CYBERSECURITY (CYBR), BACHELOR OF SCIENCE

At Dunwoody College of Technology, the Cybersecurity bachelor's completion program is a two-year evening program designed for working professionals who have a two-year degree in computer networking and are looking to build upon those skills. Students graduate ready to work in cybersecurity positions at corporate, nonprofit, and governmental organizations.

The program prepares students to secure, test, and defend information technology systems. Graduates learn how to recognize various forms of cyberattack, stop them, and repair and mitigate any damage caused by attacks. An emphasis is placed on cybersecurity within the context of business priorities and levels of acceptable risk for organizations.

Coursework includes such topics as security for software and networks, cyber warfare, scripting, forensic investigation, data protection laws, and risk mitigation.

Arts & Sciences courses enhance and support the technical coursework.

Students complete a capstone project that demonstrates their skills as a cybersecurity professional.

Credential Earned: BS
Length of Program: 2 years (4 semesters)
Classes Offered: Day on Campus or Evening Online Hybrid
Available Starts: Fall Semester only

Program Outcomes

- Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgements in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Apply security principles and practices to the environment, hardware, software, and human aspects of a system.
- Analyze and evaluate systems with respect to maintaining operations in the presence of risks and threats.

Degree Requirements

Students admitted to the Cybersecurity (CYBR) program can transfer up to 47 technical and 15 Arts & Sciences credits. A transfer evaluations is required. Not all credits may transfer into the degree program.

Code	Title	Credits
Transfer Credits		**62**
General Requirements		
MATH2250	Statistics	3
MATH2830	Discrete Math	3
COMM4100	Technical Writing Capstone	3
Humanities		3
Social Science		3
Technical Requirements		
CYBR3110	Systems Security I	3
CYBR3120	Software Security	3
CYBR3140	Cybersecurity Fundamentals	2
CYBR3160	Business Principles for Cybersecurity	2
CYBR3130	Legal Issues & Policy	2
CYBR3210	Systems Security II	4
CYBR3220	Scripting for Cyber Professionals	4
CYBR3231	Digital Forensic Theory	2
CYBR4110	Network Security	5
CYBR4120	Introduction to Cyber Warfare	2
CYBR4131	Operating Systems Forensics	3
CYBR4211	Cybersecurity Capstone	3
CYBR4222	Network Forensics	4
CYBR4231	Industrial Cyber Awareness	4
Total Credits		**120**

Courses

CYBR3110 | Systems Security I | Lecture/Laboratory (3 Credits)
Examine, configure and troubleshoot authentication and authorization applications supporting confidentiality and integrity. Topics include the basics of symmetric asymmetric encryption and their implementation for authentication and protection of data at rest and in transit as well as implementing patch management, hot fixes, and revision updates and their risks.

CYBR3120 | Software Security | Lecture/Laboratory (3 Credits)
Explore common issues with software security and methods of mitigating attack vectors. Topics include how software is made and maintained, cross site scripting, SQL Injection, the OWASP Top 10 Report, API Gateways and Security, and elements of pen-testing software.

CYBR3140 | Cybersecurity Fundamentals | Lecture (2 Credits)
Discover the many career paths in the wide and growing field of cybersecurity. Explore the world of cybersecurity by researching and practicing industry roles.

CYBR3160 | Business Principles for Cybersecurity | Lecture (2 Credits)
Examine basic business organization and principles, including financial management, budgets and revenue streams with an emphasis on risk mitigation and the levels of acceptable risk in conducting business.

CYBR3130 | Legal Issues & Policy | Lecture (2 Credits)
Examine the responsibilities of the cybersecurity professional in regards to standards, the law, and policy. Topics include data protection standards, common security policies in business, and proper communication with internal and external entities related to policy and supply risk management.

CYBR3210 | Systems Security II | Lecture/Laboratory (4 Credits)
Examine methods of protecting against intrusions from within and without. Analyze public key infrastructure and its trust models. Other topics include advanced methods of authentication under the philosophy of "zero trust" as well as an integrated approach to reducing risk, reducing the attack surface, and continuous improvement of the security posture.
Prerequisite(s): CYBR3110

CYBR3220 | Scripting for Cyber Professionals | Lecture/Laboratory (4 Credits)
Use various methods of scripting to automate, test, and secure a computer system. Scripting languages include common shell languages PowerShell and BASH as well as the popular Python language. Detect security issues and use scripts to mitigate the found vulnerability.

CYBR3231 | Digital Forensic Theory | Lecture (2 Credits)
Explore scientific theory, methods, and evidence preservation from a digital forensics perspective. Emphasis is on the fundamentals of forensic theory, attacker techniques, and procedures used in the cybersecurity profession.

CYBR4110 | Network Security | Lecture/Laboratory (5 Credits)
Explore network security in theory. Examine and practice the use of tools used for protecting networks against malicious attacks. Topics include implementation of secure networking systems including intrusion detection and prevention systems, proxy servers, wireless and point of sales systems and firewall configurations.

CYBR4120 | Introduction to Cyber Warfare | Lecture (2 Credits)
Examine methods and techniques used to perform politically motivated attacks against other nation states for strategic or military objectives including cyber espionage. Identify diverse motivations of nation state actors, non-state actors such as terrorist groups, companies and politically or economically motivated groups and individuals. Explore both offensive and defensive techniques.
Prerequisite(s): CYBR3231

CYBR4131 | Operating Systems Forensics | Lecture/Laboratory (3 Credits)
Identify common operating system storage techniques. Examine common techniques to retrieve information at file and operating systems levels. Investigate additional artifacts for information that include memory, virtual memory, slack space, and swap spaces.
Prerequisite(s): CYBR3231

CYBR4211 | Cybersecurity Capstone | Capstone (3 Credits)
Demonstrate overall content knowledge of the program outcomes through a final project. Present project with explanation of skills required by a cybersecurity professional.
Prerequisite(s): CYBR4120

CYBR4222 | Network Forensics | Lecture/Laboratory (4 Credits)
Examine network data acquisition methods. Research network protocols vulnerabilities. Activities are related to monitoring and analysis of network data.
Prerequisite(s): CYBR4110

CYBR4231 | Industrial Cyber Awareness | Lecture/Laboratory (4 Credits)
Every aspect of modern life depends on industrial control systems (ICS) operating as expected. As ICS devices become increasingly connected, they also become increasingly vulnerable. In the class you will learn how to implement industrial frameworks and foundational security controls, aligning IT/OT, gaining executive buy-in and selecting the right tools for the job.

MATH2250 | Statistics | Lecture (3 Credits)
Descriptive and inferential statistics, frequency distributions, probability theory, and issues related to gathering data; computer spreadsheets facilitate the organization, analysis and display of data.
General Education: Mathematics

MATH2830 | Discrete Math | Lecture (3 Credits)
Examine a set of branches of math that all have in common the feature that they are "discrete" rather than "continuous".
General Education: Mathematics

COMM4100 | Technical Writing Capstone | Lecture (3 Credits)
Research, plan, and organize professional documents for the capstone project. Topics include assessment techniques, special audience considerations, professional speaking skills, and presentation aids.
General Education: Communications with Writing