Weston High School- Computer Science Offerings

COMPUTER SCIENCE: CONCEPTS AND APPLICATIONS
Semester 2.5 Credits This course is intended for students who want to broaden and deepen their knowledge about computers. Topics will include the design and structure of databases, spreadsheets, the internal workings of computers, and the history of the Internet, construction of web-pages, and understanding how the Web and email work.

COMPUTER SCIENCE: PROGRAMMING IN PYTHON WITH HONORS OPTION

Semester 2.5 Credits This course is intended for students who want an in-depth introduction to computer programming and other aspects of computer science. The course will prepare students who want to go on to take Advanced Placement Computer Science (APCS), as well as those who do not intend to take APCS later on. Course topics include algorithms, procedures, functions, variables, predicates, data structures, recursion, planning, and debugging.

Students may elect Honors credit for this course by completing more complex and demanding programming assignments.

COMPUTER SCIENCE: LANGUAGE LAB Semester 2.5 Credits Prerequisites: Successful completion of Honors Programming in Python (Course 393CY) or AP Computer Science (Course 390AY) or permission of the instructor.

A self-paced lab course that provides students with a supervised environment for transferring their substantial programming skills to a new and unfamiliar programming language; the course can be used for any language of the student's choosing, subject to approval by the instructor. A series of problem sets provide a context for students to explore their chosen language, building his or her familiarity, experience, and style. More advanced students are encouraged to learn more than one new language.

Possible language choices; C. C++, C#, Objective C, Perl, Ruby, Prolog, Lisp, Scheme, SQL, Javascript, PHP, Visual Basic, Smalltalk. Python and Java are not offered because they are covered in 393CS and 390AY respectively.

AP COMPUTER SCIENCE Full Year 5 Credits Prerequisites: Teacher recommendation.

The emphasis of this course is on the logical thinking and understanding of computers necessary to solve problems by writing computer programs. The course studies programming methodology, algorithms, and data structures. Students will learn the subset of Java identified by the College Entrance Examination Board. The course includes the syllabus suggested for preparation for the Advanced Placement

Computer Science examination. Students need have no prior knowledge of Java. Students with no programming background should expect to spend significant amounts of time working with computers during the first quarter or should take Computer Science: Introduction to Programming (Course 393CS) prior to enrolling in this course. Work may be done using school computers or on the student's home computer. Successful completion of this course prepares students for the Advanced Placement Computer Science examination in May. Interested and motivated students have the opportunity to go further and study java classes and algorithms traditionally covered in a second semester college course by selecting the imbedded course 391AY Advanced Placement Computer Science with Data Structures and Algorithms

DATA STRUCTURES AND ALGORITHM Full Year 1 Credit (embedded in course 390AY)
Prerequisites: Recommendation of AP Computer Science teacher and concurrent enrollment in AP Computer Science (Course 390AY).

This course is taken within the AP Computer Science course. Students enrolled in Data Structures complete an additional 7 programming labs throughout the school year (1 in first quarter, 2 in each subsequent quarter) involving at least 5 of the following data structures: linked lists, hash tables, stacks, queues, trees, heaps, and graphs.

HONORS JAVA PROGRAMMING Full Year 5 Credits

The emphasis of this course is on the logical thinking and understanding of computers necessary to solve problems by writing computer programs. The course introduces Object Oriented Programming in Java and studies topics from programming methodology, algorithms, and data structures. Students will learn a subset of Java. Students need have no prior knowledge of Java. Students with no programming background should expect to spend significant amounts of time working with computers during the first quarter or should take Computer Science: Introduction to Programming (Course 393CS) prior to enrolling in this course. Work may be done using school computers or on the student's home computer.