

# Computer Science at TJHSST for 2018-2019

One credit in Computer Science (a full year) is required to graduate.

Ninth

Students with little or no programming experience.	<p><b>Foundations of Computer Science</b>  <i>Java: classes &amp; objects, loops, if, arrays, files, graphics</i></p>
Students with one year, or more, of programming.	<p><b>Foundations of Computer Science (Accelerated)</b>  <i>Python: classes &amp; objects, algorithmic thinking, data processing, modeling and simulation</i></p>

Tenth

Prerequisite is Foundations of Computer Science, or the TJ CS Placement Test. <i>Apply by June 1, 2018; test will be administered in August 2018.</i>	<p><b>Data Structures including AP Computer Science - A</b>  <i>Java: recursion, linked lists, stacks, queues, trees, maps, sets, graphs, heaps</i></p>
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Semester Electives – Eleventh & Twelfth

Prerequisite is APCS+DS. Students take AI 1 in fall and then may take AI 2 in spring.	<p><b>Artificial Intelligence 1</b>  <i>Python: graphs, heuristics, constraint solvers, game trees</i></p>	<p><b>Artificial Intelligence 2</b>  <i>Python: genetic algorithms, learning, natural language, agents</i></p>
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Prerequisite is APCS+DS. Students take CV 1 in fall and then may take CV 2 in spring.	<p><b>Computer Vision 1</b>  <i>C++: image filtering, detection, segmentation, recognition</i></p>	<p><b>Computer Vision 2</b>  <i>C++: motion, augmented reality, convolutional neural networks</i></p>
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Prerequisite is APCS+DS. Students take Parallel 1 in fall and then may take Parallel 2 in spring.	<p><b>Parallel Computing 1</b>  <i>C: pointers, distributed memory, MPI, Manager-Worker</i></p>	<p><b>Parallel Computing 2</b>  <i>C: threads, shared memory, OpenMP, XMT, CUDA</i></p>
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Prerequisite is APCS+DS. Students take either course, or both in any order, in fall or in spring.	<p><b>Mobile App Development</b>  <i>Android: Java based, phone, tablet, embedded</i></p>	<p><b>Web App Development</b>  <i>JavaScript, Node, SQL, CSS, HTML, the DOM</i></p>
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Senior Research Labs

Prerequisite is APCS+DS. Recommend one or more electives in AI 1, AI 2, CV 1, CV 2, Parallel 1, Parallel 2.	<p><b>Computer Systems Lab</b>  <i>Senior Research Project or Mentorship</i></p>
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Prerequisite is APCS+DS. Recommend one or both electives in Mobile App and Web App Development.	<p><b>Mobile and Web Application Development Lab</b>  <i>Senior Research Project or Mentorship</i></p>
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One of three possible tracks is the computational track. Track prerequisites are both: AP Calculus BC and AI 1&2	<p><b>Neuroscience Lab</b>  <i>Senior Research Project or Mentorship</i></p>
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*\*Any exception to a prerequisite should be directed to the Science and Technology Division Manager who (if supportive) will request the final approval of the TJ administration.*