Cybersecurity - B.S.

Curriculum

The Cybersecurity bachelor's degree program is designed to fill a critical and growing need for cybersecurity 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.

Cybersecurity

A four year program leading to the bachelor of science degree

Major Courses		
CSIS1010	Problem Solving for Computing	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 Cybersecurity	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	Ethical Hacking	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
ASCI4799	College of Arts & Sciences Internship [Ic]	
DEE3999	Directed Experiential Education [D]	
TECX4190	Technical Solutions Design Project	
Related Professional Studies		
LAW2001	The Legal Environment of Business I	3
LAW3080	Cyberlaw	3
PRMG2010	Introduction to Project Management & Project Membership	3
University Core Curriculum		
Communicating		9
ENG1020	Rhetoric & Composition I	
ENG1021	Rhetoric & Composition II	
ENG1030	Communication Skills	
Connecting		6
Two courses with the Connecting attribute (ECNG), one at the 2000 level, one at the 4000 level		
Experiencing		6
PHIL3020	Crisis and Controversy: A Critical Thinking Approach	
or PHIL3240	Ethics: A Global Perspective	
Additional course with the Experiencing attribute (EEXP) in a different discipline		
Measuring		6
MATH2001	Statistics I	
MATH2020	Discrete Mathematics [*]	
Exploring		4
PHY1011 & PHY1016	General Physics I and General Physics I Laboratory	
Interacting		6
LEAD1010	Foundations of Leadership Studies	
Additional course with the Interacting attribute (EINT) in a different discipline		
A&S Electives		6
Two courses with the Arts & Sciences elective attribute (EASC)		
Free Elective [#]		
3 credits selected from 1000-4999 numbered offerings within the university		3
Total Credits		**121.0**

[*]

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.

[D] 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).

[Ic] 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 advisor before scheduling internship and free elective credits.

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 students who qualify for the J2 program, up to four graduate courses may apply. Students are strongly encouraged to contact a faculty advisor before scheduling free elective credits.

Note: Students must pass MATH0010 Pre-Algebra or have equivalent placement scores to enroll in required math courses.

Note: Students must pass ENG0001 Writing Workshop or have equivalent placement scores to enroll in ILS 2000-level courses.

In collaboration with academic colleges Study Abroad offer several options, direct enroll with international universities, domestic and digital options meet with a Study Abroad Advisor to learn more about how your major, minor, free electives, experiential learning and transferable courses would benefit by a Study Abroad program. There are many options for students during a semester, spring and/or summer breaks. Faculty-led, exchange, and direct-enroll programs range in duration from one week to a full semester or full year. Financial aid may be applied, and some partners offer external scholarships. Visit the study abroad website for information, program

descriptions and online applications. Where will you go? Wherever you decide, make the best of your educational journey!

Admissions Requirements

Please see a campus catalog for Admissions Requirements for this program.

Accelerated Program Options

J2 Program

The JWU J2 program allows qualified students enrolled in a matriculating undergraduate program to take graduate level courses at JWU. Students interested in pursuing this option should meet with their academic advisor to discuss their interest, qualifications and plans. The undergraduate student may take up to four graduate courses (maximum 12 credits) and are limited to 6 credits a semester and 3 credits per session (Fall Session I and Fall Session II).

The completion of graduate credits to fulfill undergraduate program requirements does not guarantee acceptance into the graduate program after completion of the baccalaureate degree. Matriculating undergraduate students who wish to formally enroll in a graduate program must fulfill all requirements for entrance into the intended graduate program and complete a graduate program application.

Note: Not all graduate courses are included as part of this policy. Courses offered as part of the Master of Arts in Teaching, Master of Education, Master of Science in Physician Assistant Studies and doctoral courses are excluded from this policy and are restricted to program majors only. Additional courses and/or programs as determined by individual colleges may also have restricted access.

Eligibility Criteria

To be eligible to enroll in graduate level courses (excludes: Masters of Arts in Teaching, Masters of Education, Masters of Science in Physician Assistant Studies, doctoral courses and other programs as outlined by the colleges).

Undergraduate students must meet the following criteria:

- Undergraduate cumulative GPA of 3.00 or higher
- Completed and registered undergraduate credits at least 90 credits
- Meet the individual course prerequisites

Appeal to Eligibility Criteria: College dean or designee will receive a copy of the Petition Form, Student's GPS and email requesting appeal if the student requests to appeal the GPA or earned/registered credit criteria. College dean/designee will review and determine approval.

These courses carry graduate credit and will replace undergraduate degree requirements when applicable, traditionally free-electives (maximum of 12 credits). The course will be applied to the undergraduate degree in the order in which they are taken (if required) and will also be applied towards both the students undergraduate and graduate GPA.

Students should maintain enrollment in at least 12 credits of undergraduate coursework to maintain full-time status; graduate course enrollment is not calculated into undergraduate full-time status. For students already attending full-time as undergraduates (12 credits or more) and paying the full-time tuition, the graduate credits will be included in full-time tuition fee. Students attending part-time (11 credits or less) will pay the cost per-credit undergraduate tuition for the graduate course.

Course registration will be based on space availability and students enrolled in graduate level courses will be required to maintain good academic standing at the undergraduate and graduate level.