opportunity to apply the skills from real-world scenarios to solve problems in a remote working environment.

Career Services Workshops

Three career services workshops provide you with the resources you need to successfully prepare for a job interview. The dedicated Career Services team is prepared to support you with building resumes, training for interviews, and creating a LinkedIn profile. The team also connects you with hiring partners to help you land the job of your dreams.

Online Q&A Sessions with Instructors

You can request clarification on challenging concepts or ask for feedback from instructors through virtual, instructor-led question and answer sessions. This community environment promotes teamwork and collaboration that translate outside of the classroom.

A Library of Recorded Classroom Sessions

Curated by industry professionals, course materials are consistently updated to reflect new technologies, tools, and developments and are made available for you to review at your convenience. Recorded classroom sessions provide you with the opportunity to revisit any topics that were discussed during a lesson.

Taught by Experts in the Field

Classes are taught by instructors who are leaders in the industry and who bring a wealth of knowledge and expertise to the learning environment. You will benefit from instructors' current industry expertise as well as from their unique insider's understanding of the fast-paced field of cybersecurity.

Extended Virtual Office Hours

Instructors offer extended virtual office hours to provide you with additional support outside of lectures. You are encouraged to prepare your own questions regarding lessons as well as any concerns about your progress in the course.

FIVE-STEP CYBER EDUCATION PROCESS

The Five-Step Cyber Education Process combines unique teaching methodologies with a continually updated curriculum to ensure you receive the highest caliber of education. The process is the result of over a decade of proven research conducted by global cybersecurity experts. This revolutionary model ensures that you finish the program armed with the competitive skill set you need to enter today's job market as a competitive candidate.

01 Talk to Us

To assess your aptitude as a prospective learner and determine the most appropriate placement in our programs, schedule a consultation with a Cybersecurity Admissions Advisor.

02 One-on-One Meetings

Upon determination of placement, you will meet with an assigned advisor to further discuss the program, career expectations, and job opportunities. Meetings can be held over the phone or through videoconferencing.

03 Introductory Course

In the 30-hour Introductory Course, you will learn the fundamentals of cybersecurity and explore your expectations of working in cybersecurity versus the reality. This course provides an opportunity for you to determine your suitability for the field. At the end of the course, a summary exam and instructor evaluation are used to determine your future in the program.

04 The Program

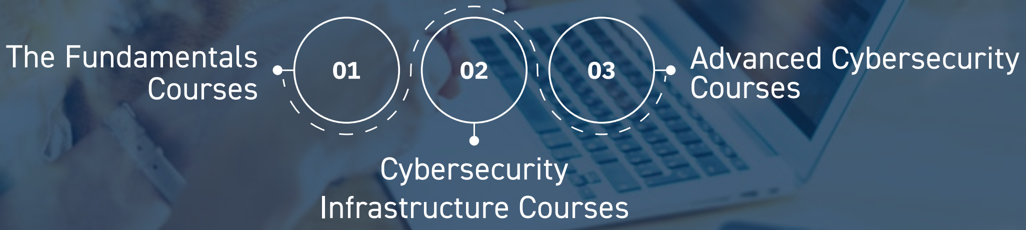
A well-rounded instructional approach instills the fundamentals of theory and practical experience that provides immersive, experiential training through digital simulation. The program is led by cybersecurity experts and is the product of over a decade of research, teaching, and best practices.

05 Career Services

Career Services are built into the program and provide personalized interview training, internship placement assistance, and professional networking. Instructors offer one-on-one feedback on your professional resume and LinkedIn profile. This integrated support increases your chances of success as you prepare to enter the field of cybersecurity.*

* Career Services are consultation-based only and do not guarantee job placement.

PROGRAM FLOW


The Fundamentals Courses
01
02
03
Advanced Cybersecurity Courses
Cybersecurity Infrastructure Courses

The Fundamentals Courses

You will already have a grasp of basic technological concepts from the Introductory Course, such as common operating systems, virtualization, communication over a computer network, and the cloud environment. From the first day, instructors teach content from a security perspective that is explored in-depth in each course. These essential courses provide you with a foundational understanding of cybersecurity.

Microsoft Security

This course provides an in-depth understanding of Microsoft systems and the security concepts that ensure system protection, from the management and operation of a Microsoft domain environment (including the Windows Server 2012 OS) to the differences between newer OS versions, such as Windows Server 2016 and 2019.

Computer Networking

This course provides an in-depth understanding of fundamental networking concepts essential for cybersecurity professionals, such as those surrounding protocols, topologies, and network devices. This course prepares you to take the CompTIA Network+ exam.*

Cloud Security

The concepts taught in this course, such as the growing use of cloud platforms and how environments are managed and secured in the cloud, provide an essential understanding that paves the way for the practices and labs in the advanced courses that follow. This course prepares you for the AWS Certified Cloud Practitioner certification.

Linux Security

This course provides an understanding of the security and hardening aspects of Linux environments with specific emphasis on the Kali Linux cybersecurity distribution. You will also learn how to manage and operate a Linux environment. The curriculum taught in this course prepares you for the LPI Linux Essentials certification exam.*

Cybersecurity Infrastructure Courses

After completing the courses above, you will be prepared to start searching for entry-level jobs that will allow you to gain experience in the field, and you will be ready to apply for at least one relevant certificate.

The courses in this category lay the groundwork for a deeper understanding of the security measures and technologies cybersecurity professionals use every day. These courses provide essential expertise that prepares you to enter the world of cybersecurity.

Network Security
In this course, you will learn to secure, manage, and operate network communication equipment and systems and to implement the network security tools and technologies that are key to protecting an organization. This course prepares you to take the Cisco Certified CyberOps Associate exam.*

Cyber Infrastructure & Technology
This course provides you with the knowledge and practical training you need to design and maintain secure infrastructures and technologies. Security countermeasures such as SIEM, SOAR, endpoint security, and more provide an essential understanding of how to effectively protect organizations. This course begins to cover the CompTIA Security+ and CySA+ certificate objectives.

Introduction to Python for Security
This course provides you with an introduction to Python, the advanced programming language used by cybersecurity professionals to write scripts and automate security-related tools. The information you learn in this course also gives you a fundamental understanding of object-oriented programming.

Advanced Cybersecurity Courses

The courses until this point have established the practical knowledge, cybersecurity best practices, and the tools you need to prevent cyber attacks. To prepare you to address an attack that has already occurred, the advanced concepts in this category provide you with an understanding of different types of attacks, the attack kill chain, how to implement an attack, how to respond to an assault that is already underway, and how to mitigate it.

Offensive Security: Ethical Hacking
To train you to discover and exploit system vulnerabilities, penetrate organizational infrastructures, hack into web interfaces, and execute and defend against a variety of cyber attacks, this course provides you with knowledge, tools, and an understanding of a hacker's perspective. This skill set will help you to be a better defender as you prepare for a future career in ethical hacking and penetration testing.

DFIR & Threat Hunting
This course, as an introduction to Digital Forensics and Incident Response, provides a foundational understanding of the dynamics of working on a Security Operations Center (SOC) team and how to handle cyber attacks in real time. The material taught in this course prepares you for the CompTIA Security+, CompTIA CySA+, and (ISC)^2 SSCP** certification exams.*

IoT & Mobility Security
In this course, you will learn how to secure Internet of Things (IoT) and mobility devices, extract firmware and data, leverage emulation to mimic device functionality, and perform common attacks. Topics include the CAN bus, on-board diagnostics (OBD), infotainment systems, and regulations and best practices. Hands-on projects will build your understanding of how to protect against attacks and learn to analyze remote frequencies to implement a successful attack against a device. You will also build an IoT device on an Arduino, which provides a platform to gain the basic understanding of hardware security and similar IoT devices.

*Certification exams are not conducted as part of the program and require additional costs not included in tuition. The program meets the objectives of the certificate throughout the program. Additionally, we are offering two non-mandatory extra sessions per certificate for Network+, Linux Essentials, CyberOps, and Security+ exam preparation.

**Learners must have a minimum of one year of cumulative work experience in one or more of the seven domains of the SSCP Common Body of Knowledge (CBK) in order to be certified.

WHAT'S INCLUDED

Experiential Learning

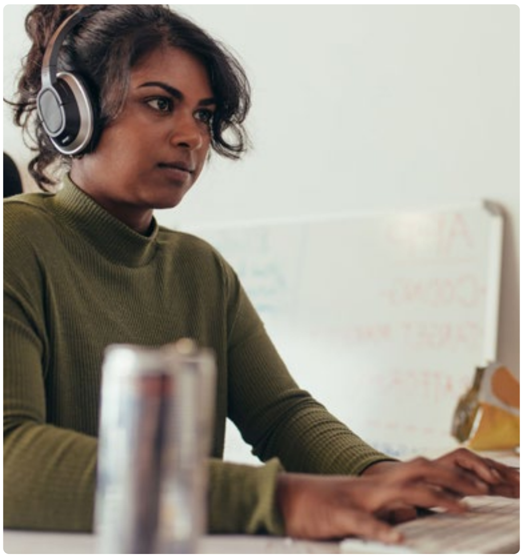
12 Specialized Courses

3 Dedicated Career Services Workshops

Professional Networking

4 Dedicated Test Preparation Workshops

430 In-Class Hours



PREREQUISITES

- No background in the field is needed but you should be technically inclined.
- Professional evaluation and admissions exam

INDUSTRY CERTIFICATIONS

The Nexus at University of Michigan Engineering Cybersecurity Professional Bootcamp sets you up for success by providing you with the fundamental knowledge you'll need to prepare for the industry's most recognized exams. The preparation and experience you receive in this intensive program helps you stand out to employers while training you for an exciting career in cybersecurity defense.*

Preparation assistance for Certification Exams includes the following†:**

- CompTIA Network+
- AWS Certified Cloud Practitioner
- LPI Linux Essentials
- Cisco Certified CyberOps Associate
- CompTIA Security+
- CompTIA CySA+
- (ISC)^2 SSCP††

Learners who complete the Cybersecurity Professional Bootcamp are prepared for a career defending the world's most sensitive information, critical infrastructures, and digital assets for business and industry. The knowledge gained in this program also prepares you to take essential industry certifications. The extensive opportunities in cybersecurity extend to the private and governmental sectors. For those who wish to enter the Information Assurance (IA) workforce, the following baseline certifications from the list above have been approved by the Department of Defense‡ (DoD):

- CompTIA Network+
- CompTIA Security+
- CompTIA CySA+
- Cisco Certified CyberOps Associate
- (ISC)^2 SSCP††

The above certifications are considered by the DoD to be among the necessary qualifications for IA personnel. Opportunities for the DoD include various roles, such as Information Assurance Technicians (IATs), Identity and Access Management (IAM), Information Assurance System Architects and Engineers (IASAEs), and Cybersecurity Service Providers (CSSPs). Opportunities are available for Analysts, Infrastructure Support, Incident Responders, Auditors, and Managers.‡‡

* While the curriculum provides the knowledge needed to perform well on industry exams, this program is not a test-preparation program, where the primary focus is the learner's performance on the exam. The program is designed to teach in-demand knowledge for today's workforce.
**Certification exams are not conducted as part of the program and require additional costs not included in tuition.
† The test preparation workshops are not mandatory and are not part of the program curriculum. The workshops are designed to provide extra resources and help for learners who wish to take specific exams.
††Learners must have a minimum of one year of cumulative work experience in one or more of the seven domains of the SSCP Common Body of Knowledge (CBK) in order to be certified.
‡ The certifications are DoD-Approved 8570 Baseline Certifications:
https://public.cyber.mil/cw/cwmp/dod-approved-8570-baseline-certifications/
‡‡DoD guidelines listing certification requirements for various IA roles can be found at https://public.cyber.mil/cw/cwmp/dod-approved-8570-baseline-certifications/ DoD guidelines subject to change. It is the individual's sole responsibility to check DoD documents for changes.

THE HACKERU DIFFERENCE

The information and critical methodologies participants learn in this program are based on the National Cybersecurity Authority's manual on Cyber Defense Methodology. A world leader in cybersecurity defense, Israel recommends the best-practice strategies and methodologies presented in the manual to all organizations in the country. Learners enrolled in the HackerU-powered Cybersecurity Professional Bootcamp receive the same caliber of training as Israel's elite cybersecurity intelligence forces.

PROGRAM BREAKDOWN BY COURSE

COURSE 1

Introductory Course

30 Hours

The Introductory Course teaches you the essentials of defensive cybersecurity and IT so you can decide, from a fully informed perspective, whether or not cybersecurity is the right career path for you. At the end of the course, a summary exam and one-on-one assessment with an Admissions Advisor allow you to examine your future in the program. Most importantly, this course discusses your expectations of working in cybersecurity versus the reality. This method ensures that only those with the passion and skills to become successful cybersecurity professionals advance into the extended program.

The Introductory Course teaches concepts of virtualization, the fundamentals of networking, and the essentials of the Linux and Windows operating systems. Through immersive virtual exercises that enhance experiential education, you will learn how to run basic commands while gaining an understanding of cybersecurity countermeasures and defense techniques, computer communication protocols, basic operating system structures, and the Cyber Attack Cycle.

The following topics are covered in the course:

1. **Introduction to Cybersecurity**
2. **Cybersecurity Research**
3. **Network Fundamentals**
4. **Windows OS**
5. **Linux OS**
6. **Network Attacks**
7. **Cyber Attack Cycle**
8. **Countermeasures and Defense**

COURSE 2

Microsoft Security

40 Hours

Companies around the world manage their computers and networks with Group Policy Objects on Windows Server 2012. This course teaches you how to set up domain environments with Active Directory to enable central control of all computers and users in a domain. You will also learn the differences between Windows Server 2012 and newer versions, how to manage network services such as DNS and DHCP servers, and how to configure security servers to harden systems.

The following topics are covered in the course:

1. **Introduction to Windows Client**
2. **Windows Server 2012 & Enterprise Creation**
3. **Domain Name System**
4. **Active Directory**
5. **PowerShell**
6. **Group Policy**
7. **Shares and Permissions**
8. **DHCP**
9. **Disk Management**
10. **Microsoft Endpoint Security**
11. **Security Policies & Authentication**

COURSE 3

Computer Networking

50 Hours

Networking is a major part of nearly every industry, including government, finance, transportation, technology, healthcare, manufacturing, hospitality, and more, as almost every business sector worldwide operates with networked devices. In this course, you will learn the various protocols, network layers, and devices that are essential to understanding a computer network.

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Because it is vital for cybersecurity professionals to have an in-depth understanding of networking, in this course, you will learn the networking concepts surrounding protocols, topologies, and network devices. This course also prepares you to take the CompTIA Network+ exam.*

The following topics are covered in the course:

1. **Introduction to Networks**
2. **Network Fundamentals**
3. **IOS Fundamentals**
4. **Switch Security**
5. **IP & Routing Concepts**
6. **Subnetting**
7. **IPv4 & IPv6 Static Routing**
8. **Dynamic Routing**
9. **VLAN & Trunk**
10. **Diagnostics & Troubleshooting**
11. **Access Control List**
12. **Infrastructure Services**

COURSE 4

Cloud Security

15 Hours

Cloud platforms provide centralized managed solutions that house organizational infrastructures. More and more companies are migrating their servers and databases to platforms such as Amazon's AWS, Google Cloud, and Microsoft Azure. Services range from basic physical servers to completely managed solutions. An essential understanding of cloud platforms includes knowing how to leverage, work with, and secure them.

In this course, you will learn how environments are managed and secured in the cloud and understand the rationale and scope of the growing use of cloud platforms. This course also provides you with the knowledge base and skill set that will prepare you for the AWS Certified Cloud Practitioner exam.*

The following topics are covered in the course:

1. **Cloud Fundamentals**
2. **Virtualization and Containers**
3. **Securing the Cloud**
4. **Advanced Cloud Computing**

COURSE 5

Linux Security

30 Hours

Linux's growing increase in popularity can be attributed to its use in IoT products, as well as the benefits it offers information security personnel. With specific emphasis on the Kali Linux cybersecurity distribution, this course focuses on the management and operation of the Linux open-source operating system. You will learn to navigate the Linux file system, run basic commands, configure network services, handle access permissions, and exploit mitigations. This course provides you with an understanding of the security aspects and hardening of Linux environments, and prepares you for the LPI Linux Essentials certification exam.*

The following topics are covered in the course:

1. **Introduction to Linux**
2. **CLI Fundamentals**
3. **Users and Permissions**
4. **Networking and System Management**
5. **Services and Hardening**
6. **Bash Scripting**
7. **Host Security**
8. **Network Security**

COURSE 6

Network Security

35 Hours

This course provides you with the knowledge you need to specialize in technological fields and business operations and stand out to potential employers with an understanding of how to secure, manage, and operate network communication equipment and systems for different organizations. This course helps to prepare you for the Cisco Certified CyberOps Associate exam.*

The following topics are covered in the course:

1. **Network Security Systems & Architecture**
2. **Secure Management & Access**
3. **Network Attacks & Mitigation**
4. **Network Traffic Analysis**
5. **Practical Cryptography**
6. **Firewall Fundamentals**
7. **VPN Technologies**
8. **Network Monitoring**
9. **IPS & IDS Concepts**

*Certification exams are not conducted as part of the program and require additional costs not included in tuition.

COURSE 7

Cyber Infrastructure & Technology

40 Hours

This course teaches you to design and maintain secure infrastructures, implement various security countermeasures, and build the knowledge base required to take the CompTIA Security+ certification exam.* Through an in-depth examination of various defensive infrastructures, you will learn how to design a secure architecture and understand the security measures that can be used to harden networks, devices, and cloud infrastructures. You will also learn how to work with Security Information & Event Management (SIEM) solutions through an emphasis on Splunk, a widely used open-source solution.

The following topics are covered in the course:

1. **Endpoint Security Measures**
2. **Honeypots**
3. **Data Loss Prevention**
4. **Mail Security**
5. **SIEM Introduction**
6. **Advanced SIEM**
7. **SIEM & SOAR**
8. **IIoT & ICS**
9. **Physical Security**
10. **Secure Architecture**

COURSE 8

Introduction to Python for Security

25 Hours

This course teaches you the essential concepts of Python, the industry's leading programming language. Immersive training exercises provide you with firsthand experience as you learn to work with tools to automate cybersecurity tasks. In a virtual hands-on integration, you will set up a Python environment in Windows and Linux and discover how to use external libraries.

In this course, you will receive guidance on how to find a position as a Cybersecurity Practitioner, how to work with IT and Network Operations Center (NOC) teams across a variety of organizations, and how to become the cybersecurity specialist for those teams.

The following topics are covered in the course:

1. **Introduction to Programming**
2. **Data Types & Conditions**
3. **Loops**
4. **File System & Error Handling**
5. **Functions**
6. **Network Communication**
7. **Python for Security**

COURSE 9

Offensive Security: Ethical Hacking

50 Hours

In this course, you will learn how to execute and defend against various attacks, such as network, application, cryptographic, and social engineering attacks. Hands-on digital labs provide you with the knowledge and tools you need to discover and exploit system vulnerabilities. You will also gain an understanding of how black-hat hackers think so you can anticipate their intentions and stay ahead of impending threats. The material presented in this course further prepares you for the CompTIA Security+, CompTIA CySA+, and (ISC)^2 SSCP** certification exams.*

The following topics are covered in the course:

1. **Introduction to Ethical Hacking**
2. **Network Scanning**
3. **MITM Attacks**
4. **Brute-Force**
5. **Social Engineering**
6. **Infrastructure Attacks**
7. **Windows Privilege Escalation**
8. **Linux Privilege Escalation**
9. **Web Application Security Fundamentals**
10. **XSS & File Inclusion**
11. **SQL Injection**
12. **Vulnerability Scanners & Reporting**

* Certification exams are not conducted as part of the program and require additional costs not included in tuition.
** Learners must have a minimum of one year of cumulative work experience in one or more of the seven domains of the SSCP Common Body of Knowledge (CBK) in order to be certified.

COURSE 10

DFIR & Threat Hunting

60 Hours

Through an understanding of digital forensics and incident response (DFIR), this course instills advanced threat hunting techniques such as situational awareness, machine learning, intelligence, and user behavior analytics. You will learn how to identify elusive threats that evade existing security countermeasures, how to implement successful threat hunting procedures, and how to handle cyber attacks as they occur. With an understanding of digital forensics techniques, you will investigate network attacks, host attacks, and learn how to reverse engineer malware to understand its purpose and execution on vulnerable systems.

The curriculum seeks to familiarize you with the dynamics of working on a Security Operations Center (SOC) team and the role of SOC teams across a variety of organizations. This course also prepares you for the CompTIA Security+, CompTIA CySA+, and (ISC)^2 SSCP** certification exams*.

The following topics are covered in the course:

1. **Introduction to DFIR**
2. **Incident Response Preparation**
3. **Incident Response Implementation**
4. **Data Acquisition**
5. **Windows Live Analysis**
6. **Windows Dead Analysis**
7. **Memory Analysis**
8. **Linux Forensics**
9. **Log Analysis & Timeline**
10. **DFIR Simulation**
11. **Threat Hunting**
12. **Static Malware Analysis**
13. **Dynamic Malware Analysis**
14. **Network Forensics**
15. **Network Defense & Persistence**

COURSE 11

IoT & Mobility Security

40 Hours

This course provides you with the knowledge and practical training needed to secure Internet of Things (IoT) and mobility devices. With a focus on preparing you for the real world by immersing you in the different approaches of hacking IoT and mobility devices, you will learn the crucial skill of extracting firmware and data and leverage the use of emulation to mimic device functionality and perform common attacks.

In IoT, automotive, and mobility infrastructures, there are regulations and best practices and you will gain a fundamental understanding of these. Topics include the CAN bus, on-board diagnostics (OBD), and infotainment systems. Hands-on projects will build your understanding of how to protect against attacks and by learning how to analyze remote frequencies, you will implement a successful attack against a device. You will also build an IoT device on an Arduino, which provides a platform to gain the basic understanding of hardware security and similar IoT devices.

The following topics are covered in the course:

1. **Introduction to IoT**
2. **Hardware Security**
3. **Introduction to Arduino**
4. **Arduino IDE**
5. **Understanding IoT File Systems**
6. **Firmware Extraction and Emulation**
7. **Introduction to RF**
8. **RF Attacks and Mitigations**
9. **Introduction to Automotive Security**
10. **Common Attacks in Automotive Security**

COURSE 12

Career Services

15 Hours

The career planning, training, and tools you need to enter the field of cybersecurity—along with personalized interview coaching, professional networking, internship placement assistance, and one-on-one consultations devoted to perfecting LinkedIn profiles and resumes—help you to put your best foot forward as you prepare to seek entry into the field of cybersecurity. Career Services covers the following subjects:

1. **Resume & LinkedIn Profile Building**
2. **Interview Skill Building**
3. **Question and Answer-Based Scenarios**

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PROGRAM SUMMARY

Courses	In-Class Hours
Introductory Course	30
Microsoft Security	40
Computer Networking	50
Cloud Security	15
Linux Security	30
Network Security	35
Cyber Infrastructure & Technology	40
Introduction to Python for Security	25
Offensive Security: Ethical Hacking	50
DFIR & Threat Hunting	60
IoT & Mobility Security	40
Career Services	15
Total	**430**

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