

Information Science and Technology BS

Overview

Science and technology are the foundations of our future. The Department of Computer and Information Sciences (CIS) is focused on the understanding of fundamental scientific principles and the application of these principles to solving complex problems, using computing technology.

Students in the **Bachelor of Science in Information Science and Technology** (IS&T) develop the skills and the knowledge necessary to analyze information problems and to apply current technology to their solution. The emphasis is to develop problem-solving and communication skills.

The technologies and methods include databases, web and mobile application development, client-server computing, network security, project management, software engineering principles, and quality assurance methodologies. A two-semester capstone project course is required. This course is designed to help students integrate what they have learned in other courses and apply this knowledge in the design and implementation of a software application. The BS program gives students the further opportunity to explore their interests in the variety of electives available to them.

The program is targeted for students who have a strong interest in applying computing technologies to solving problems in business, education, science and government agencies. Our IS&T graduates are also involved in innovative product developments. They hold jobs as consultants, network engineers, business and systems analysts, database administrators, and web and application developers.

Campus Location: Main

Program Code: ST-IST-BS

Distinction in Major

To graduate with distinction in this major, a student must satisfy the following criteria:

- have a minimum 3.50 major GPA and
- have a minimum 3.50 cumulative GPA.

Undergraduate Contact Information

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Learn more about the Bachelor of Science in Information Science and Technology.

These requirements are for students who matriculated in academic year 2023-2024. Students who matriculated prior to fall 2023 should refer to the Archives to view the requirements for their Bulletin year.

Bachelor of Science Requirements

Summary of Requirements for the Degree

1. University Requirements (123 total s.h.)

- Students must complete all University requirements including those listed below.
- All undergraduate students must complete at least two writing-intensive courses for a total of at least six credits at Temple as part of their major. The specific writing-intensive course options for this major are:

Code	Title	Credit Hours
CIS 4296	Information Systems Analysis and Design	4
CIS 4396	Information Systems Implementation	4

- Students must complete the General Education (GenEd) requirements.

- See the General Education section of the *Undergraduate Bulletin* for the GenEd curriculum.
- Students who complete CST majors receive a waiver for 2 Science & Technology (GS) and 1 Quantitative Literacy (GQ) GenEd courses.
- Students must satisfy general Temple University residency requirements.

2. College Requirements

- A minimum of 90 total credits within the College of Science & Technology (CST), the College of Liberal Arts (CLA), and/or the College of Engineering (ENG).
 - A minimum of 45 of these credits must be upper-level (courses numbered 2000 and above).
- Complete a one-credit first-year or transfer seminar.
 - SCTC 1001 CST First Year Seminar for every entering first-year CST student.
 - SCTC 2001 CST Transfer Seminar for every entering transfer CST student.

3. Major Requirements for Bachelor of Science (76 s.h.)

At least 9 courses required for the major must be completed at Temple. At least 8 CIS courses must be completed at Temple.

Code	Title	Credit Hours
Computer & Information Science		
CIS 1001	Introduction to Academics in Computer Science	1
CIS 1051	Introduction to Problem Solving and Programming in Python	4
or CIS 1057	Computer Programming in C	
CIS 1068	Program Design and Abstraction	4
or CIS 1968	Honors Program Design and Abstraction	
CIS 1166	Mathematical Concepts in Computing I	4
or CIS 1966	Honors Mathematical Concepts in Computing I	
CIS 2109	Database Management Systems	4
CIS 2168	Data Structures	4
CIS 2229	Architecture, Operating Systems and Networking	4
CIS 3309	Component-Based Software Design	4
CIS 3329	Network Architectures	4
CIS 3342	Server-Side Web Application Development	4
CIS 3344	Client-Side Scripting for the Web	4
CIS 4296	Information Systems Analysis and Design	4
CIS 4396	Information Systems Implementation	4
Mathematics		
MATH 2031	Probability and Statistics	3
Select one of the following: ¹		4
MATH 1031	Differential and Integral Calculus	
MATH 1041	Calculus I	
MATH 1941	Honors Calculus I	
Information Science & Technology Related Electives		
Select 12 credits from the following IS&T elective courses:		12
CIS 3100	Special Topics in CIS	
CIS 3281	Cooperative Education Experience in Information Science & Technology ²	
CIS 3374	Quality Assurance & Testing (F)	
CIS 3376	Enterprise Resource Planning (ERP) Design and Implementation	
CIS 3441	Software Security	
CIS 3515	Introduction to Mobile Application Development	
CIS 3603	User Experience Design	
CIS 3605	Introduction to Digital Forensics	
CIS 3715	Principles of Data Science	
CIS 3775	Information Technology Project Management	
CIS 4105	Information Technology Process Management (F)	
CIS 4106	System Development Process	
CIS 4108	Emerging Technologies and Tools for Enterprise Management (S)	
CIS 4282	Independent Study ²	

CIS 4330	Current Topics in Information Science & Technology
CIS 4340	Seminar in Information Science & Technology (S)
CIS 4344	Advanced Web Application Design & Scripting
CIS 4350	Seminar on Topics in Computer Science (F)
CIS 4362	Application System Development Using Relational Technology (Not offered every year)
CIS 4376	E-Commerce System Development
CIS 4378	Computer and Network Security
CIS 4419	Securing the Internet of Things
CIS 4515	Advanced Mobile Application Development
CIS 4615	Ethical Hacking and Intrusion Forensics
CIS 4625	Audit and Compliance for Security and Digital Forensics
Other courses communicated to the students from the IS&T Faculty Advisor.	

Laboratory Science courses

Two (2) laboratory science courses ³	8
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Total Credit Hours	76
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Code	Title	Credit Hours
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(F) - Fall only course

(S) - Spring only course

1

IS&T majors are required to have completed MATH 1022. They can then choose either MATH 1031, MATH 1041 or MATH 1941.

2

A maximum of two sections may be taken from CIS 3281 and CIS 4282. CIS 3281 may be taken once within this two-section sequence.

3

Must select within a Sequence for Laboratory Science A and Laboratory Science B. See the Sequenced Laboratory Science list below for the science options.

- Students may also select other 3000-level or higher Computer & Information Science courses for which they meet the prerequisites as long as that course is not already used for the IS&T degree.
- No more than two courses that do not have formal classes and a text, such as Independent Study, Directed Study, and co-op may be used to satisfy the elective requirement. In addition, the co-op course may only be taken once.
- Students with senior standing and a minimum overall 3.25 GPA may also request permission from both the IS&T advisor and course instructor to use graduate courses (5xxx level) as electives.

Sequenced Information Science and Technology Laboratory Science Requirements

Code	Title	Credit Hours
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Biology Sequence**Select one Biology Lab Science A:**

BIOL 1011	General Biology I
BIOL 1111	Introduction to Organismal Biology
BIOL 1911	Honors Introduction to Organismal Biology (S)

Select one Biology Lab Science B:

BIOL 1012	General Biology II
BIOL 1112	Introduction to Biomolecules, Cells and Genomes
BIOL 1912	Honors Introduction to Biomolecules, Cells and Genomes
BIOL 2112	Introduction to Cellular and Molecular Biology
BIOL 2912	Honors Introduction to Cellular and Molecular Biology (F)

Chemistry Sequence ¹**Select one Chemistry Lab Science A:**

CHEM 1021 & CHEM 1023	Introduction to Chemistry I and Introduction to Chemistry Laboratory I
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CHEM 1031 & CHEM 1033	General Chemistry I and General Chemistry Laboratory I
CHEM 1951 & CHEM 1953	Honors General Chemical Science I and Honors Chemical Science Laboratory I

Select one Chemistry Lab Science B:

CHEM 1022 & CHEM 1024	Introduction to Chemistry II and Introduction to Chemistry Laboratory II
CHEM 1032 & CHEM 1034	General Chemistry II and General Chemistry Laboratory II
CHEM 1952 & CHEM 1954	Honors General Chemical Science II and Honors Chemical Science Laboratory II

Earth & Environmental Science Sequence ²**Select this Lab Science A:**

EES 2001	Physical Geology
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Select one Lab Science B:

EES 2011	Mineralogy I (with CHEM 1031 prerequisite)
EES 2021	Sedimentary Environments (no CHEM 1031 prerequisite)
EES 2061	Introduction to Geochemistry (with CHEM 1031 prerequisite)

Physics Sequence ³**Select one Physics Lab Science A:**

PHYS 1021	Introduction to General Physics I
PHYS 1061	Elementary Classical Physics I
PHYS 1961	Honors Elementary Classical Physics I (F)
PHYS 2021	General Physics I
PHYS 2921	Honors General Physics I (F)

Select one Physics Lab Science B:

PHYS 1022	Introduction to General Physics II
PHYS 1062	Elementary Classical Physics II
PHYS 1962	Honors Elementary Classical Physics II (S)
PHYS 2022	General Physics II
PHYS 2922	Honors General Physics II (S)

1

Students can choose to mix-and-match the Chemistry Sequence A and B courses. However, they must take at least 1 course from Chemistry Sequence A and 1 from Chemistry Sequence B. Note: Chemistry courses consist of a three-credit lecture plus a one-credit lab.

2

For the EES Sequence, two of the three Lab Science B options require students to take CHEM 1031 as a prerequisite, but EES 2021 does not.

3

Students can choose to mix-and-match the Physics Sequence A and B courses. However, they must take at least 1 course from Physics Sequence A and 1 from Physics Sequence B.

Suggested Academic Plan

Bachelor of Science in Information Science and Technology

Suggested Plan for New Students Starting in the 2023-2024 Academic Year

Year 1		Credit Hours
Fall		
CIS 1001	Introduction to Academics in Computer Science	1
Select one of the following:		4
CIS 1051	Introduction to Problem Solving and Programming in Python	
CIS 1057	Computer Programming in C	
Select one of the following: ¹		4
MATH 1031	Differential and Integral Calculus	
MATH 1041	Calculus I	

MATH 1941	Honors Calculus I	
SCTC 1001	CST First Year Seminar	1
GenEd Breadth Course		3
GenEd Breadth Course		3
Credit Hours		16
Spring		
CIS 1068 or CIS 1968	Program Design and Abstraction or Honors Program Design and Abstraction	4
CIS 1166 or CIS 1966	Mathematical Concepts in Computing I or Honors Mathematical Concepts in Computing I	4
ENG 0802 or ENG 0812 or ENG 0902	Analytical Reading and Writing or Analytical Reading and Writing: ESL or Honors Writing About Literature	4
GenEd Breadth Course		3
Credit Hours		15
Year 2		
Fall		
MATH 2031	Probability and Statistics	3
CIS 2168	Data Structures	4
IST Laboratory Science A		4
IH 0851 or IH 0951	Intellectual Heritage I: The Good Life or Honors Intellectual Heritage I: The Good Life	3
Elective		1
Credit Hours		15
Spring		
CIS 2109	Database Management Systems	4
CIS 2229	Architecture, Operating Systems and Networking	4
IST Laboratory Science B		4
IH 0852 or IH 0952	Intellectual Heritage II: The Common Good or Honors Intellectual Heritage II: The Common Good	3
Credit Hours		15
Year 3		
Fall		
CIS 3309	Component-Based Software Design	4
CIS 3344	Client-Side Scripting for the Web	4
Information Science & Technology Elective ²		3-4
GenEd Breadth Course		3-4
Elective		2-0
Credit Hours		16
Spring		
CIS 3329	Network Architectures	4
Information Science & Technology Elective ²		3-4
GenEd Breadth Course		3
Elective		3
Elective		2-1
Credit Hours		15
Year 4		
Fall		
CIS 4296	Information Systems Analysis and Design	4
CIS 3342	Server-Side Web Application Development	4
Information Science & Technology Elective ²		3-4
Elective		3

Elective		2-1
Credit Hours		16
Spring		
CIS 4396	Information Systems Implementation	4
Information Science & Technology Elective ²		3-4
Elective		3
Elective		3
Elective		2-1
Credit Hours		15
Total Credit Hours		123

1

IS&T majors are required to have completed MATH 1022. They can then choose either MATH 1031, MATH 1041 or MATH 1941.

2

Select from the Information Science & Technology Related Electives list under Requirements.