

(only use this template if you entered RPI in the F23/S24 academic year)

This template summarizes the undergraduate curriculum requirements for students majoring in Computer Science, including dual majors. Note that you do not need to take courses in the exact order shown below as long as all requirements are met and you earn at least 128 credit hours. Check the Rensselaer Catalog ([catalog.rpi.edu](https://catalog.rpi.edu)) for prerequisites and semester restrictions (e.g., fall only, spring/summer only) on all courses you plan to take.

**Please use this template, the Rensselaer Catalog, Degree Works in SIS, and discussions with your academic advisors to verify that you are meeting all requirements for the CSCI major.**

**First Year**

Fall 2023		Spring 2024	
CSCI 1100 Computer Science I	4	CSCI 1200 Data Structures	4
MATH 1010 Calculus I	4	MATH 1020 Calculus II	4
PHYS 1100 Physics I <sup>1</sup>	4	BIOL 1010 Intro. to Biology <sup>1</sup>	3
HASS Elective	4	BIOL 1015 -or- 1016 Intro. to Biology Lab <sup>1</sup>	1
		HASS Elective	4

**Second Year**

Fall 2024		Spring 2025	
CSCI 2200 Foundations of CS	4	CSCI 2300 Intro. to Algorithms	4
CSCI 2500 Computer Organization <sup>2</sup>	4	CSCI 2600 Principles of Software <sup>3</sup>	4
MATH 2010 Multivariable Calc. & Matrix Algebra	4	MATH/MATP Course as specified by CSCI Track	4
HASS Elective	4	HASS Elective	4

**Third Year**

Your third- and fourth-year requirements will vary depending on your chosen track within the CSCI major. For more details, please see the specific requirements for your chosen track on the second page of this document and the corresponding curriculum checklist specific to your track. In general, the third and fourth year will follow the template below:

Arch Summer 2025		Fall 2025 -or- Spring 2026	
CSCI 4000 Level Track Course <sup>4</sup>	4	CSCI 4000 Level Track Course	4
HASS Elective	4	Science Option <sup>5</sup>	4
Free Elective	4	HASS Elective	4
Free Elective	4	Free Elective	4

**Fourth Year**

Fall 2026		Spring 2027	
CSCI 4000 Level Track Course	4	CSCI 4000 Level Track Course	4
CSCI 4000 Level Track Course	4	CSCI 4000 Level Track Course	4
Free Elective	4	Free Elective	4
Free Elective	4	Free Elective	4

<sup>1</sup> If you have no prior experience in MATH 1010 Calculus I, we recommend that you take BIOL 1010 and BIOL 1015/1016 in your first semester; otherwise, we recommend that you take PHYS 1100 in your first semester.

<sup>2</sup> CSCI 2500 may be replaced with ECSE 2660; you should not take both of these courses.

<sup>3</sup> CSCI 2600 is offered in summer and spring semesters only.

<sup>4</sup> Specific course(s) offered will vary each summer.

<sup>5</sup> The Science Option consists of one or more courses totaling 4 credits chosen from the following: astronomy, biology, chemistry, earth and environmental science, and physics. The Pass/No Credit option cannot be used for this course. The course EARTH 1030 cannot be used to satisfy this requirement. Reading and independent study courses cannot be used to satisfy this requirement.

**All tracks require seven courses; no course may be double-counted.**

**One 4000-level CSCI course must be Communication Intensive (CI) unless fulfilled by your dual major CI course.**

<b>Focus Track</b>	<b>Required Courses</b>	<b>Depth Electives</b>	<b>Breadth Electives</b>
<b>Systems and Software</b>	<ul style="list-style-type: none"> <li>• (The MATH 2010 course could be replaced with MATH 4030, MATH 4100, MATH 4140, or MATP 4600)</li> <li>• One MATH/MATP 2000-level or higher course</li> <li>• CSCI 4210 Operating Systems (spring &amp; summer only)</li> <li>• CSCI 4430 Programming Languages (fall only)</li> </ul>	<p><i>Choose 2 from:</i></p> <ul style="list-style-type: none"> <li>CSCI 4220 Network Programming</li> <li>CSCI 4310 Networking in the Linux Kernel</li> <li>CSCI 4320 Parallel Programming</li> <li>CSCI 4380 Database Systems</li> <li>CSCI 4440 Software Design &amp; Doc.</li> <li>CSCI 4450 Principles of Program Analysis</li> <li>CSCI 4460 Large-Scale Prog. &amp; Testing</li> <li>CSCI 4470 Open Source Software</li> <li>CSCI 4500 Dist. Comp. over the Internet</li> </ul>	<p><i>Choose 2 from:</i></p> <ul style="list-style-type: none"> <li>• 4000-level CSCI courses</li> <li>• 4000-level courses outside of department (see list of courses approved by CS Department)</li> </ul>
<b>Vision, Graphics, Robotics, and Visualization</b>	<ul style="list-style-type: none"> <li>• One MATH/MATP 2000-level or higher course</li> </ul> <p><i>Choose 2 from:</i></p> <ul style="list-style-type: none"> <li>• CSCI 4020 Design and Analysis of Algorithms (spring only)</li> <li>• CSCI 4210 Operating Systems (spring &amp; summer only)</li> <li>• CSCI 4430 Programming Languages (fall only)</li> </ul>	<p><i>Choose 2 from:</i></p> <ul style="list-style-type: none"> <li>CSCI 4270 Computational Vision</li> <li>CSCI 4320 Parallel Programming</li> <li>CSCI 4480 Robotics I</li> <li>CSCI 4530 Advanced Computer Graphics</li> <li>CSCI 4550 Interactive Visualization</li> <li>CSCI 4560 Computational Geometry</li> </ul>	<p><i>Choose 2 from:</i></p> <ul style="list-style-type: none"> <li>• 4000-level CSCI courses</li> <li>• 4000-level courses outside of department (see list of courses approved by CS Department)</li> </ul>
<b>Theory and Algorithms</b>	<ul style="list-style-type: none"> <li>• One MATH/MATP 4000- or 6000-level course</li> </ul> <p><i>Choose 1 from:</i></p> <ul style="list-style-type: none"> <li>• CSCI 4020 Design and Analysis of Algorithms (spring only)</li> <li>• CSCI 4050 Theory of Computation (spring odd-numbered years only)</li> </ul> <p><i>Choose 1 from:</i></p> <ul style="list-style-type: none"> <li>• CSCI 4210 Operating Systems (spring &amp; summer only)</li> <li>• CSCI 4320 Parallel Programming (spring only)</li> <li>• CSCI 4430 Programming Languages (fall only)</li> </ul>	<p><i>Choose 2 from:</i></p> <ul style="list-style-type: none"> <li>CSCI 4030 Randomized Algorithms</li> <li>CSCI 4040 Approximation Algorithms</li> <li>CSCI 4100 Machine Learning from Data</li> <li>CSCI 4230 Cryptography &amp; Net. Security I</li> <li>CSCI 4250 Frontiers of Network Science</li> <li>CSCI 4260 Graph Theory</li> <li>CSCI 4510 Distributed Sys. &amp; Algorithms</li> <li>CSCI 4560 Computational Geometry</li> </ul>	<p><i>Choose 1 from:</i></p> <ul style="list-style-type: none"> <li>• 4000-level CSCI course</li> <li>• 4000-level course outside of department (see list of courses approved by CS Department)</li> </ul> <p><i>Choose 1 from:</i></p> <ul style="list-style-type: none"> <li>• One MATH/MATP 4000- or 6000- level course</li> </ul>
<b>Artificial Intelligence, Machine Learning, and Data Science</b>	<ul style="list-style-type: none"> <li>• One MATH/MATP 4000- or 6000-level course</li> </ul> <p><i>Choose 1 from:</i></p> <ul style="list-style-type: none"> <li>• CSCI 4100 Machine Learning from Data (fall only)</li> <li>• CSCI 4150 Intro to AI (spring only)</li> <li>• CSCI 4350 Data Science (fall only)</li> <li>• CSCI 4390 Data Mining (fall only)</li> </ul> <p><i>Choose 1 from:</i></p> <ul style="list-style-type: none"> <li>• CSCI 4210 Operating Systems (spring &amp; summer only)</li> <li>• CSCI 4320 Parallel Programming (spring only)</li> <li>• CSCI 4380 Database Systems (fall/spring)</li> </ul>	<p><i>Choose 2 from:</i></p> <ul style="list-style-type: none"> <li>CSCI 4100 Machine Learning from Data</li> <li>CSCI 4150 Intro to AI</li> <li>CSCI 4270 Computational Vision</li> <li>CSCI 4380 Database Systems</li> <li>CSCI 4390 Data Mining</li> </ul>	<p><i>Choose 1 from:</i></p> <ul style="list-style-type: none"> <li>• CSCI 4340 Ontologies</li> <li>• CSCI 4370 Data &amp; Society</li> <li>• Additional MATH/MATP 4000- or 6000-level course</li> </ul> <p><i>Choose 1 from:</i></p> <ul style="list-style-type: none"> <li>• 4000-level CSCI course</li> <li>• 4000-level course outside of department (see list of courses approved by CS Department)</li> </ul>