SECURITY AND RISK ANALYSIS, B.S. (CAPITAL)

Begin Campus: Any Penn State Campus

End Campus: Harrisburg

Program Description

The Bachelor of Science in Security and Risk Analysis (SRA) in the College of Information Sciences and Technology responds to the expanding need for a highly trained analytic workforce to address a wide range of security and risk domains including national/homeland security, emergency and disaster management, law and crime, as well as enterprise risk management.

SRA program prepares students with core competence in four knowledge areas:

1. understanding the fundamentals of security, risk, analytic methods and decision support for the purpose of recognizing, articulating, and addressing analytic needs;
2. understanding the roles of data and analytics in various security domains and organizational contexts;
3. applying data analytics, methods, and tools (structured analytics; data gathering and manipulation; visual analytics; analytic judgements and presentation) to derive and communicate insights and actionable knowledge;
4. the legal, ethical, and professional issues within which analytics of security and risk are conducted.

Students may specialize in risk domains ranging from national security to community emergency preparedness and response. The SRA program positions our students to be future leaders to address the current and emerging security and risk challenges that face individuals, organizations and our nation.

SRA majors will choose one of the following options:

Intelligence Analysis and Modeling Option
Available at the following campuses: University Park, World Campus

This option focuses on developing a more thorough knowledge of the strategic and tactical levels of intelligence collection, analysis, and decision-making. This includes examining the foundations of decision analysis, economic theory, statistics, data mining, and knowledge management, as well as the security-specific contexts in which such knowledge is applied.

Information and Cyber Security Option
Available at the following campuses: Altoona, Berks, Harrisburg, University Park, World Campus

This option includes a set of courses that provides an understanding of the theories, skills, and technologies associated with network security, cyber threat defense, information warfare, and critical infrastructure protection across multiple venues.

What is Security and Risk Analysis?

Security and risk analysis is a field that explores the integrated processes conducted to provide decision-makers with the information needed to understand factors that can negatively influence operations and outcomes, and make informed judgments concerning the extent of actions needed to reduce vulnerabilities, protect resources, and optimize investments. Security and risk analysis is a field of practice with two blended concentration areas: 1) security, which seeks to identify, understand, and analyze critical local, national and international security issues, and 2) risk, which includes risk assessment, risk characterization, risk communication, risk management, and the formulation of risk policy. In practice, the issues and processes for conducting of security and risk analytics are neither separate nor sequential. To be effective, the issues of security and risk must be addressed concurrently and synergistically.

MORE INFORMATION ABOUT SECURITY AND RISK ANALYSIS (https://ist.psu.edu/prospective/undergraduate/academics/sra/)

You Might Like This Program If…

- You want to protect people, information, and assets from manmade and natural threats.
- You want to understand the role of data in protecting individuals, organizations and our nation.
- You are mission oriented, a good critical thinker and wish to put your problem-solving skills to work to make the world a safer place.
- You want to make informed strategic decisions that help to defend critical infrastructures that supports our daily lives.

MORE INFORMATION ABOUT WHY STUDENTS CHOOSE TO STUDY SECURITY AND RISK ANALYSIS (https://ist.psu.edu/prospective/undergraduate/academics/sra/)

Entrance to Major

In addition to the minimum grade point average (GPA) requirements described in the University Policies*, all Security and Risk Analysis (SRA) entrance to major course requirements must also be completed with a minimum grade of C: IST 140 (or equivalent CMPSC 101 or CMPSC 121), IST 210, SRA 111, and SRA 211. All of these courses must be completed by the end of the semester during which the admission to major process is carried out.

In the event that the major is under enrollment control, a higher minimum cumulative grade-point average is likely to be needed at the time of confirming their major choice.

Degree Requirements

For the Bachelor of Science degree in Security and Risk Analysis, a minimum of 120 credits is required:

Requirement	Credits
General Education	45
Electives	5-13
Requirements for the Major	77-85

15 of the 45 credits for General Education are included in the Requirements for the Major. This includes: 6 credits of GQ courses; 6 credits of GS courses; and 3 credits of GWS courses.

Requirements for the Major

To graduate, a student enrolled in the major must earn a grade of C or better in each course designated by the major as a C-required course, as specified by Senate Policy 82-44 (https://senate.psu.edu/policies-and-

rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#82-44).

Common Requirements for the Major (All Options)

Code	Title	Credits
Prescribed Courses		
Prescribed Courses: Require a grade of C or better		
IST 110	Information, People and Technology	3
IST 210	Organization of Data	3
IST 432	Legal and Regulatory Environment of Information Science and Technology	3
IST 495	Internship	1
SRA 111	Introduction to Security and Risk Analysis	3
SRA 211	Threat of Terrorism and Crime	3
SRA 221	Overview of Information Security	3
SRA 231	Decision Theory and Analysis	3
STAT 200	Elementary Statistics	4
Additional Courses		
ENGL 202C	Effective Writing: Technical Writing	3
or ENGL 202D	Effective Writing: Business Writing	
PSYCH 100	Introductory Psychology	3
or SOC 5	Social Problems	
Select one of the following:		3
AGBM 101	Economic Principles of Agribusiness Decision Making	
ECON 102	Introductory Microeconomic Analysis and Policy	
ECON 104	Introductory Macroeconomic Analysis and Policy	
Select one of the following:		3-5
MATH 22	College Algebra With Analytic Geometry and Applications II	
MATH 26	Plane Trigonometry and Applications of Trigonometry	
MATH 40	Algebra, Trigonometry, and Analytic Geometry	
MATH 41	Trigonometry and Analytic Geometry	
MATH 110	Techniques of Calculus I	
MATH 140	Calculus With Analytic Geometry I	
Select one of the following:		3
GEOG 128	Geography of International Affairs	
PLSC 1	American Politics: Principles, Processes and Powers	
PLSC 14	International Relations	
Additional Courses: Require a grade of C or better		
SRA 365	Statistics for Security and Risk Analysis	3
or STAT 460	Intermediate Applied Statistics	
Select one of the following:		3
IST 140	Introduction to Application Development	
CMPSC 101	Introduction to Programming	
CMPSC 121	Introduction to Programming Techniques	
Requirements for the Option		
Select an option		30-36

Requirements for the Option
Intelligence Analysis and Modeling Option (36 credits)
Available at the following campuses: University Park, World Campus

Code	Title	Credits
Prescribed Courses		
Prescribed Courses: Require a grade of C or better		
IST 452	Legal and Regulatory Environment of Privacy and Security	3
SRA 268	Visual Analytics	3
SRA 311W	Risk Analysis in a Security Context	3
SRA 421	The Intelligence Environment	3
SRA 433	Deception and Counterdeception	3
SRA 440W	Security and Risk Analysis Capstone Course	3
SRA 468	Spatial Analysis of Risks	3
Supporting Courses and Related Areas		
Select 15 credits from College-approved list (at least 3 credits must be at the 400-level)		15

Information and Cyber Security Option (30 credits)
Available at the following campuses: Altoona, Berks, Harrisburg, University Park, World Campus

Code	Title	Credits
Prescribed Courses		
Prescribed Courses: Require a grade of C or better		
IST 220	Networking and Telecommunications	3
IST 451	Network Security	3
IST 454	Computer and Cyber Forensics	3
IST 456	Information Security Management	3
SRA 311	Risk Analysis in a Security Context	3
Additional Courses		
Additional Courses: Require a grade of C or better		
IST 440W	Information Sciences and Technology Integration and Problem Solving	3
or SRA 440W	Security and Risk Analysis Capstone Course	
Supporting Courses and Related Areas		
Select 12 credits from College-approved list (at least 3 credits must be at the 400-level)		12

General Education

Connecting career and curiosity, the General Education curriculum provides the opportunity for students to acquire transferable skills necessary to be successful in the future and to thrive while living in interconnected contexts. General Education aids students in developing intellectual curiosity, a strengthened ability to think, and a deeper sense of aesthetic appreciation. These are requirements for all baccalaureate students and are often partially incorporated into the requirements of a program. For additional information, see the General Education Requirements (https://bulletins.psu.edu/undergraduate/general-education/baccalaureate-degree-general-education-program/) section of the Bulletin and consult your academic adviser.

The keystone symbol appears next to the title of any course that is designated as a General Education course. Program requirements may also satisfy General Education requirements and vary for each program.

Foundations (grade of C or better is required and Inter-Domain courses do not meet this requirement.)
- **Quantification (GQ):** 6 credits
- **Writing and Speaking (GWS):** 9 credits

Breadth in the Knowledge Domains (Inter-Domain courses do not meet this requirement.)
- **Arts (GA):** 3 credits
- **Health and Wellness (GHW):** 3 credits
- **Humanities (GH):** 3 credits
- **Social and Behavioral Sciences (GS):** 3 credits
- **Natural Sciences (GN):** 3 credits

Integrative Studies
- **Inter-Domain Courses (Inter-Domain):** 6 credits

Exploration
- **GN,** may be completed with Inter-Domain courses: 3 credits
- **GA, GH, GN, GS, Inter-Domain courses.** This may include 3 credits of World Language course work beyond the 12th credit level or the requirements for the student's degree program, whichever is higher: 6 credits

University Degree Requirements

First Year Engagement
All students enrolled in a college or the Division of Undergraduate Studies at University Park, and the World Campus are required to take 1 to 3 credits of the First-Year Seminar, as specified by their college First-Year Engagement Plan.

Other Penn State colleges and campuses may require the First-Year Seminar; colleges and campuses that do not require a First-Year Seminar provide students with a first-year engagement experience.

First-year baccalaureate students entering Penn State should consult their academic adviser for these requirements.

Cultures Requirement
6 credits are required and may satisfy other requirements

- United States Cultures: 3 credits
- International Cultures: 3 credits

Writing Across the Curriculum
3 credits required from the college of graduation and likely prescribed as part of major requirements.

Total Minimum Credits
A minimum of 120 degree credits must be earned for a baccalaureate degree. The requirements for some programs may exceed 120 credits. Students should consult with their college or department adviser for information on specific credit requirements.

Quality of Work
Candidates must complete the degree requirements for their major and earn at least a 2.00 grade-point average for all courses completed within their degree program.

Limitations on Source and Time for Credit Acquisition
The college dean or campus chancellor and program faculty may require up to 24 credits of course work in the major to be taken at the location or in the college or program where the degree is earned. Credit used toward degree programs may need to be earned from a particular source or within time constraints (see Senate Policy 83-80 (https://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#83-80)). For more information, check the Suggested Academic Plan for your intended program.

Program Learning Objectives

- **Communication (Individual and Team):** Communicate and work effectively (both individually and in teams) with a range of perspectives and audiences through a variety of media
  - Participate effectively on teams in order to accomplish a common goal
  - Communicate effectively with a range of audiences, formally or informally, through writing and the spoken word
  - Seek out, analyze, and incorporate diverse ideas and broader perspectives represented in the diversity of people
  - Make respectful and inclusive choices in interacting with customers, peers, supervisors, and/or subordinates with a diversity of identity characteristics (e.g., age, ancestry, color, disability or handicap, national origin, race, religious creed, sex, sexual orientation, gender identify, or veteran status)
- **Knowledge/Application:** Understand and apply the interdisciplinary, theoretical knowledge of the information sciences or security sciences
  - Define and explain the core concepts, principles, processes, and theories within the academic majors of IST and/or SRA
  - Apply the core concepts of the academic majors of IST and/or SRA to real-world problems
- **Lifelong Learning:** Commit to the continuous acquisition of relevant knowledge for professional development by self-teaching and/or on-going education and learning
  - Employ information-seeking strategies and self-directed learning in pursuit of current knowledge
  - Enroll in professional development and tutoring opportunities
- **Problem-Solving:** Understand, apply and adapt various problem solving strategies to address security and risk problems within the individual, community, organizational and national security dimensions
  - Identify security and risk problem terms of the individual, community, organizational and national security levels of analysis
  - Analyze issues surrounding the problem and/or opportunity in terms of the human, informational, and technology dimensions; and determine the requirements appropriate to understanding the situation
  - Identify and recognize countermeasure application strategies to address security needs to include architectures, processes, components, or programs to meet desired needs at varying levels of analysis (e.g., individual, community, organizational and/or national security)
- **Professional Responsibilities:** Understand professional responsibilities in terms of the ethical, legal, security and social aspects of any given problem and its solution
  - Demonstrate an understanding of the cognitive, social, legal, ethical, diversity, and security perspectives surrounding a given problem
  - Assess the impact of information, computing and technology on individuals, groups, organizations, society, and the world for the purpose of making informed decisions from a sociological, governmental, legal, and/or security perspective

Academic Advising

The objectives of the university's academic advising program are to help advisees identify and achieve their academic goals, to promote their intellectual discovery, and to encourage students to take advantage of

both in-and out-of class educational opportunities in order that they become self-directed learners and decision makers.

Both advisers and advisees share responsibility for making the advising relationship succeed. By encouraging their advisees to become engaged in their education, to meet their educational goals, and to develop the habit of learning, advisers assume a significant educational role. The advisee's unit of enrollment will provide each advisee with a primary academic adviser, the information needed to plan the chosen program of study, and referrals to other specialized resources.

READ SENATE POLICY 32-00: ADVISING POLICY (https://senate.psu.edu/policies-and-rules-for-undergraduate-students/32-00-advising-policy/)

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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*).

Information & Cyber Security Option: Security and Risk Analysis, 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
SRA 111[*][#]	3	SRA 211[*][#]	3
IST 110[*]	3	IST 210[*][#]	3
ENGL 15, 15S, 30T, or ESL 15[‡]	3	CAS 100A or 100S[‡]	3
IST 140[*][#]	3	MATH 22	3
General Education Course	3	General Education Course	3
	15		**15**

Second Year

Fall	Credits	Spring	Credits
SRA 221[*]	3	SRA 231[*]	3
STAT 200[†]	4	ECON 102 or 104[†]	3
IST 220[*]	3	PSYCH 100 or SOC 5	3
General Education Course	3	General Education Course	3
Elective	3	Elective	3
	16		**15**

Third Year

Fall	Credits	Spring	Credits	Summer	Credits
SRA 311[*]	3	ENGL 202C or 202D[‡]	3	IST 495[*]	1
IST 432[*]	3	GEOG 128, PLSC 1, or PLSC 14[†]	3		
SRA 365 or STAT 460[*]	3	IST 451, 454, or 456[*]	3		
Support of Option	3	Support of Option	3		
General Education Course	3	General Education Course	3		
	15		**15**		**1**

Fourth Year

Fall	Credits	Spring	Credits
IST 451, 454, or 456[*]	3	IST 440W[*]	3
Elective	3	IST 451, 454, or 456[*]	3

Support of Option	3	Support of Option (400 - level)	3
General Education Course	3	Elective	4
General Education Course	3		
	15		**13**

Total Credits 120

* 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 Security and Risk Analysis (SRACA_BS) major are expected to complete 24 credits of upper level course work in the major and the senior capstone course (SRA 440W) at Penn State Harrisburg. This is in compliance with Faculty Senate Policy 83-80.5.
- SRA 440W 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.

Program Notes

- SRA/IST courses are only offered once per year.
- Students must complete a 3-credit course in "United States Cultures (US)" and a 3-credit course in "International Cultures (IL)."
- Students in the Security and Risk Analysis (SRACA_BS) major are expected to complete 24 credits of upper level course work in the major and the senior capstone course for the major at Penn State Harrisburg. This is in compliance with Faculty Senate Policy 83-80.5.

Supporting Course List:
Business: ACCTG 211*, MGMT 100

Communications: COMM 180, COMM 479* COMM 484*, COMM 489W*, COMM 490*

Crime/Criminology: CRIM 12/SOC 12, CRIM 100, CRIM 406*, CRIM 412*, CRIM 425*, PSYCH 100**, PSYCH 221*, PSYCH 270*, PSYCH 445*, SOC 1, SOC 405*, SOC 409*, SOC 416*, SOC 419*, SOC 422*, SOC 423*, SOC 424* SOC 440*, SOC 457*, SOC 461*, SOC 467*, SOC 470*

CYBER/IST/SRA: CYBER 262*, CYBER 362*, IST 230*, IST 240*, IST 242*, IST 301, IST 302, IST 402*, IST 442*, IST 452*, IST 453*, SRA 468*, SRA 471*, SRA 480

Ethics: PHIL 103*, PHIL 119, PHIL 407*, PHIL 418*

Geography: GEOG 361*, GEOG 362*, GEOG 363*

Global Security: PLSC 7, PLSC 14**, PLSC 410*, PLSC 418*, PLSC 434*, PLSC 440*, PLSC 442*, PLSC 443*, PLSC 454*, PLSC 455*, PLSC 458* PLSC 459, PLSC 464*, PLSC 467*

Military Studies: AIR 151, AIR 351, AIR 352, AIR 451, ARMY 101, ARMY 102, ARMY 301, ARMY 402, NAVSC 101, NAVSC 204, NAVSC 311, NAVSC 402

Please be mindful of course prerequisites, as indicated with a single asterisk (*).

Courses taken to satisfy the SRA major requirements for GEOG/PL SC (GEOG 40 OR PLSC 1/14) and PSYCH/SOC (PSYCH 100 or soc 5) cannot be used as a Support of Option course as indicated with a double asterisk (**).

Career Paths

The Security and Risk Analysis program responds to the expanding need for a highly trained analytic workforce to address a wide range of security and risk domains including national/homeland security, emergency and disaster management, law and crime, as well as enterprise risk management. The SRA degree prepares students to be future leaders to address the current and emerging security and risk challenges that face individuals, organizations and our nation. IST's Office of Career Solutions helps students navigate internship and career development through coaching, workshops, interview preparation, resume reviews, career fairs, job postings, and networking opportunities.

Careers

Security and Risk Analysis students may specialize in risk domains ranging from national security to community emergency preparedness and response. Because our courses blend technical knowledge with skills in communication and business, a Security and Risk Analysis degree allows students to pursue opportunities in intelligence, counterterrorism, computer forensics, and a number of other growing careers. SRA graduates work in a variety of fields, including defense, business, and emergency management; and many graduates go on to work for government intelligence agencies like the CIA, FBI, and NSA.

MORE INFORMATION ABOUT POTENTIAL CAREER OPTIONS FOR GRADUATES OF THE SECURITY AND RISK ANALYSIS PROGRAM (https://www.ist.psu.edu/current/careers/development/process/path/)

Opportunities for Graduate Studies

With a focus on problem solving, critical thinking and the presentation of analytic findings, the SRA program is a great stepping-stone to graduate education and higher learning. Many SRA graduates will go on to pursue graduate degrees in fields like law, cyber security, and data science. The foundational skills obtained in the SRA degree directly apply to graduate education.

Contact

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https://www.worldcampus.psu.edu/degrees-and-certificates/penn-state-online-security-and-risk-analysis-information-and-cybersecurity-bachelor-of-science-degree (https://www.worldcampus.psu.edu/degrees-and-certificates/penn-state-online-security-and-risk-analysis-information-and-cybersecurity-bachelor-of-science-degree/)