Information Sciences and Technology, B.S. (Abington)

Begin Campus: Any Penn State Campus
End Campus: Abington

Program Description

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

This major is structured to provide students with the theoretical frameworks and skill sets necessary to compete and be productive in the information technology-intensive global context that defines the new "Information Age." Specifically, the degree will be focused on a program that will build an understanding of core information technology and related areas of study; will prepare students for the practical application of various information sciences and related technologies; and engage students in sharpening their abilities to think critically and to work in teams. All this will be done with considerable interdisciplinary integration in order to expose students to the cognitive, social, institutional, and global environments of IST. Team projects in most courses, a required internship, and a senior capstone experience provide additional, focused venues for involving students in the cutting-edge issues and technologies of the field.

Information Context: People, Organizations, and Society Option

Available at the following campuses: Beaver, Berks, Scranton, University Park

This option focuses on how information technology affects social change and the delivery of information to the consumer. This includes the human-machine interface; organization and retrieval of information; digital libraries; information and telecommunications services; information and media industry structures; software services and intermediaries; telecommunications and information law and policy; sociological aspects of technology change; multimedia; and art, design, and aesthetics.

Information Systems: Design & Development Option

Available at the following campuses: Abington, Beaver, Berks, Brandywine, Harrisburg, Lehigh Valley, Scranton, World Campus, York

This option is focused on expanding the skills needed to develop advanced information technology systems using state-of-the-art tools and techniques. The emphasis is on providing the student with both knowledge in the design, implementation, testing and evolution of complex software systems as well as a set of project-oriented, team-programming experiences.

Information Technology: Integration & Application Option

Available at the following campuses: Abington, Beaver, Berks, Brandywine, Greater Allegheny, Harrisburg, Hazleton, Lehigh Valley, Mont Alto, New Kensington, Schuylkill, Scranton, University Park, Wilkes-Barre, World Campus, York

This option is designed to prepare students to use information technology to realize a variety of system-based goals (e.g., reliability, accessibility, efficiency, etc.). It is focused on developing a theoretical foundation and the skill set needed for integrating information technology into different systems for the purpose of enhancing system performance. The emphasis is on providing the student with both the theoretical frameworks needed to use information technology as a system attribute as well as a set of application-oriented experiences and skills.

What is Information Sciences and Technology?

Information Sciences and Technology is a discipline that explores how we can strengthen the power of information and technology, and use it to increase human potential. This includes focusing on creating innovative systems and technological solutions that benefit businesses, organizations, and individuals, and understanding the role of technology in how we live our lives.

More Information About Why Students Choose to Study Information Sciences and Technology (https://ist.psu.edu/prospective/undergraduate/academics/ist/)

You Might Like This Program If...

- You want to develop new software and web applications, help businesses operate more effectively by creating and implementing technological solutions, or understand how technology is connected to broader social issues.
- You are interested in technology but also want to work with people.
- You enjoy coming up with creative solutions to difficult challenges.

More Information About the Integrated Undergraduate-Graduate (IUG) Program

The Integrated Undergraduate Graduate (IUG) program is available for strong undergraduate students who wish to pursue a bachelor's and master's degree in a shorter period of time than would be necessary if the degrees were pursued separately. Information Sciences and Technology undergraduates may apply for admission to the ISTBS/ISTMSS IUG program as early as February 15 of their sophomore year and no later

Entrance to Major

To be eligible for entrance to the Information Sciences and Technology (ISTBS) major, students must:

1. have completed the following entrance-to-major requirements with a grade of C or better in each: IST 110; IST 140 (or equivalent CMPSC 101 or CMPSC 121) IST 210; and IST 220.
2. have achieved a minimum cumulative grade point average of 2.00 prior to and through the end of the semester during which the entrance-to-major procedure is carried out.

Entrance to the Integrated Undergraduate-Graduate (IUG) Program

The Integrated Undergraduate Graduate (IUG) program is available for strong undergraduate students who wish to pursue a bachelor's and master's degree in a shorter period of time than would be necessary if the degrees were pursued separately. Information Sciences and Technology undergraduates may apply for admission to the ISTBS/ISTMSS IUG program as early as February 15 of their sophomore year and no later
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).

Common Requirements for the Major (All Options)

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<tr>
<td>STAT 200</td>
<td>Elementary Statistics</td>
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<tr>
<td>IST 110</td>
<td>Information, People and Technology</td>
<td>3</td>
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<tr>
<td>IST 210</td>
<td>Organization of Data</td>
<td>3</td>
</tr>
<tr>
<td>IST 220</td>
<td>Networking and Telecommunications</td>
<td>3</td>
</tr>
<tr>
<td>IST 230</td>
<td>Language, Logic, and Discrete Mathematics</td>
<td>3</td>
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<tr>
<td>IST 301</td>
<td>Information and Organizations</td>
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Prescribed Courses: Require a grade of C or better

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<thead>
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<td>Information, People and Technology</td>
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<td>Organization of Data</td>
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<tr>
<td>IST 220</td>
<td>Networking and Telecommunications</td>
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Information Sciences and Technology, B.S. (Abington) 3

Information Systems: Design & Development Option (24 credits)
Available at the following campuses: Abington, Beaver, Berks, Brandywine, Harrisburg, Lehigh Valley, Scranton, World Campus, York

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>IST 242</td>
<td>Intermediate &amp; Object-Oriented Application Development</td>
<td>3</td>
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<tr>
<td>IST 311</td>
<td>Object-Oriented Design and Software Applications</td>
<td>3</td>
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</table>

Additional Courses

Additional Courses: Require a grade of C or better

| IST 251 | Application Development Design Studio I             | 3       |
| or IST 361 | Application Development Design Studio II          |         |

Select 6 credits of the following:

- IST 411 | Distributed-Object Computing                        |         |
- IST 412 | The Engineering of Complex Software Systems         |         |
- IST 413 | Usability Engineering                                |         |

Supporting Courses and Related Areas

Select 9 credits from College-approved list (at least 3 credits must be at the 400-level)

1. Students in the Information Systems: Design and Development Option are expected to take IST 242 prior to taking the prescribed and additional courses for that option.

Information Technology: Integration & Application Option (24 credits)
Available at the following campuses: Abington, Beaver, Berks, Brandywine, Greater Allegheny, Harrisburg, Hazleton, Lehigh Valley, Mont Alto, New Kensington, Schuylkill, Scranton, University Park, Wilkes-Barre, World Campus, York

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<tbody>
<tr>
<td>IST 302</td>
<td>IT Project Management</td>
<td>3</td>
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<tr>
<td>IST 420</td>
<td>Fundamentals of Systems and Enterprise Integration</td>
<td>3</td>
</tr>
<tr>
<td>IST 421</td>
<td>Advanced Enterprise Integration: Technologies and Applications</td>
<td>3</td>
</tr>
</tbody>
</table>

Additional Courses

Additional Courses: Require a grade of C or better

| IST 240 | Introduction to Computer Languages                  | 3       |
| or IST 242 | Intermediate & Object-Oriented Application Development |         |

Supporting Courses and Related Areas

Select 12 credits from College-approved list (at least 3 credits at the 400-level and no more than 6 credits below the 200-level)

Program Learning Objectives

- Analytical Skills:
  - Demonstrate the ability to translate a problem definition into an algorithm process and apply it to a practical solution.

- Coding and Database Skills:
  - Demonstrate the ability to code the features (data types, data structures, flow control, GUI, methods, iteration, and threading,
consume APIs and online services) with the following enterprise programming languages: JavaScript, Python, Java, and C#.

• Demonstrate the ability to perform database connectivity, tables design, views, functions, triggers, and stored procedures, with the following Enterprise databases: Oracle, SQL Server, MySQL.

• Demonstrate how to work with next generation databases like MongoDB.

• Networking Skills:
  • Demonstrate the ability to perform management and maintenance of servers, PC’s, routers, switches, work with networking security tools, firewalls, anti-virus and intrusion detection systems.
  • Demonstrate knowledge of networking concepts: OSI model, networking topologies, and networking protocols.

• Project Management Skills:
  • Demonstrate the ability to perform full software/system lifecycle development, prepare and respond to request for quote documentation.

• Technical Skills:
  • Demonstrate the ability to work with operation systems (Windows Server, Linux and Mac OSX) and software applications (Integrated Development Environment, design tools like Visio, code control, project management, bug tracking and unit testing tools, and production builds).

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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Coordinator of Information Sciences and Technology
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Integration and Application Option: Information Sciences and Technology, B.S. at Abington 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.

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<td>IST 110*#</td>
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<td>IST 210*#</td>
<td>3 IST 495¹</td>
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<td>IST 140 or CMPSC 121*</td>
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<td>IST 220*#</td>
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<tr>
<td>World Language Level 1</td>
<td>4 or 6</td>
<td>World Language Level 2</td>
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<td>MATH 110 or 140 (GQ)</td>
<td>4 ENGL 15 or 30H (GWS)</td>
<td>General Education Course</td>
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<td>IST 230*</td>
<td>3</td>
<td>IST 240 or 242*</td>
<td>3 IST 495¹</td>
<td>1</td>
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<tr>
<td>ECON 102 or 104 (GS)</td>
<td>3</td>
<td>STAT 200 or SCM 200 (GQ)</td>
<td>4</td>
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<tr>
<td>World Language Level 3 (if needed)</td>
<td>4 CAS 100A or 100B (GWS)</td>
<td>General Education Course</td>
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<td>IST 301*</td>
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<td>IST 331*</td>
<td>3 IST 495¹</td>
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<td>IST 302*</td>
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<td>IST 420*</td>
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<td>Support of Option</td>
<td>3 ENGL 202C or 202D (GWS)</td>
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<td>General Education Course</td>
<td>3 Support of Option</td>
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<td>General Education Course</td>
<td>3 Foreign Culture (IL)</td>
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<tr>
<td>IST 421*</td>
<td>3</td>
<td>IST 440W (GWS)</td>
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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 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).
IST 402, 451, or 461* 3 Support of Option 3
Support of Option 3 General Education Course 3
Foreign Culture (IL) 3 Elective 3-4
General Education Course 3 Elective 3

15 15-16

Total Credits 125-130

* 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 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.

1 IST 495 - One internship for credit is required to complete degree requirements, a maximum of three internships for credit are allowed. Should be scheduled and completed during summer and can be scheduled as early as the first year.

Support of Option Notes
Any non-required IST course can be used as a Support of Option. For example: IST 250, IST 261, IST 311.
Design and Development Option: Information Sciences and Technology, B.S. at Abington Campus

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<td>3 IST 495†</td>
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<td>IST 140 or CMPSC 121†</td>
<td>3 IST 220*#</td>
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<td>IST 261†</td>
<td>3 Support of Option (Web/ Mobile App or Game Development recommended)</td>
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<td>CAS 100A or 100B (GWS)</td>
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<td>3 Support of Option (IST 361, Application Development Design Studio II recommended)</td>
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<td>IST 412 or 413*</td>
<td>3 IST 440W (GWS)</td>
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<td>IST 402 or 4x Emerging Issues and Technologies†</td>
<td>3 Support of Option (Web/ Mobile App or Development recommended)</td>
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Total Credits 125-130

* 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 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.

1 IST 495 - One internship for credit is required to complete degree requirements, a maximum of three internships for credit are allowed. Should be scheduled and completed during summer and can be scheduled as early as the first year.

Career Paths

IST allows you to explore some of the biggest challenges facing society and work to solve them by leveraging information and using technology. It blends skills from a number of fields – computer science, business, psychology, math, sociology, political science – so you can help people
and organizations thrive. IST's Office of Career Solutions helps students navigate their internship and career development in the field through coaching, workshops, interview preparation, resume reviews, career fairs, job postings, and networking opportunities.

**Careers**
Because our courses blend technical knowledge with skills in communication and business, an IST degree allows for careers in nearly every industry including consulting, business, government, defense, entertainment, and medicine.

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

**Contact**

**Abington**
DIVISION OF SCIENCE AND ENGINEERING
1600 Woodland Road
Abington, PA 19001
267-633-3316
jxo19@psu.edu

http://abington.psu.edu/information-sciences-and-technology-ist (http://abington.psu.edu/information-sciences-and-technology-ist/)

**Beaver**
INFORMATION SCIENCES AND TECHNOLOGY
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Monaca, PA 15061
rkl5137@psu.edu

https://beaver.psu.edu/academics/ist (https://beaver.psu.edu/academics/ist/)

**Berks**
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610-892-1343
nxd13@psu.edu

http://brandywine.psu.edu/information-sciences-and-technology (http://brandywine.psu.edu/information-sciences-and-technology/)

**DuBois**
1 College Place
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814-372-3000
jel115@psu.edu

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**Greater Allegheny**
101 Frable Building
4000 University Drive
McKeesport, PA 15132
412-675-9140
GA-Academics@lists.psu.edu

http://greaterallegheny.psu.edu/information-sciences-and-technology-bs (http://greaterallegheny.psu.edu/information-sciences-and-technology-bs/)

**Harrisburg**
SCHOOL OF BUSINESS ADMINISTRATION
Olmsted Building, E355
717-948-6141
ljc43@psu.edu


**Hazleton**
Kostos 117
Hazleton, PA 18202
570-450-3089
bxb30@psu.edu

http://hazleton.psu.edu/bachelor-science-information-sciences-and-technology (http://hazleton.psu.edu/bachelor-science-information-sciences-and-technology/)

**Lehigh Valley**
2809 Saucon Valley Road
Center Valley, PA 18034
610-285-5071
kmb6846@psu.edu


**Mont Alto**
1 Campus Drive
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717-749-6126
jch146@psu.edu


**New Kensington**
036 Theater & IST Building
3550 Seventh Street Road
New Kensington, PA 15068
724-334-6089
hhs10@psu.edu
https://newkensington.psu.edu/2-year-information-sciences-technology

**Scranton**

114B Dawson
120 Ridge View Drive
Dunmore, PA 18512
570-963-2593
dls102@psu.edu

https://scranton.psu.edu/academics/degrees/bachelors/information-sciences-technology-degree

**University Park**

COLLEGE OF INFORMATION SCIENCES AND TECHNOLOGY
E397 Westgate Building
University Park, PA 16802
814-865-8947

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

**Wilkes-Barre**

44 University Drive
Dallas, PA 18612
570-675-9142
weifan@psu.edu

http://wilkesbarre.psu.edu/academics/ist

**World Campus**

COLLEGE OF INFORMATION SCIENCES AND TECHNOLOGY
E397 Westgate Building
University Park, PA 16802
814-865-8947

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

https://www.worldcampus.psu.edu/degrees-and-certificates/information-sciences-and-technology-bachelors/overview

**York**

226 Grumbacher Building (GISTC)
York, PA 17403
717-771-4143
wpc2@psu.edu

http://york.psu.edu/academics/baccalaureate/information-sciences-and-technology