Information Science & Technology, B.S.

Learn more about the Bachelor of Science in Information Science and Technology (https://www.temple.edu/academics/degree-programs/information-science-and-technology-major-st-ist-bs).

Students in the Information Science and Technology (IS&T) curriculum 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 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.

Undergraduate Contact Information:

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215-204-8450

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Science Education and Research Center, Room 304
215-204-8450

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Science Education and Research Center, Room 353
215-204-2940
xli@temple.edu

The BS program gives students the further opportunity to explore their interests in the variety of electives available to them.

Bachelor of Science

Summary of Requirements for the Degree

1. University Requirements (123 total s.h.)
   - MATH 0701 (4 s.h.) and/or ENG 0701 (4 s.h.), if required by placement testing.
   - All Temple students must take a minimum of two writing-intensive courses at Temple as part of their major. Following is a list of courses that can be used to satisfy the writing-intensive requirement: CIS 4296 and CIS 4396.
   - Students must complete the General Education (GenEd) requirements.
     - See the General Education (http://bulletin.temple.edu/undergraduate/general-education) section of the Undergraduate Bulletin for the GenEd curriculum.
     - Students who complete CST majors typically receive a waiver for 2 Science & Technology (GS) and 1 Quantitative Literacy (GQ) GenEd courses.
     - Students must satisfy general Temple University residency requirements (http://bulletin.temple.edu/undergraduate/academic-policies/academic-residency-requirements).

2. College Requirements
   - 90 credits within the College of Science & Technology (CST) or the College of Liberal Arts (CLA).
   - 45 Upper Level (2000+) credits within the College of Science & Technology (CST) or the College of Liberal Arts (CLA).

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.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>CIS 1001</td>
<td>Introduction to Academics in Computer Science</td>
<td>1</td>
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<tr>
<td>CIS 1051</td>
<td>Introduction to Problem Solving and Programming in Python</td>
<td>4</td>
</tr>
<tr>
<td>Code</td>
<td>Title</td>
<td>Credit</td>
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<tr>
<td>------------</td>
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</tr>
<tr>
<td>CIS 1057</td>
<td>Computer Programming in C</td>
<td></td>
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<tr>
<td>CIS 1068</td>
<td>Program Design and Abstraction</td>
<td>4</td>
</tr>
<tr>
<td>or CIS 1968</td>
<td>Honors Program Design and Abstraction</td>
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<tr>
<td>CIS 1166</td>
<td>Mathematical Concepts in Computing I</td>
<td>4</td>
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<tr>
<td>or CIS 1966</td>
<td>Honors Mathematical Concepts in Computing I</td>
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<tr>
<td>CIS 2109</td>
<td>Database Management Systems</td>
<td>4</td>
</tr>
<tr>
<td>CIS 2168</td>
<td>Data Structures</td>
<td>4</td>
</tr>
<tr>
<td>CIS 2229</td>
<td>Architecture, Operating Systems and Networking</td>
<td>4</td>
</tr>
<tr>
<td>CIS 3309</td>
<td>Component-Based Software Design</td>
<td>4</td>
</tr>
<tr>
<td>CIS 3329</td>
<td>Network Architectures</td>
<td>4</td>
</tr>
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<td>CIS 3342</td>
<td>Server-Side Web Application Development</td>
<td>4</td>
</tr>
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<td>CIS 3344</td>
<td>Client-Side Scripting for the Web</td>
<td>4</td>
</tr>
<tr>
<td>CIS 4296</td>
<td>Information Systems Analysis and Design</td>
<td>4</td>
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<tr>
<td>CIS 4396</td>
<td>Information Systems Implementation</td>
<td>4</td>
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<tr>
<td></td>
<td><strong>Mathematics</strong></td>
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<td>MATH 2031</td>
<td>Probability and Statistics</td>
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<td>MATH 1031</td>
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<td>MATH 1041</td>
<td>Calculus I</td>
<td></td>
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<td>MATH 1941</td>
<td>Honors Calculus I</td>
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<td></td>
<td><strong>Information Science &amp; Technology Related Electives</strong></td>
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<td>CIS 3281</td>
<td>Cooperative Education Experience in Information Science &amp; Technology</td>
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<tr>
<td>CIS 3374</td>
<td>Quality Assurance &amp; Testing (F)</td>
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</tr>
<tr>
<td>CIS 3376</td>
<td>Enterprise Resource Planning (ERP) Design and Implementation</td>
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</tr>
<tr>
<td>CIS 3515</td>
<td>Introduction to Mobile Application Development</td>
<td></td>
</tr>
<tr>
<td>CIS 3603</td>
<td>User Experience Design</td>
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</tr>
<tr>
<td>CIS 3605</td>
<td>Introduction to Digital Forensics</td>
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</tr>
<tr>
<td>CIS 3715</td>
<td>Principles of Data Science</td>
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<tr>
<td>CIS 3775</td>
<td>Information Technology Project Management</td>
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<tr>
<td>CIS 4105</td>
<td>Information Technology Process Management (F)</td>
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<tr>
<td>CIS 4106</td>
<td>System Development Process</td>
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<td>CIS 4108</td>
<td>Emerging Technologies and Tools for Enterprise Management (S)</td>
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<tr>
<td>CIS 4282</td>
<td>Independent Study</td>
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</tr>
<tr>
<td>CIS 4330</td>
<td>Current Topics in Information Science &amp; Technology</td>
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<td>CIS 4340</td>
<td>Seminar in Information Science &amp; Technology (S)</td>
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<tr>
<td>CIS 4344</td>
<td>Advanced Web Application Design &amp; Scripting</td>
<td></td>
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<tr>
<td>CIS 4350</td>
<td>Seminar on Topics in Computer Science (F)</td>
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<tr>
<td>CIS 4362</td>
<td>Application System Development Using Relational Technology (Not offered every year)</td>
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<tr>
<td>CIS 4376</td>
<td>E-Commerce System Development</td>
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<tr>
<td>CIS 4378</td>
<td>Computer and Network Security</td>
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<tr>
<td>CIS 4515</td>
<td>Advanced Mobile Application Development</td>
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<tr>
<td>CIS 4615</td>
<td>Ethical Hacking and Intrusion Forensics</td>
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<tr>
<td>CIS 4625</td>
<td>Audit and Compliance for Security and Digital Forensics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other courses communicated to the students from the IS&amp;T Faculty Advisor.</td>
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**Laboratory Science courses**

<table>
<thead>
<tr>
<th>Two (2) laboratory science courses</th>
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**Total Credit Hours**

<table>
<thead>
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<tr>
<td></td>
<td><strong>Total Credit Hours</strong></td>
<td>76</td>
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</table>

(F) - Fall only course
IS&T majors are required to have completed MATH 1022. They can then choose either MATH 1031, MATH 1041 or MATH 1941. 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. 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 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

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>Biology Sequence</td>
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<tr>
<td>Select one Biology Lab Science A:</td>
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<tr>
<td>BIOL 1011</td>
<td>General Biology I</td>
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<tr>
<td>BIOL 1111</td>
<td>Introduction to Organismal Biology</td>
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<tr>
<td>BIOL 1911</td>
<td>Honors Introduction to Organismal Biology (S)</td>
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<tr>
<td>Select one Biology Lab Science B:</td>
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</tr>
<tr>
<td>BIOL 1012</td>
<td>General Biology II</td>
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<tr>
<td>BIOL 2112</td>
<td>Introduction to Cellular and Molecular Biology</td>
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<tr>
<td>BIOL 2912</td>
<td>Honors Introduction to Cellular and Molecular Biology (F)</td>
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<tr>
<td>Chemistry Sequence 1</td>
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<tr>
<td>Select one Chemistry Lab Science A:</td>
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<tr>
<td>CHEM 1021 &amp; CHEM 1023</td>
<td>Introduction to Chemistry I and Introduction to Chemistry Laboratory I</td>
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<tr>
<td>CHEM 1031 &amp; CHEM 1033</td>
<td>General Chemistry I and General Chemistry Laboratory I</td>
<td></td>
</tr>
<tr>
<td>CHEM 1951 &amp; CHEM 1953</td>
<td>Honors General Chemical Science I and Honors Chemical Science Laboratory I</td>
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<tr>
<td>Select one Chemistry Lab Science B:</td>
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<td></td>
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<tr>
<td>CHEM 1022 &amp; CHEM 1024</td>
<td>Introduction to Chemistry II and Introduction to Chemistry Laboratory II</td>
<td></td>
</tr>
<tr>
<td>CHEM 1032 &amp; CHEM 1034</td>
<td>General Chemistry II and General Chemistry Laboratory II</td>
<td></td>
</tr>
<tr>
<td>CHEM 1952 &amp; CHEM 1954</td>
<td>Honors General Chemical Science II and Honors Chemical Science Laboratory II</td>
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<tr>
<td>Earth &amp; Environmental Science Sequence 2</td>
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<tr>
<td>Select this Lab Science A:</td>
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<tr>
<td>EES 2001</td>
<td>Physical Geology</td>
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<tr>
<td>Select one Lab Science B (both have co-requisite):</td>
<td></td>
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<tr>
<td>EES 2011</td>
<td>Mineralogy I (with CHEM 1031 co-requisite)</td>
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<tr>
<td>EES 2061</td>
<td>Introduction to Geochemistry (with CHEM 1031 co-requisite)</td>
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<tr>
<td>Physics Sequence 3</td>
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<td>Select one Physics Lab Science A:</td>
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<tr>
<td>PHYS 1021</td>
<td>Introduction to General Physics I</td>
<td></td>
</tr>
<tr>
<td>PHYS 1061</td>
<td>Elementary Classical Physics I</td>
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<tr>
<td>PHYS 1961</td>
<td>Honors Elementary Classical Physics I (F)</td>
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<tr>
<td>PHYS 2021</td>
<td>General Physics I</td>
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<tr>
<td>PHYS 2921</td>
<td>Honors General Physics I (F)</td>
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</table>
Select one Physics Lab Science B:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>PHYS 1022</td>
<td>Introduction to General Physics II</td>
</tr>
<tr>
<td>PHYS 1062</td>
<td>Elementary Classical Physics II</td>
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<tr>
<td>PHYS 1962</td>
<td>Honors Elementary Classical Physics II (S)</td>
</tr>
<tr>
<td>PHYS 2022</td>
<td>General Physics II</td>
</tr>
<tr>
<td>PHYS 2922</td>
<td>Honors General Physics II (S)</td>
</tr>
</tbody>
</table>

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. The Earth & Environmental Science (EES) sequence will require students to take CHEM 1031 as a co-requisite to either of the two EES Sequence B courses.
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.

**Calculation of Major GPA**

Courses listed under the major requirements for the degree will be included in the calculation of the major GPA. Courses that could not apply toward the major as an elective or required course would not be counted in the calculation of the major GPA. This would include CIS 1056, for example.

**Distinction in Major**

To graduate with Distinction in Major, students are required to have a 3.50 or higher grade point average (GPA) both in the major and overall, as well as be recommended by the department of Computer & Information Sciences.

**Suggested Academic Plan**

**Bachelor of Science in Information Science & Technology**

**Requirements for New Students starting in the 2018-2019 Academic Year**

**Year 1**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>Fall</td>
<td>CIS 1001</td>
<td>Introduction to Academics in Computer Science</td>
<td>1</td>
</tr>
<tr>
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<td>Select one of the following:</td>
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<td>4</td>
</tr>
<tr>
<td></td>
<td>CIS 1051</td>
<td>Introduction to Problem Solving and Programming in Python</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CIS 1057</td>
<td>Computer Programming in C</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select one of the following:</td>
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<tr>
<td></td>
<td>MATH 1031</td>
<td>Differential and Integral Calculus</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MATH 1041</td>
<td>Calculus I</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MATH 1941</td>
<td>Honors Calculus I</td>
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<tr>
<td></td>
<td>General Education/Elective Credits</td>
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</table>

**Spring**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>CIS 1068 or 1968</td>
<td>Program Design and Abstraction</td>
<td>4</td>
</tr>
<tr>
<td>CIS 1166 or 1966</td>
<td>Mathematical Concepts in Computing I</td>
<td>4</td>
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<td>General Education/Elective Credits</td>
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**Year 2**

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<th>Credit Hours</th>
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<tr>
<td>Fall</td>
<td>MATH 2031</td>
<td>Probability and Statistics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>CIS 2168</td>
<td>Data Structures</td>
<td>4</td>
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<tr>
<td></td>
<td>IST Laboratory Science A</td>
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</tr>
<tr>
<td></td>
<td>General Education/Elective Credits</td>
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**Spring**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>CIS 2109</td>
<td>Database Management Systems</td>
<td>4</td>
</tr>
<tr>
<td>CIS 2229</td>
<td>Architecture, Operating Systems and Networking</td>
<td>4</td>
</tr>
<tr>
<td>IST Laboratory Science B</td>
<td>4</td>
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<tr>
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**Term Credit Hours** 15

### Year 3

#### Fall

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<tr>
<td>CIS 3309</td>
<td>Component-Based Software Design</td>
<td>4</td>
</tr>
<tr>
<td>CIS 3344</td>
<td>Client-Side Scripting for the Web</td>
<td>4</td>
</tr>
<tr>
<td>Information Science &amp; Technology Elective&lt;sup&gt;2&lt;/sup&gt;</td>
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**Term Credit Hours** 16

#### Spring

<table>
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<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CIS 3329</td>
<td>Network Architectures</td>
<td>4</td>
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<tr>
<td>Information Science &amp; Technology Elective&lt;sup&gt;2&lt;/sup&gt;</td>
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**Term Credit Hours** 15

### Year 4

#### Fall

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<tbody>
<tr>
<td>CIS 4296</td>
<td>Information Systems Analysis and Design [WI]</td>
<td>4</td>
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<tr>
<td>CIS 3342</td>
<td>Server-Side Web Application Development</td>
<td>4</td>
</tr>
<tr>
<td>Information Science &amp; Technology Elective&lt;sup&gt;2&lt;/sup&gt;</td>
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<td>3-4</td>
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**Term Credit Hours** 16

#### Spring

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<tr>
<td>CIS 4396</td>
<td>Information Systems Implementation [WI]</td>
<td>4</td>
</tr>
<tr>
<td>Information Science &amp; Technology Elective&lt;sup&gt;2&lt;/sup&gt;</td>
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<td>3-4</td>
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**Term 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.