

# B.S. in Cyber Intelligence and Security

The Cyber Intelligence and Security (CI) degree program, offered by the College of Business, Security and Intelligence is designed to provide graduates with the knowledge and skills essential for entry into many areas of cyber security work including: cyber analytics, incident response, network security and cyber security operations, and management careers.

Our students are encouraged to think beyond traditional academic boundaries and seek workplace and cultural experiences that will enrich and enlighten them on the evolving workplace and the global internet/business environment. Dedicated faculty advisors assist CI students in evaluating the many opportunities available to them in this program. Emphasis is placed on effective communications, quantitative skills, global awareness, social responsibility, ethical and legal grounding, information technology, critical thinking skills, teamwork, computer and network functional skills, broad cyber industry familiarity, and a commitment to lifelong learning.

Course requirements include a core computer science foundation with lectures and labs, group/individual projects and presentations, and a blend of theory and applications to best prepare students for a variety of positions in the workplace. Colloquia, forums, visiting speakers, interesting field trip experiences, and interdisciplinary opportunities/ activities serve to enrich the curriculum. Diverse elective courses allow students to broaden their general education interests or pursue specific interests in many specialized areas, including international commerce, uncrewed aviation, global security and intelligence, and culture and language.

The Bachelor of Science degree program in Cyber Intelligence and Security is accredited by the Computing Accreditation Commission (CAC) of ABET (<https://www.abet.org/>). This program is also recognized as a NSA and DHS Center of Academic Excellence (CAE) Program of Study, signifying its commitment to excellence in cybersecurity education and research (<https://www.caecommunity.org>).

## Students will:

- Apply principles of computing and other relevant disciplines to analyze and solve complex computing problems.
- Implement computing-based solutions to meet specific computing requirements within their program's discipline.
- Communicate effectively in a variety of professional contexts.
- Observe professional responsibilities to make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as members or leaders of teams engaged in activities appropriate to their program's discipline.
- Apply security principles and practices to maintain operations in the presence of risks and threats.

## Degree Requirements

The Bachelor of Science degree in Cyber Intelligence and Security requires successful completion of a minimum of 120 credit hours and is normally completed in eight semesters. Students choose one of three options as a part of their senior capstone - either a project, a thesis, or internship/co-op program. Some courses may require prerequisite subject knowledge or particular class standing. Course descriptions should be reviewed prior to registration to ensure proper placement.

The National Security Agency (NSA) and the Department of Homeland Security (DHS) jointly sponsor the National Centers of Academic Excellence in Cyber Defense (CAE-CD) program, and have designated the Prescott Campus as a NSA/DHS CAE-CD institution with its degree programs in Cyber Intelligence and Security meeting their stringent criteria.

Embry-Riddle is a sponsor and mentor for the National Cyber Patriot program and a member of the National CyberWatch Network.

In order to be awarded this degree, a student is required to complete a minimum of 80% of the core in residence or transfer those credits from institutions approved by the Department Chair.

Students should follow the suggested course of study--taking 200, 300, and 400 level courses in sequence--unless otherwise approved by the Department Chair. This will provide the student with the greatest chance of success.

## Program Requirements

### General Education

Embry-Riddle degree programs require students to complete a minimum of 36 hours of General Education coursework. For a full description of Embry-Riddle General Education guidelines, please see the General Education section of this catalog.

Students may choose other classes outside of their requirements, but doing so can result in the student having to complete more than the degree's 120 credit hours. This will result in additional **time and cost** to the student.

Communication Theory and Skills	9
Computer Science/Information Technology	3
Mathematics	6
Physical and Life Sciences (Natural Sciences)	6
Humanities and Social Sciences	12
3 hours of Lower-Level Humanities	
3 hours of Lower-Level Social Science	
3 hours of Lower-Level or Upper-Level Humanities or Social Science	
3 hours of Upper-Level Humanities or Social Science	
<b>Total Credits</b>	<b>36</b>

### Cyber Intelligence and Security Core (89 Credits)

The following course of study outlines the quickest and most cost-efficient route for students to earn their B.S. in Cyber Intelligence and Security. Students are encouraged to follow the course of study to ensure they complete all program required courses and their prerequisites within four years.

Courses in the core with a # will satisfy your general education requirements.

ACC 210	Financial Accounting *	3
ACC 329	Forensic Accounting and Fraud Examination *	3
BA 201	Principles of Management	3
CI 120	Introduction to Cyber Security Majors	3
CI 201	Introduction to Linux, Unix, Windows, and Scripting	3
CI 320	Ethical Hacker - Pen Testing *	3
CI 330	Software Security	3
CI 340	Database System Security	3
CI 410	Malware Analysis **	3
CI 460	Big Data Analytics and Machine Learning	3
COM 122	English Composition #	3
COM 219	Speech #	3
COM 223	Intelligence Writing #	3
CS 118	Fundamentals of Computer Programming #	3
CS 125	Computer Science I	4
CS 213	Introduction to Computer Networks *	3
CS 304	Introduction to Computer Forensics *	3
CS 315	Data Structures and Analysis of Algorithms *	3
CS 420	Operating Systems *	3

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General Education - Humanities Lower-Level Elective #	3
General Education - Humanities or Social Science Lower-Level Elective #	3
General Education - Humanities or Social Science Upper-Level Elective #	3
General Education - Natural Science Elective (One must include a lab) #	7
General Education - Social Science Lower-Level Elective #	3
MA 111 Pre-Calculus for Aviation #	3
MA 112 Applied Calculus for Aviation #	3
MA 225 Introduction to Discrete Structures	3
MA 314 Applied Linear Algebra & Statistics **	3

### Intelligence and Security Concentration (21 Credits)

CI 310 Intelligence, Surveillance and Reconnaissance **	3
CI 311 Securing Computer Networks **	3
CI 450 Computer Forensics II **	3
CS 303 Cryptography and Network Security **	3
CS 432 Information and Computer Security **	3
SIS 210 Security Fundamentals	3
SIS 315 Studies in Global Intelligence I	3

### Senior Capstone (3 Credits)

#### Choose one of the following:

CI 475 Cyber Senior Thesis **	3
CI 490 Cyber Capstone Project **	3
CECIS 497 Senior Capstone Option	3

### Open Electives (7 Credits)

Open Electives	7
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<b>Total Credits</b>	<b>120</b>
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\* Offered in Fall Only

\*\* Offered in Spring Only

# General Education Course

All Army ROTC students are required to complete SS 321 - U.S. Military History 1900-Present (3 credits) in order to commission.

### Cyber Intelligence and Security - General

#### Freshman Year

Fall	Credits
CI 120 Introduction to Cyber Security Majors	3
COM 122 English Composition	3
CS 118 Fundamentals of Computer Programming	3
MA 111 Pre-Calculus for Aviation	3
Social Science Lower-Level Elective	3
UNIV 101 College Success	(1)
<b>Credits Subtotal</b>	<b>15.0</b>

#### Spring

BA 201 Principles of Management	3
CI 201 Introduction to Linux, Unix, Windows, and Scripting	3
CS 125 Computer Science I	4
Humanities Lower-Level Elective	3
MA 112 Applied Calculus for Aviation	3
<b>Credits Subtotal</b>	<b>16.0</b>

#### Sophomore Year

##### Fall

COM 223 Intelligence Writing	3
CS 213 Introduction to Computer Networks	3
CS 315 Data Structures and Analysis of Algorithms	3
MA 225 Introduction to Discrete Structures	3
Natural Science Elective	3
<b>Credits Subtotal</b>	<b>15.0</b>

##### Spring

ACC 210 Financial Accounting	3
CI 311 Securing Computer Networks	3
CS 303 Cryptography and Network Security	3
MA 314 Applied Linear Algebra & Statistics	3
Natural Science Elective with Lab	4
<b>Credits Subtotal</b>	<b>16.0</b>

#### Junior Year

##### Fall

CI 320 Ethical Hacker - Pen Testing	3
CI 330 Software Security	3
CS 304 Introduction to Computer Forensics	3
Humanities or Social Science Lower-Level Elective	3
SIS 210 Security Fundamentals	3
<b>Credits Subtotal</b>	<b>15.0</b>

##### Spring

CI 340 Database System Security	3
CI 450 Computer Forensics II	3
COM 219 Speech	3
Open Elective	3
SIS 315 Studies in Global Intelligence I	3
<b>Credits Subtotal</b>	<b>15.0</b>

#### Senior Year

##### Fall

ACC 329 Forensic Accounting and Fraud Examination	3
CI 460 Big Data Analytics and Machine Learning	3
CS 420 Operating Systems	3
Humanities or Social Science Upper-Level Elective	3
Open Elective	4
<b>Credits Subtotal</b>	<b>16.0</b>

##### Spring

CI 310 Intelligence, Surveillance and Reconnaissance	3
CI 410 Malware Analysis	3
CS 432 Information and Computer Security	3
Senior Capstone	3
<b>Credits Subtotal</b>	<b>12.0</b>
<b>Credits Total:</b>	<b>120.0</b>