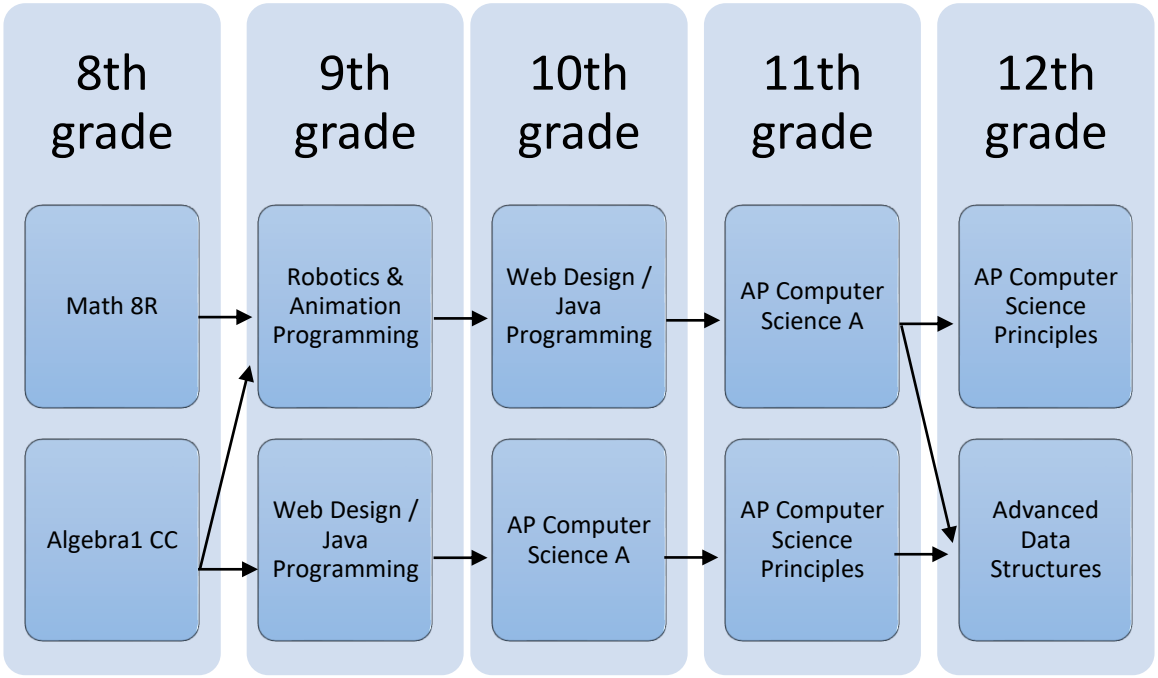
PATCHOGUE-MEDFORD HIGH SCHOOL
COMPUTER SCIENCE COURSE OFFERINGS 2019 – 2020



3600 ROBOTICS AND ANIMATION PROGRAMMING – Full year

Prerequisite: *80+ average in Math8R(without Math 8+) AND teacher approval OR successful completion of Algebra1 CC with 80+*

Students will explore the exciting world of computer programming by being introduced to fundamental programming concepts using the high-level languages of Terrapin Logo graphics, ALICE, and Robotics Engineering through Robot-C.
Semester 1: 3D Animation with Alice Programming – Concepts of Java
Semester 2: Terrapin Logo – 2D Animation **AND** Robot-C – Animation with Robotics

3610 WEBSITE DESIGN AND PROGRAMMING IN JAVA – Full Year

Prerequisite: *Successful completion of Algebra 1CC (formerly Integrated Algebra) with an 80+.*

This course is designed for students interested in coding and designing websites and learning the internet programming language Java.
Semester 1: Website Design/HTML5/CSS3
Semester 2: Basics of Java Programming

3620 AP Computer Science A/JAVA – Full Year - 1.1 weight

Prerequisite: *Instructor approval required*

****Juniors in any honors-level mathematics class may take this course without the web/java prerequisite.**

This course is equivalent to a first semester college-level programming course in the language Java. College credit may be received for grades of three or higher on the Advanced Placement examination taken in May.

3630 AP Computer Science Principles – Full Year - 1.1 weight

Prerequisite: *Instructor approval required*

With a unique focus on creative problem solving and real-world applications, AP Computer Science Principles prepares students for college and future careers in any STEM discipline. Students will use App Inventor solve real world problems by developing Android APPs. **All students enrolled in this class are expected to take the College Board AP exam which includes two performance tasks that will be submitted as part of their exam. Note: One performance exam is being removed for May 2021.**

3640 Advanced Data Structures – Full Year - 1.05 weight

Prerequisite: *Instructor approval required*

It is possible to take Honors Computer Science and Advanced Placement Computer Science simultaneously with instructor approval. This course is equivalent to a second semester college-level programming course. This course is a formal in-depth study of algorithms, data structures (including dynamic structures) and object oriented programming using the Java programming language.

Key Facts About Computer Science in New York:

1. Five of the top ten fastest growing jobs will be in computing-related fields (ie: computer software engineer jobs expected to grow 45% over the next five to seven years).

2. Computer science in New York New York currently has 23,997 open computing jobs (3.3 times the average demand rate in New York).

3. The average salary for a computing occupation in NY is $105,768, which is significantly higher than the average salary in the state ($61,870).

4. The existing open jobs alone represent a $2,538,110,047 opportunity in terms of annual salaries.

5. New York had only 5,232 computer science graduates in 2017; only 21% were female.

6. In New York, only 44% of all public high schools teach computer science. Only 11,969 exams were taken in AP Computer Science by high school students in New York in 2019 (4,416 took AP CS A and 7,553 took AP CSP).
   Only 35% were female (27% for AP CS A and 40% for AP CSP); only 1,904 exams were taken by Hispanic or Latino students (488 took AP CS A and 1,416 took AP CSP); only 1,153 exams were taken by African American students (267 took AP CS A and 886 took AP CSP); only 33 exams were taken by American Indian or Alaska Native students (9 took AP CS A and 24 took AP CSP); only 12 exams were taken by Native Hawaiian or Pacific Islander students (3 took AP CS A and 9 took AP CSP).

7. Only 407 schools in NY (35% of NY schools with AP programs) offered an AP Computer Science course in 2017-2018 (17% offered AP CS A and 20% offered AP CSP), which is 68 more than the previous year.

Why Computer Science?

Computer science is ubiquitous(exists everywhere); it touches everyone's daily lives and plays a critical role in today's society by driving innovation and economic growth. The field is shaping the future by solving some of the world's grandest challenges and creating today's most exciting innovations. Computing related jobs remain strong despite the nation's extraordinary economic challenges.

Computer science – not computer literacy – underlies most innovation today, from biotechnology to cinematography to energy and climate change. You can inspire a diverse group of students, through engaging and exciting curriculum, to develop the next great computing innovations that will change the world and expose all students to the skills they need to create and discover new things.

Move Beyond Computer Literacy!

Computer science education means far more than learning how to use a computer, building a spreadsheet or even creating a webpage. It's about problem solving, computational thinking and abstract reasoning across a broad range of subjects. You can incorporate these concepts into your curriculum—no matter what subject you teach—and prepare students with the skills for success in the new knowledge economy.

Do you have any questions about our program at Patchogue-Medford High School?

Mrs. Moshman (cmoshman@pmschools.org)
Mrs. Brown (mtbrown@pmschools.org)

Please watch our video at: http://www.youtube.com/watch?v=Qk-N5sb7Aq4&feature=youtu.be