



CYBER SECURITY ANALYST PRACTICUM PROGRAM

Program Outline

51 Week Full-Time Diploma Program
600 Hours of Classroom Instruction
150 Hours of Practicum
750 Total Hours in Duration



PROGRAM DESCRIPTION

This program begins within an introduction into computer network technology and communication protocols used over the internet as a foundation for network security knowledge. An understanding of operating systems, data management and general system communications will be heavily focused on before moving onto more complex security topics.

Students will get an introduction into programming related to cyber security. They will learn how to utilize common web technologies in order to get a deep understanding of web application architecture. Moreover, they will get to know different encryption mechanisms used both across networks as well as encryption technologies used on a local file system.

Common security practices and vulnerabilities will be thoroughly focused on prior to being introduced into the core of the program, which is penetration testing. Students will get to display their skills in system intrusion through a Hackathon.

CAREER OCCUPATION PROGRAM

NOCs: 2171, 0213, 2147, 2281

This program prepares students for the following career occupations:

Systems Specialist, Systems Security Planner, Systems Security Analyst, System Auditor, Systems Analyst, Internet Security Analyst, Computer Systems Analyst, Computer Analyst, Applications Analyst, Internet Systems Administrator, Computer Network Manager, Systems Implementation Manager, Network Systems Engineer, Network Test Engineer, System Administrator, Server Administrator, Network Support Technician, Network Support Analyst, Network Operator, Network Controller, Network Administrator

ADMISSION REQUIREMENTS

Admission requirements may not be waived by either the student nor the Canadian College of Technology and Business (CCTB).

No funding may be disbursed to the student or received by CCTB until all admission requirements are met.

Once students enter a contract with the CCTB, payment arrangements, if any, must be met and first payment or payment in-full completed before the first class begins. Payment plan can be offered to a student if student loan is not an option.

Requirements:

- Good command of English language (See [Language Proficiency Policy](#))
- High school diploma or equivalent from an approved government institution of applicant's home country, or applicant is minimum 19 years of age

- Students are required to bring their own computers to class

LEARNING OBJECTIVES

After completing this program, students will be able to:

- Demonstrate knowledge of computer networks including TCP/IP protocol suite, OSI Network Stack, infrastructure design and hardware networking components
- Understand web application architecture and how it relates to network security
- Demonstrate an understanding of web programming with technologies such as HTML, CSS, and Python
- Describe and implement encryption-based technologies on both local machines and over the web
- Demonstrate an understanding of cybersecurity practical implementation in modern infrastructure
- Be able to run penetration tests on systems to test for vulnerabilities and potential security risks

PROGRAM EVALUATION METHODS AND COMPLETION REQUIREMENTS

CCTB evaluation methods are projects/assignments, presentations, assessments, quizzes, exams.

Students will be given interim transcripts after two courses are completed, evaluating their performance and the mark to date. Any academic concerns will be addressed with the student at that time.

To complete the program, students must have minimum of 75% attendance rate and a passing grade is 65% for each course and the program in whole.

Exam at the end of each course will have a minimum of 60 questions and 2 hours in duration and will be worth 40% of the course mark. The remaining 60% of the course mark will be assessed by the Instructor, based on projects/assignments completed, presentations completed, participation in class activities, and evaluations of appropriate equipment competencies.

If the course is failed, the student must re-take the course with the next available group/cohort. Re-take fee is \$1100.

Students will take a 4-hour final exam at the end of the whole program that will consist of up to 120 questions and worth 25% of the program mark. Students will be given opportunity to re-take the exam once, to improve the mark. The exam re-take must be completed no later than five days after the result for the first exam is available. Highest mark will count.

The overall grade for the Program is compiled from the accumulated marks of courses and the final exam completed to date. Final grades are posted in the campus on Friday of the following week.



If a final grade of less than 65% in a program is achieved, the student must re-take the program.

(See [Dispute Resolution and Grade Appeal Policy](#))

PROGRAM DURATION

51 Weeks (750 Hours)

HOMEWORK HOURS

Minimum 2.5 - 3 hours of homework between lectures are expected.

DELIVERY METHODS

- In-classroom instruction
- Online instructional videos
- Software hands-on Labs

TEACHING METHODS

- Lecture Format

REQUIRED PROGRAM MATERIALS

Textbooks/Manuals:

- Grabosky, P., & Smith, R. (2012). *Cybercrime*. Lawbook Co.
- Pande, J. (2017). Introduction to Cyber Security. *Technology*, 7(1), 11-26.
- Comer, D. E., & Droms, R. E. (2003). *Computer networks and internets*. Prentice-Hall, Inc.
- Zacker, C., & Warren, A. (2017). *MCSA Windows Server 2016 Exam Ref 3-Pack: Exams 70-740, 70-741, and 70-742*. Microsoft Press.
- White, G. B., Fisch, E. A., & Pooch, U. W. (2017). *Computer system and network security*. CRC press.
- Ray, J. M. (Ed.). (2014). *Research data management: Practical strategies for information professionals*. Purdue University Press.
- Beaulieu, A. (2009). *Learning SQL: Master SQL Fundamentals*. O'Reilly Media, Inc.
- Graham, I. S. (1995). *The HTML sourcebook*. John Wiley & Sons, Inc.
- Lutz, M., & Lutz, M. (1996). *Programming python* (Vol. 8). O'Reilly.
- Graves, K. (2010). *CEH certified ethical hacker study guide*. John Wiley & Sons.
- Gregg, M. (2017). *Certified Ethical Hacker (CEH) Version 9* Pearson uCertify Course and Labs Access Card.
- Dulaney, E., Easttom, C., Chapple, M., & Seidl, D. (2017). *CompTIA Complete Cybersecurity Study Guide 2-Book Set: Exam SY0-501 and Exam CSA-001*.

- Dulaney, E. (2017). *CompTIA Security+ Deluxe Study Guide: Exam SY0-501*. SYBEX Inc.

Software tools and user licenses will be provided by the CCTB.

Instructors will provide additional educational resources that are specific to the course subject matter that students may use in addition to their class lectures to attain a greater understanding of that subject. These additional resources and/or reference material will be made available online.

Students must have their own computers in class.

PROGRAM ORGANIZATION

Course Titles:

1. Introduction to Information Systems Management	60 Hours
2. Introduction into Cyber Security	60 Hours
3. Computer Networks	60 Hours
4. Communications, Operating Systems, and Data Management	60 Hours
5. Programming languages for Cyber Security	60 Hours
6. Concepts and Practical Implementation of Encryption	60 Hours
7. Information Security in the Cyber World	60 Hours
8. Penetration Testing	60 Hours
9. Hackathon	60 Hours
10. Employment Preparation	60 Hours
Practicum Placement	150 Hours
Total Program Duration	750 Hours