

# Cyber Threat Intelligence & Defense - B.S.

The Cyber Threat Intelligence & Defense bachelor's degree program is designed to fill a critical and growing need for cyber threat intelligence and defense personnel in the public and private sector. Students completing this curriculum should have the understanding of incident response techniques that detect, scope and respond to internal and external intelligence. This intelligence is used to enable network and system defenders to establish protocols that decrease the cyber attacker's likelihood of success with each ensuing intrusion attempt.

Upon completion of the program, graduates are expected to:

- Operate and communicate effectively in working with stakeholders at all levels.
- Function effectively on teams to accomplish a common goal.
- Synthesize aspects of professional, ethical, legal, security and social issues and responsibilities in the area of cyber operations.
- Apply current techniques, skills and tools necessary for computer and cyber practices.
- Measure the performance of security systems within an enterprise level information system infrastructure.
- Analyze the local and global impact of computing on individuals, organizations and society.
- Analyze a problem, identify possible threats, and define the computing requirements appropriate to solve cyber operations issues.

The focus of this program is to educate and train the new wave of cyber specialist that can track, analyze and counter digital security threats. This form of intelligence is a blend of physical reconnaissance and defense with modern information technology techniques. Proactive cyber defense is the direction of the future, the gathering of information about trends and behaviors of adversaries in anticipation to opposing an attack against computers and networks, is critical to mitigating operational risk.

An experiential educational experience is also offered. There are a variety of options available for students to complete the required six-credit experience. Student may elect to add an additional three credits based upon advising and prior planning.

Upon graduation, students may be employed in cyber-related jobs ranging from manufacturing, defense, public administration, healthcare and retail trade industries.

An important component of the program's educational experience is the general studies courses taught by the College of Arts & Sciences. Graduates are expected to show competencies in higher-order thinking, communications, ethics, global diversity, responsible citizenship and leadership.

## Cyber Threat, Intelligence & Defense

A four year program leading to the bachelor of science degree

### Major Courses

CSIS1000	Problem Solving and Programming Concepts	3
CSIS1101	Computer Science I	3
CSIS1112	Computer Science II	3
CSIS2030	Database Concepts	3
CSIS2045	Introduction to Operating Systems	3
CSIS2080	Database Design	3
CYB1005	Introduction to Cyber Security Operations	3
CYB2010	Computer Architecture with Assembly Language Programming	3
CYB3011	Software Reverse Engineering	3
CYB3023	Large Scale Distributed Systems	3
CYB3038	HCI/Usable Security	3
CYB4010	Computer and Network Forensics	3
CYB4026	Cyber Intelligence	3
CYB4032	Perimeter Protection and Vulnerability Assessment	3
CYB4044	Active Cyber Defense and Countermeasures	3
ITEC2081	Network Protocols I	3
ITEC2082	Network Protocols II	3
ITEC3050	Information Security with Cryptography	3
ITEC3075	Network Security	3
ITEC3083	Wireless Networking	3

### Applied/Experiential Learning

Choose 6 credits from the following:		6
DEE3999	Directed Experiential Education <sup>D</sup>	
TECX4099	College of Engineering & Design Internship <sup>LC</sup>	
TECX4190	Technical Solutions Design Project	
<b>Related Professional Studies</b>		
CAR0010	Career Management	1
LAW2001	The Legal Environment of Business I	3
LAW3080	Cyberlaw	3
PRMG2010	Introduction to Project Management & Project Membership	3
<b>A&amp;S Core Experience</b>		
Communications Foundation Courses		9
ENG1020	Rhetoric & Composition I	
ENG1021	Rhetoric & Composition II	
ENG1030	Communication Skills	
Integrative Learning		6
Two ILS courses, one at the 2000 level, and one at the 4000 level		
Arts and Humanities		6
PHIL3020	Crisis and Controversy: A Critical Thinking Approach	
or PHIL3240	Ethics: A Global Perspective	
One course from ART, HIST, HUM, LIT, or REL		
Mathematics		6
MATH2001	Statistics I	
MATH2020	Discrete Mathematics <sup>*</sup>	
Science		4
PHY1011 & PHY1016	General Physics I and General Physics I Laboratory	
Social Sciences		6
LEAD1010	Foundations of Leadership Studies	
One course from ANTH, ECON, PSCI, PSYC or SOC		
A&S Electives		6
Two courses with an EASC attribute		
<b>Free Elective <sup>#</sup></b>		
3 credits selected from 1000-4999 numbered offerings within the university		3
Total Credits		122.0

\* Students that do not place in MATH2020 Discrete Mathematics, will need to take an extra course, MATH1020 Fundamentals of Algebra, as a prerequisite. If needed this will count as an A&S elective.

<sup>D</sup> Directed Experiential Education (DEE) opportunities are based on project availability with community partners and student eligibility. For more information, visit Experiential Education & Career Services (EE&CS).

<sup>LC</sup>Typically, internships require a minimum of six credits. Students interested in a 9 or 12-credit internship can apply additional experiential learning and free elective credits, if available. Students are strongly encouraged to contact a faculty adviser before scheduling internship and free elective credits.

<sup>#</sup> In addition to classes, free elective credits may be applied to a number of options such as internship, study abroad, Directed Experiential Education courses and courses in a specialization or minor as relevant. For Accelerated Master's program students, up to three graduate-level courses may apply. Students are strongly encouraged to contact a faculty adviser before scheduling free elective credits.

NOTE: Students must pass MATH0010 Basic Mathematics or have equivalent placement scores to enroll in required math course(s).

Students who graduate with a bachelor's degree must leave Johnson & Wales University with effective writing skills to fulfill the graduation writing requirement. These writing skills are assessed in ENG1021 Rhetoric & Composition II. Students who have met the requirement of ENG1021 Rhetoric & Composition II or ENG1027 Honors Advanced Composition and Communications: Civic Discourse outside of Johnson & Wales University must fulfill the graduation writing requirement through successful completion of ENG0001 Writing Workshop.

In collaboration with academic colleges across all JWU campuses, JWU Global Study Abroad programs offer a variety of international options for major, minor, arts and sciences, and elective credit at many affordable price points for students during the academic year, break periods, and summer. Faculty-led, exchange, affiliate, and direct-enroll programs range in duration from one week to a full semester or full year. Financial aid may be applied and

scholarships are available. Visit the study abroad website for information, program descriptions and online applications. Where will you go?