SECURITY AND RISK ANALYSIS, B.S. (INFORMATION SCIENCES AND TECHNOLOGY)

Begin Campus: Abington, Altoona, Berks, Beaver, Brandywine, DuBois, Erie, Fayette, Greater Allegheny, Harrisburg, Hazleton, Lehigh Valley, Mont Alto, New Kensington, Shenango, Schuylkill, University Park, Wilkes-Barre, Scranton, York

End Campus: University Park

INFORMATION AND CYBERSECURITY OPTION ON HOLD AND NOT ACCEPTING NEW STUDENTS AT WORLD CAMPUS
Begin Date of Enrollment Hold at World Campus: Fall 2021

PROGRAM AVAILABLE AT ALL OTHER LISTED CAMPUSES

Program Description

Not all options are available at every campus. Contact the campus you are interested in attending to determine which options are offered.

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

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

University Park

This program currently has administrative enrollment controls. Administrative Enrollment Controls are initiated when limitations of space, faculty, or other resources in a major prevent accommodating all students who request them. Students must follow the administrative enrollment controls that are in effect for the semester that they enter the university.

First-Year Students Entering Summer 2021, Fall 2021, Spring 2022

In order to be eligible for entrance to this major, students must satisfy the following requirements:
• 40-70 graded Penn State credits (excludes transfer and AP credits)
• completed with a grade of C or better: IST 140 or CMPSC 101 or
  CMPSC 121, IST 210, SRA 111, SRA 211
• earned a minimum cumulative grade-point average (GPA) of 3.00

Students Who Entered Prior to Summer 2021
Students who entered the University from Summer 2018 through
Spring 2021 should view the administrative enrollment controls in the
appropriate Undergraduate Bulletin archive (https://bulletins.psu.edu/
undergraduate/archive/). Students who entered the University prior to
the summer 2018 semester should view the administrative enrollment
controls for the semester that they entered the university (https://
advising.psu.edu/entrance-major-requirements/) on the Academic
Advising Portal.

World Campus
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:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>General Education</td>
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<tr>
<td>Electives</td>
<td>5-13</td>
</tr>
<tr>
<td>Requirements for the Major</td>
<td>77-85</td>
</tr>
</tbody>
</table>

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.

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 (http://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.)
• Quantification (GQ): 6 credits
• Writing and Speaking (GWS): 9 credits

Knowledge Domains
• Arts (GA): 6 credits
• Health and Wellness (GHW): 3 credits
• Humanities (GH): 6 credits
• Social and Behavioral Sciences (GS): 6 credits
• Natural Sciences (GN): 9 credits

Integrative Studies (may also complete a Knowledge Domain
requirement)
• Inter-Domain or Approved Linked Courses: 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 (http://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.

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 (http://senate.psu.edu/policies-and-
rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/
#82-44).
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<thead>
<tr>
<th>Code</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>IST 452</td>
<td>Legal and Regulatory Environment of Privacy and Security</td>
<td>3</td>
</tr>
<tr>
<td>SRA 268</td>
<td>Visual Analytics</td>
<td>3</td>
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<td>SRA 311W</td>
<td>Risk Analysis in a Security Context</td>
<td>3</td>
</tr>
<tr>
<td>SRA 421</td>
<td>The Intelligence Environment</td>
<td>3</td>
</tr>
<tr>
<td>SRA 433</td>
<td>Deception and Counterdeception</td>
<td>3</td>
</tr>
<tr>
<td>SRA 440W</td>
<td>Security and Risk Analysis Capstone Course</td>
<td>3</td>
</tr>
<tr>
<td>SRA 468</td>
<td>Spatial Analysis of Risks</td>
<td>3</td>
</tr>
</tbody>
</table>

**Supporting Courses and Related Areas**

Select 15 credits from College-approved list (at least 3 credits must be at the 400-level)

**Information and Cyber Security Option (30 credits)**

Available at the following campuses: Altoona, Berks, Harrisburg, University Park, World Campus

<table>
<thead>
<tr>
<th>Code</th>
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</thead>
<tbody>
<tr>
<td>IST 220</td>
<td>Networking and Telecommunications</td>
<td>3</td>
</tr>
<tr>
<td>IST 451</td>
<td>Network Security</td>
<td>3</td>
</tr>
<tr>
<td>IST 454</td>
<td>Computer and Cyber Forensics</td>
<td>3</td>
</tr>
<tr>
<td>IST 456</td>
<td>Information Security Management</td>
<td>3</td>
</tr>
<tr>
<td>SRA 311</td>
<td>Risk Analysis in a Security Context</td>
<td>3</td>
</tr>
</tbody>
</table>

**Additional Courses**

Select a grade of C or better

| MATH 22 | College Algebra II and Analytic Geometry                              | 3-5     |
| MATH 26 | Plane 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                                    |         |
| GEOG 128 | Geography of International Affairs                                   | 3       |
| PLSC 1  | American Politics: Principles, Processes and Powers                  |         |
| PLSC 14 | International Relations                                              |         |

**Additional Courses**

Select 12 credits from College-approved list (at least 3 credits must be at the 400-level)

**Integrated B.S. in Security and Risk Analysis and M.S. in Informatics**

Available at the following campuses: University Park

Requirements for the Integrated B.S. in Security and Risk Analysis and M.S. in Informatics can be found in the Graduate Bulletin (http://bulletins.psu.edu/graduate/programs/majors/informatics/#integratedundergradgradprogramstext).

**Integrated B.S. in Security and Risk Analysis and M.I.A. in International Affairs**

Available at the following campuses: University Park

Requirements for the Integrated B.S. in Security and Risk Analysis and M.I.A. in International Affairs can be found in the Graduate Bulletin (http://bulletins.psu.edu/graduate/programs/majors/international-affairs/#integratedundergradgradprogramstext).

**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 from an analytic perspective to include concision, analytic reasoning and active voice
• 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 identity, or veteran status)
• Knowledge/Application: Understand and apply the language of security and risk analysis sciences
  • Define and explain the core concepts, principles, processes, and theories within the academic SRA Major
  • Apply the core concepts of SRA to real-world problems
• Lifelong Learning: Commit to the continuous acquisition of relevant knowledge for professional development by self-teaching and/or ongoing 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/)

University Park
Undergraduate Academic Advising Center
E103 Westgate Building
University Park, PA 16802
814-865-8947
advising@ist.psu.edu

Altoona
David Barnes
Associate Teaching Professor, Information Sciences and Technology
Penn Building 212C, 3000 Ivyside Park
Altoona, PA 16601
814-949-5275
drb21@psu.edu

Berks
Tricia Clark
Program Coordinator, Instructor
Gaige 211
Reading, PA 19610
610-396-5349
tkc3@psu.edu

Harrisburg
Jesse Middaugh, PMP
Program Coordinator
Olmsted Building E335
Middletown, PA 17057
717-948-6153
jlm10@psu.edu

World Campus
Undergraduate Academic Advising
301 Outreach Building
University Park, PA 16802
814-863-3283
advising@outreach.psu.edu

Suggested Academic Plan
The suggested academic plan(s) listed on this page are the plan(s) that are in effect during the 2021-22 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 contain suggested academic plans beginning with the 2018-19 edition of the Undergraduate Bulletin).

Intelligence Analysis and Modeling: Security and Risk Analysis, B.S. at University Park 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.

<table>
<thead>
<tr>
<th>First Year</th>
<th>Fall Credits</th>
<th>Spring Credits</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRA 111*</td>
<td>3</td>
<td>SRA 211*</td>
<td>3</td>
</tr>
<tr>
<td>IST 110*</td>
<td>3</td>
<td>CAS 100†</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 15, 30H, or ESL 15‡</td>
<td>3</td>
<td>ECON 102, 104, or AGBM 101</td>
<td>3</td>
</tr>
<tr>
<td>IST 140, CMPS 101, or CMPS 121*</td>
<td>3</td>
<td>MATH 22, 26, 40, 41, 110, or 140</td>
<td>3-5</td>
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<td>General Education Course (GN, GA, GH, or GHW)</td>
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<td>General Education Course (GN, GA, GH, or GHW)</td>
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<td><strong>15-17</strong></td>
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<table>
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<th>Second Year</th>
<th>Fall Credits</th>
<th>Spring Credits</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRA 221*</td>
<td>3</td>
<td>SRA 231*</td>
<td>3</td>
</tr>
<tr>
<td>STAT 200‡</td>
<td>4</td>
<td>PSYCH 100 or SOC 5</td>
<td>3</td>
</tr>
<tr>
<td>SRA 26b*</td>
<td>3</td>
<td>IST 210*</td>
<td>3</td>
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<tr>
<td>PLSC 1, 14, or GEOG 128</td>
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<td>US or IL or Elective</td>
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<td>Supporting Course</td>
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<td>Supporting Course</td>
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<td><strong>15</strong></td>
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<table>
<thead>
<tr>
<th>Third Year</th>
<th>Fall Credits</th>
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<th>Summer Credits</th>
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<tbody>
<tr>
<td>SRA 311*</td>
<td>3</td>
<td>SRA 468*</td>
<td>3 IST 495†</td>
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<tr>
<td>SRA 365 or STAT 460*</td>
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<td>ENGL 202C or 202D‡</td>
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<td>US or IL or Elective</td>
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<th>Fall Credits</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>IST 452*</td>
<td>3</td>
<td>SRA 433*</td>
<td>3</td>
</tr>
<tr>
<td>SRA 421*</td>
<td>3</td>
<td>SRA 440W*</td>
<td>3</td>
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<tr>
<td>400 Level Support of Option</td>
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<td><strong>15</strong></td>
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<td></td>
<td><strong>1</strong></td>
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</table>

| General Education Course (GN, GA, GH, or GHW) | 3 | General Education Course (GN, GA, GH, or GHW) | 3 |
| **15** | **13** | **1** |

Total Credits 120-122

* 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 1 credit of IST 495 is required. A grade of C or better must be earned in this course. This requirement can be completed at any time before graduation.

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy University 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.

GWS, GQ, GHW, GN, GA, GH, and GS are abbreviations used to identify General Education program courses. General Education includes Foundations (GWS and GQ) and Knowledge Domains (GHW, GN, GA, GH, GS, and Integrative Studies). Foundations courses (GWS and GQ) require a grade of ‘C’ or better.

Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

All incoming Schreyer Honors College first-year students at University Park will take ENGL 137H/CAS 137H in the fall semester and ENGL 138T/CAS 138T in the spring semester. These courses carry the GWS designation and replace both ENGL 30H and CAS 100. Each course is 3 credits.
Information and Cyber Security Option: Security and Risk Analysis, B.S. at University Park Campus

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First Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Credits</th>
<th>Course (GH)</th>
<th>Credits</th>
<th>Course (GHW)</th>
<th>Credits</th>
<th>Course (GN)</th>
<th>Credits</th>
<th>Course (IL)</th>
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<tr>
<td>Fall</td>
<td>SRA 111*#</td>
<td>3</td>
<td>SRA 211*#</td>
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<td>ENGL 15, 30H, or ESL 15†</td>
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<td>CAS 100†</td>
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<td>IST 110*#</td>
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<td>IST 140 or CMPSC 101*†</td>
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Second Year

<table>
<thead>
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<th>Semester</th>
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<th>Credits</th>
<th>Course (GHW)</th>
<th>Credits</th>
<th>Course (GN)</th>
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<tbody>
<tr>
<td>Fall</td>
<td>SRA 221*</td>
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<td>4</td>
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<td>IST 210‡</td>
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Third Year

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Fourth Year

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Support of Option

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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
† 1 credit of IST 495 is required. A grade of C or better must be earned in this course. This requirement can be completed at any time before graduation.

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy University 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.

GWS, GQ, GHW, GN, GA, GH, and GS are abbreviations used to identify General Education program courses. General Education includes Foundations (GWS and GQ) and Knowledge Domains (GHW, GN, GA, GH, GS, and Integrative Studies). Foundations courses (GWS and GQ) require a grade of ‘C’ or better.

Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

All incoming Schreyer Honors College first-year students at University Park will take ENGL 137H/CAS 137H in the fall semester and ENGL 138T/CAS 138T in the spring semester. These courses carry the GWS designation and replace both ENGL 30H and CAS 100. Each course is 3 credits.

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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E397 Westgate Building
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814-865-8947

https://ist.psu.edu/about/contact (https://ist.psu.edu/about/contact/)

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