# CYBER OPERATIONS
## Bachelor of Science
### 2025-2026

**CEDARVILLE UNIVERSITY**

## FRESHMAN

### FALL

| Course | Hours | Title | Codes |
|---|---|---|---|
| BTGE 1725 | 3 | The Bible and the Gospel | W |
| CS 1210 | 3 | Intro to Programming Using C++ | A |
| EGCP 1010 | 3 | Digital Logic Design | B |
| ENG 1400 | 3 | Composition | |
| MATH 1705 | 4 | Calculus I | C |

**Total: 16**

### SPRING

| Course | Hours | Title | Codes |
|---|---|---|---|
| CS 1220 | 3 | Object-Oriented Design Using C++ | A, D |
| CY 1000 | 3 | Introduction to Cybersecurity | E |
| MATH 1715 | 4 | Calculus II | C, F |
| PEF 1990 | 2 | Physical Activity and Healthy Living | |
| PHYS 2110 | 4 | General Physics I | F |

**Total: 16**

## SOPHOMORE

### FALL

| Course | Hours | Title | Codes |
|---|---|---|---|
| BTGE 2730 | 3 | Old Testament Literature | W, X |
| CS 2210 | 3 | Data Structures Using Java | D, G |
| CY 3420 | 3 | Cyber Defense | D, E, H |
| CY 2310 | 3 | Cyber Forensics | E |
| GSS 1100 | 3 | Politics and American Culture | |

**Total: 15**

### SPRING

| Course | Hours | Title | Codes |
|---|---|---|---|
| BTGE 2740 | 3 | New Testament Literature | X, Y |
| COM 1100 | 3 | Fundamentals of Speech | |
| CS 3310 | 3 | Operating Systems | D, J |
| EGCP 3210 | 3 | Computer Architecture | A, B |
| MATH 2520 | 3 | Discrete Math & Probability Princip for CS | F, K |

**Total: 15**

## JUNIOR

### FALL

| Course | Hours | Title | Codes |
|---|---|---|---|
| BTGE 3755 | 3 | Theology I | Y, Z |
| CS 3410 | 3 | Algorithms | G, K, L |
| CY 3320 | 3 | Linux Systems Programing | G, J, M |
| EGCP 2120 | 3 | Micro-controllers | A, B |
| EGCP 4310 | 3 | Computer Networks | G, J |
| Electives | 1.5 | | |

**Total: 16.5**

### SPRING

| Course | Hours | Title | Codes |
|---|---|---|---|
| BTGE 3765 | 3 | Theology II | Z |
| CY 4330 | 3 | Software Security | H, M |
| Electives | 2 | | |
| Interdisciplinary Elective | 3 | | |
| Technical Elective | 3 | | |
| Technical Elective | 3 | | |

**Total: 17**

## SENIOR

### FALL

| Course | Hours | Title | Codes |
|---|---|---|---|
| CY 4810 | 3 | Secure Software Engineering I | H, L, N |
| EGGN 4010 | 0 | Senior Seminar | |
| GBIO 1000 | 3.5 | Principles of Biology | |
| HIST | 3 | History Elective | |
| LIT 2XXX | 3 | Literature Elective | |
| Social Science Elective | 3 | | |

**Total: 15.5**

### SPRING

| Course | Hours | Title | Codes |
|---|---|---|---|
| CY 4310 | 3 | Cyber Operations | H |
| CY 4820 | 4 | Secure Software Engineering II | N |
| EGGN 3110 | 3 | Professional Ethics | |
| Electives | 4 | | |
| HUM 1400 | 3 | Introduction to Humanities | |

**Total: 17**

**GUIDE KEY**

| Left Side | Middle | Right Side |
|---|---|---|
| Required prerequisite ID | Required corequisite ID | This course prerequisite ID |

A → A   is a prerequisite for

Credit hours: 3

- ENGR & COMP SCI
- MATH & SCIENCE
- GENERAL EDUCATION

**TOTAL PROGRAM HOURS: 128**

*Program, track, and elective information on reverse side*

## Cyber Operations Program Information

### WHAT IS CYBER OPERATIONS?

Cyber operations focuses on securing and operating in contested digital environments, including defending systems and networks and conducting authorized mission-oriented activities such as collection, exploitation, and response. As a broad field, it includes activities ranging from threat detection and incident response to vulnerability assessment, secure configuration, and security testing of software and infrastructure. Cyber operations emphasizes technical fundamentals, disciplined procedures, and extensive hands-on lab work that simulates real attack-and-defend conditions.

### WHAT KINDS OF JOBS CAN I GET WITH A CYBER OPERATIONS DEGREE?

Cyber operations graduates are prepared for roles in the cybersecurity workforce, including working in Top Secret facilities for the US government to help secure our nation, and in roles like network security engineer, penetration tester, security analyst, and software developer in both the private and public sectors. Cedarville's program's hands-on lab work, internships, and cyber competitions (including collegiate defense and skills-based leagues) provide practice that maps to common employer expectations in security operations, incident response, and defensive and offensive testing.

### WHY CHOOSE CEDARVILLE?

The School of Engineering and Computer Science education at Cedarville is based on three pillars, aimed at helping students:
1. *Discover their purpose*
2. *Know their people*
3. *Prepare to change their world*

Addressing these topics from a biblical perspective is critical for developing not only an understanding of their pursuit of their career, but also their life-long roles as followers of Jesus Christ!

## Cyber Operations Program Track

Students in the cyber operations program at Cedarville University have the option of fulfilling their 6 hours of Technical Electives (along with 3 additional elective hours) by completing the Artificial Intelligence Track:

### ARTIFICIAL INTELLIGENCE TRACK

» DSAI-2110 Data Management for AI *(3 hrs)*
» DSAI-3110 Foundations of Data Science & Machine Learning *(3)*
» DSAI-3510 Neural Networks and Deep Learning *(3)*

*9 hours total*

## Cyber Operations Program Electives

### INTERDISCIPLINARY ELECTIVES

» CRJU-4160 International & Domestic Terrorism *(3 hrs)*
» CRJU-4320 Criminal Investigation *(3)*
» HIST-3080 History & Politics of Russia & Eastern Europe *(3)*
» HIST-3220 History & Politics of the Middle East *(3)*
» HIST-4500 Seminar: Warfare Ancient & Modern *(3)*
» ITM-3450 Information Security Governance *(3)*
» PUAD-3690 Public Policy *(3)*

### TECHNICAL ELECTIVES

» CS-3220 Web Applications *(3 hrs)*
» CS-3510 Compiler Theory & Practice *(3)*
» CS-3610 Database Organization & Design *(3)*
» EGCP-3010 Advanced Digital Logic Design *(3)*
» EGCP-4210 Advanced Computer Architecture *(3)*

## Cyber Operations Critical Path

The below sequence of courses is most critical for students' timely completion of the program due to prerequisites.



| CS-1210 Intro to C++ → CS-1220 Obj-Orient Design → CS-2210 Data Structures | CS-3410 Algorithms | CY-4810 Secure Software Engineering I → CY-4820 Secure Software Engineering II |
| MATH-1705 Calculus I → MATH-1715 Calculus II → MATH-3560 Discrete Math (Sp Only) | | |

| Taken Prior to Junior Year | Fall | Spring | Fall | Spring |