

CYBERSECURITY ANALYTICS AND OPERATIONS, B.S. (CAPITAL)

Begin Campus: Any Penn State Campus

End Campus: Harrisburg

Suggested Academic Plan

The suggested academic plan(s) listed on this page are the plan(s) that are in effect during the 2023-24 academic year. To access previous years' suggested academic plans, please visit the archive (<https://bulletins.psu.edu/undergraduate/archive/>) to view the appropriate Undergraduate Bulletin edition (*Note: the archive only contains suggested academic plans beginning with the 2018-19 edition of the Undergraduate Bulletin*).

Cybersecurity Analytics and Operations, B.S. at Harrisburg Campus

The course series listed below provides **only one** of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an **Academic Requirements** or **What If** report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

First Year

Fall	Credits Spring	Credits
IST 140*	3 MATH 110 (GQ)**†	4
SRA 111 (GS)*	3 CAS 100A or 100S†	3
CYBER 100*#	3 IST 242*#	3
General Education Selection	3 SRA 211*	3
ENGL 15, 15S, 30T, or ESL 15†	3 General Education Selection*	3
	15	16

Second Year

Fall	Credits Spring	Credits
CYBER 262*	3 IST 210*#	3
IST 220*#	3 SRA 231*	3
IST 261*	3 ENGL 202C or 202D†	3
SRA 221*	3 Application Focus Selection 1	3
STAT 200*#	4 General Education Selection	3
	16	15

Third Year	Credits Spring	Credits Summer	Credits
Fall			
CYBER 362*	3 CYBER 342W*	3 IST 495*	1
IST 230*	3 CYBER 366*	3	
SRA 365*	3 IST 454*	3	
SRA 311*	3 Application Focus Selection 2	3	
General Education Selection	3 General Education Selection	3	
	15	15	1

Fourth Year

Fall	Credits Spring	Credits
IST 432*	3 CYBER 440*	3
IST 451*	3 IST 456*	3
General Education Selection	3 Application Focus Selection 3	3
General Education Selection	3 General Education Selection	3
General Education Selection	3 Elective	3
	15	15

Total Credits 123

- * Course requires a grade of C or better for the major
- ‡ Course requires a grade of C or better for General Education
- # Course is an Entrance to Major requirement
- † Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy Cultural Diversity Requirements (United States and International Cultures).

W, M, X, and Y are the suffixes at the end of a course number used to designate courses that satisfy University Writing Across the Curriculum requirement.

General Education includes Foundations (GWS and GQ), Knowledge Domains (GHW, GN, GA, GH, GS) and Integrative Studies (Inter-domain) requirements. N or Q (Honors) is the suffix at the end of a course number used to help identify an Inter-domain course, but the inter-domain attribute is used to fill audit requirements. Foundations courses (GWS and GQ) require a grade of 'C' or better.

Advising Notes:

Students in the Cybersecurity Analytics and Operations (CAOCA_BS) major are expected to complete 24 credits of upper level course work in the major and the senior capstone course (CYBER 440) at Penn State Harrisburg. This is in compliance with Faculty Senate Policy 83-80.5.

CYBER 440 should be taken during the final Spring semester of academic progress.

IST 495 Internship: Supervised work experience where the student is employed in a position related to the student's major. An internship is typically completed the summer after the junior year, but it may be completed at any time during the student's academic career. Students are required to complete one internship but may complete three. A grade of C or better must be earned in this course. For more information, contact your academic adviser.

Students who plan to apply for the National Security Agency Certifications must complete all required courses. No substitutions or transfer credits are permitted.

Students pick one of the five tracks below or create a custom 3-course application focus. Students must pick three (3) credits at the 400 level. All nine (9) credits must be in the same application focus area. It is recommended that students use the application focus area list to select a course that meets a General Education requirement (GS/GHW) and serves as a prerequisite for more advanced coursework within the application focus. This course does not count as part of the 9 credits of application focus sequence.

Application Development

Code	Title	Credits
IST 110	Information, People and Technology	3
IST 311	Object-Oriented Design and Software Applications	3
IST 331	Foundations of Human-Centered Design	3
IST 361	Application Development Design Studio II	3
IST 402	Emerging Issues and Technologies	3
IST 411	Distributed-Object Computing	3
IST 412	The Engineering of Complex Software Systems	3

Economics

The Economics focus is for students who have an interest in pursuing cybersecurity careers in the financial services sector or government. Designed to help students understand today's financial and economic environments, this focus highlights the importance of translating the financial and economic impact of cybersecurity activities to effectively manage any program.

Code	Title	Credits
ECON 102	Introductory Microeconomic Analysis and Policy	3
BLAW 243	Legal Environment of Business	3
BA 301	Finance	3
ECON 302	Intermediate Microeconomic Analysis	3
ECON 402	Decision Making and Strategy in Economics	3
ECON 409		3
ECON 445	Health Economics	3
ECON 470	International Trade and Finance	3
FIN 301	Corporation Finance	3
HPA 445	Health Economics	3
PLSC 412	International Political Economy	3
PLSC 481	Global Political Economy	3

Geopolitics

Understanding the geopolitical landscape is key to understanding and modeling cyberthreats from nation-states and other threat actors. The Geopolitics focus is for students who have an interest in pursuing cybersecurity careers in government or related consulting sectors.

Code	Title	Credits
GEOG 160	Mapping Our Changing World	3
GEOG 260	Geographic Information in a Changing World: Introduction to GIScience	3
IB 440	Globalization and Its Implications	3
PLSC 14	International Relations	3
PLSC 461	Politics of the European Union	3
PLSC 467	International Relations of the Middle East	3
PLSC 481	Global Political Economy	3
GEOG 333	Human Dimensions of Natural Hazards	3
GEOG 363	Geographic Information Systems	3
AFR/PLSC 440	Globalization and Its Implications	3
SRA 450	Cyber-Crime and Cyber-Warfare	3
SRA 480	Crisis Informatics	3

Health Care

Hospitals, pharmaceutical companies, and government agencies are just a few of the sectors that have strict requirements around protecting health care data. The Health Care focus is for students who have an interest in pursuing cybersecurity careers in a health care environment. Understanding how information is managed in these environments will help students thrive in a health care-related career.

Code	Title	Credits
HPA 101	Introduction to Health Services Organization	3
BBH 101	Introduction to Biobehavioral Health	3
ECON 445	Health Economics	3
HPA 332	Health Systems Management	3
HPA 445	Health Economics	3
HPA 450	Healthcare Policies and Politics	3
IST 110	Information, People and Technology	3
NURS 357	Introduction to Nursing Informatics (offered at Commonwealth and World Campuses; not at University Park)	3
HPA/BBH 440	Principles of Epidemiology	3
HPA 470	Health Care Information Management	3
NURS 458	Ethical Challenges in Healthcare Informatics (offered at Commonwealth and World Campuses; not at University Park)	3

Law and Policy

Cybersecurity careers in law enforcement require knowledge of laws and policies focused on the handling of evidence related to digital forensics and monitoring. Individuals in the private sector and government agencies must also understand and adhere to these topics as they involve cybersecurity. The Law and Policy focus is for students who want to understand law and policy as they relate to digital data.

Code	Title	Credits
COMM 180	Survey of Electronic Media and Telecommunications	3
COMM 404	Telecommunications Law	3
CRIM/CRIMJ 100	Introduction to Criminal Justice	3
CRIM/CRIMJ 113	Introduction to Law	3
PLSC 14	International Relations	3
PLSC 140	Contemporary Controversies in International Relations	3

PLSC 438	National Security Policies	3
PLSC 442	American Foreign Policy	3
PLSC/STS 460	Science, Technology, and Public Policy	3
PLSC 467	International Relations of the Middle East	3
CRIM/CRIMJ/ SOC 467	Law and Society	3
HLS/PADM 401	Introduction to Homeland Security (offered by Harrisburg and World Campus only)	3
PLSC/CRIMJ 439	The Politics of Terrorism	3
PLSC 487	International Law and Organizations (not offered at University Park)	3

Custom Application Focus

There is an option for a student to create a custom 4-course application focus sequence. It must be a coherent sequence of courses that provides context for the student in terms of cybersecurity content. It should contain three credits of GS coursework and must contain six credits of 400-level coursework. It must be selected in consultation with a teaching CYBER faculty member and an academic adviser.