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

Begin Campus: Any Penn State Campus

End Campus: Altoona

Suggested Academic Plan

The suggested academic plan(s) listed on this page are the plan(s) that are in effect during the 2024-25 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.

Cybersecurity Analytics and Operations, B.S. at Altoona 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[#1]	3	IST 210[*#]	3
CYBER 100 (FYS)[*#1]	3	IST 220[*#1]	3
MATH 110 (GQ)[*‡]	4	SRA 111 (GS)[*†1]	3
CAS 100 (GWS)[‡]	3	ENGL 15 or 30H (GWS)[‡]	3
PSU 3	1	Application Focus	3
General Education (GN, GA, GH, GS, or GHW)	3		
	17		**15**

Second Year

Fall	Credits	Spring	Credits
IST 242[*#1]	3	IST 261[*]	3
STAT 200 (GQ)[*‡#]	4	SRA 211[*]	3
CYBER 262[*]	3	IST 230[*]	3
SRA 221[*]	3	SRA 231[*]	3
Application Focus	3	General Education (GN, GA, GH, GS, or GHW)	3
	16		**15**

Third Year

Fall	Credits	Spring	Credits
CYBER 362[*]	3	CYBER 342W[*]	3
IST 451[*]	3	IST 454[*]	3
SRA 365[*]	3	SRA 311W[*]	3
ENGL 202C or 202D (GWS)[‡]	3	CYBER 366[*]	3
General Education (GN, GA, GH, GS, or GHW)	3	Application Focus	3
General Education (GHW)	1.5		
	16.5		**15**

Fourth Year

Fall	Credits	Spring	Credits
IST 432[*]	3	CYBER 440[*]	3
IST 456[*]	3	Application Focus 400 Level	3
SRA 472[*]	3	General Education (GN, GA, GH, GS, or GHW)	3
General Education (GN, GA, GH, GS, or GHW)	3	Elective	3
General Education (GN, GA, GH, GS, or GHW)	3	Elective	3
General Education (GHW)	1.5		
	16.5		**15**

Total Credits 126

* 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

[1] IST/SRA/CYBER course offered both fall and spring semesters at Altoona. Otherwise, IST/SRA/CYBER courses are only offered once per academic year.

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:

1 credit of IST 495 Internship is also required.

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 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

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
ARMY, AIR, NAVSC (any)		3
AFR/PLSC 440	Globalization and Its Implications	3
CAS 404	Conflict Resolution and Negotiation	3
COMM 458	Media Law and Ethics	3
GEOG 260	Geographic Information in a Changing World: Introduction to GIScience	3
GEOG 333	Human Dimensions of Natural Hazards	3
GEOG 363	Geographic Information Systems	3
IB 440	Globalization and Its Implications	3
IST 301	Information and Organizations	3
PLSC 291	Introduction to Peace and Conflict Studies	3
PLSC 461	Politics of the European Union	3
PLSC 467	International Relations of the Middle East	3
PLSC 481	Global Political Economy	3
PLSC 491	Peace and Conflict Studies Seminar	3
SRA 421	The Intelligence Environment	3
SRA 433	Deception and Counterdeception	3
SRA 450	Cyber-Crime and Cyber-Warfare	3
SRA 471	Informatics, Risk, and the Post-Modern World	3
SRA 480	Crisis Informatics	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 404	Telecommunications Law	3
CRIM/CRIMJ 113	Introduction to Law	3
CRIM/CRIMJ/SOC 406	Sociology of Deviance	3
CRIM 430	American Correctional System	3
CRIM/CRIMJ 451	Race, Crime, and Justice	3
CRIM/CRIMJ/SOC 467	Law and Society	3
CRIM 469	Seminar in the Law	3-4
CRIMJ 304	Security Administration	3
CRIMJ 430	Alternatives to Incarceration	3
CRIMJ 435	Border Security	3
FRNSC 100	Introduction to Forensic Science	3
HLS/PADM 401	Introduction to Homeland Security (offered by Harrisburg and World Campus only)	3

IST 452	Legal and Regulatory Environment of Privacy and Security	3
PLSC 438	National Security Policies	3
PLSC 439	The Politics of Terrorism	3
PLSC 440	Globalization and Its Implications	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
PLSC 471	American Constitutional Law	3
PLSC/CRIMJ 439	The Politics of Terrorism	3
PLSC 487	International Law and Organizations (not offered at University Park)	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
BLAW 243	Legal Environment of Business	3
BA 301	Finance	3
ECON 302	Intermediate Microeconomic Analysis	3
ECON 399	Foreign Studies	1-12
ECON 402	Decision Making and Strategy in Economics	3
ECON 409		3
ECON 438	Winners and Losers from Globalization	3
ECON 445	Health Economics	3
ECON 447	Economics of Sports	3
ECON 470	International Trade and Finance	3
ECON 479	Economics of Matching	3
FIN 301	Corporation Finance	3
HPA 445	Health Economics	3
PLSC 412	International Political Economy	3
PLSC 481	Global Political Economy	3

ENTERPRISE TECHNOLOGY

Code	Title	Credits
IST 301	Information and Organizations	3
IST 302	IT Project Management	3
IST 420	Fundamentals of Systems and Enterprise Integration	3
IST 421	Advanced Enterprise Integration: Technologies and Applications	3
IST 423	Enterprise Information Management and Storage Architecture	3
ETI 300W	Development and Documentation of Enterprise Web	3
ETI 435	Enterprise Analytics	3
ETI 461	Database Management and Administration	3
ETI 463	Distributed Database Management Systems	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
BBH 101	Introduction to Biobehavioral Health	3
ECON 445	Health Economics	3
HPA 101	Introduction to Health Services Organization	3
HPA 332	Health Systems Management	3
HPA/BBH 440	Principles of Epidemiology	3
HPA 445	Health Economics	3
HPA 450	Healthcare Policies and Politics	3
HPA 470	Health Care Information Management	3
IST 402	Emerging Issues and Technologies	3
NURS 357	Introduction to Nursing Informatics (offered at Commonwealth and World Campuses; not at University Park)	3
NURS 458	Ethical Challenges in Healthcare Informatics (offered at Commonwealth and World Campuses; not at University Park)	3

Custom Application Focus

There is an option for a student to create a custom 3-course application focus sequence. It must be a coherent sequence of courses that provides context for the student in terms of cybersecurity content. It must contain three (3) credits of 400-level coursework. The focus area courses must be selected in consultation with a teaching CYBER faculty member and an academic adviser.