

## Computer Science

Whitman offers a range of Technology courses that introduces the student to various aspects of the fastest growing career field, as well as courses that take the motivated student beyond the basics. Courses offered include Software Applications, Web Site Development, and Computer Programming in Java and Internships.

- All courses are typically taken in sequence; however, based on teacher recommendation, students can skip one or more levels.
- Note: Beginning with the class of 2012, none of the Computer Science courses count towards the Technology Education credit required for graduation.
- An AP (Advanced Placement) level class in Computer Programming prepares the students for the AP Computer Science A exam administered in May by College Board. The course emphasizes object-oriented programming methodology with a concentration on problem solving and algorithm development, and it is meant to be the equivalent of a first-semester college-level course in computer science. It also includes the study of data structures, design, and abstraction.
- The Software Applications courses help students prepare to take the Microsoft Office Specialist (MOS) certification core-level examination. This examination qualifies them for a higher entry level of employment.
- In Computer Programming I, Computer Programming II, students use the Java programming language.
- The Web Site Development course introduces the students to web site development tools such as Microsoft Front Page, Macromedia Dreamweaver, Flash and Fireworks.

For details on Computer Science courses, refer to the Whitman Course Bulletin. Contact Nancy Mornini (Nancy\_M\_Mornini@mcpsmd.org ) for additional information.

*Comprehensive lists of electives as well as detailed course descriptions can be found in the Whitman Course Bulletin. Students should consult with their counselors when making course scheduling decisions.*

## ***Computer Science Courses***

**\*\*None of these courses count for the technology education credit.**

### **Software Applications by Design A & B**

Project based learning helps students prepare to take the Microsoft Office Specialist (MOS) certification core-level examination for Microsoft Word, Excel, Access, and Power Point. The students are also introduced to HTML and basic keyboarding skills.

*Prerequisite: Attainment of the outcomes of Software Applications by Design A. Students who have already completed computer applications or business technology are not eligible to take these courses.*

### **Advanced Software Applications by Design A & B (AT)**

Project based learning helps students to apply advanced skills in Microsoft Word and Excel, graphics, desktop publishing, databases and development of a Digital Portfolio. Students are prepared to take the MOS certification, expert level examination for Microsoft Word and Excel.

*Prerequisite: Attainment of the outcomes of Software Applications by Design B*

### **Discovering Programming Concepts A & B, Grades 9-12**

This course is designed for students who have little or no past programming experience, but may have an interest in Computer Science. Students will begin the process of describing, analyzing, and solving programming problems. They will continue to explore fundamental concepts such as Graphical User Interface (GUI's), variables, constants, looping structures, functions, arrays, graphics, and sorting/searching methods. Students will use Microsoft Visual Basic Programming Language in this course.

*Prerequisite: Algebra 1*

### **Computer Programming 1A & 1B, Grades 9-12**

Students will write programs using structured programming techniques to solve problems. This course introduces the fundamental principals of structured programming within the context of an object-oriented language. Emphasis will be placed on developing effective problem-solving techniques through individual and team project. Students use a problem-solving approach to implement one or more large programs using Java language.

*Prerequisite: Geometry; Co-requisite: Honors Geometry*

### **Computer Science Advanced Placement**

Advanced Placement Computer Science (APCS) courses are designed for students of high academic ability who have a strong interest in computer science and who want to prepare for the AP Computer Science A or AB examinations. A qualifying score gives the student college credit or advanced standing. The topics covered normally comprise up to six semester hours included in the first year of a computer science curriculum at the college level. Projects will require both rigorous problem definition and program implementation strategies and will be written in the Java programming language. The AP examinations will also be given in Java.

### **Computer Programming 2A & 2B (AT)**

(Advanced Placement Computer Science)

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Students use Java, an object-oriented programming language, to complete in-depth work with text files and arrays. Using existing object libraries for object-based programming, as well as developing their own objects, students will explore the power of an industry-standard programming language that is cross-platform and web-friendly. Emphasis will be placed on continuing the development of effective problem solving techniques individually and in project teams.

*Prerequisite: Computer Programming 1B*

### **Computer Programming 3A & 3B, Advanced Topics in Computer Science, Grades 11-12 (AT)**

Problem-solving techniques and adaptation or development of appropriate algorithms or data structures are studied.

*Prerequisite: Attainment of the outcomes of Computer Programming 2B*

### **Computer Science Internship**

If interested, see the Computer Science Resource Teacher for internship possibilities.

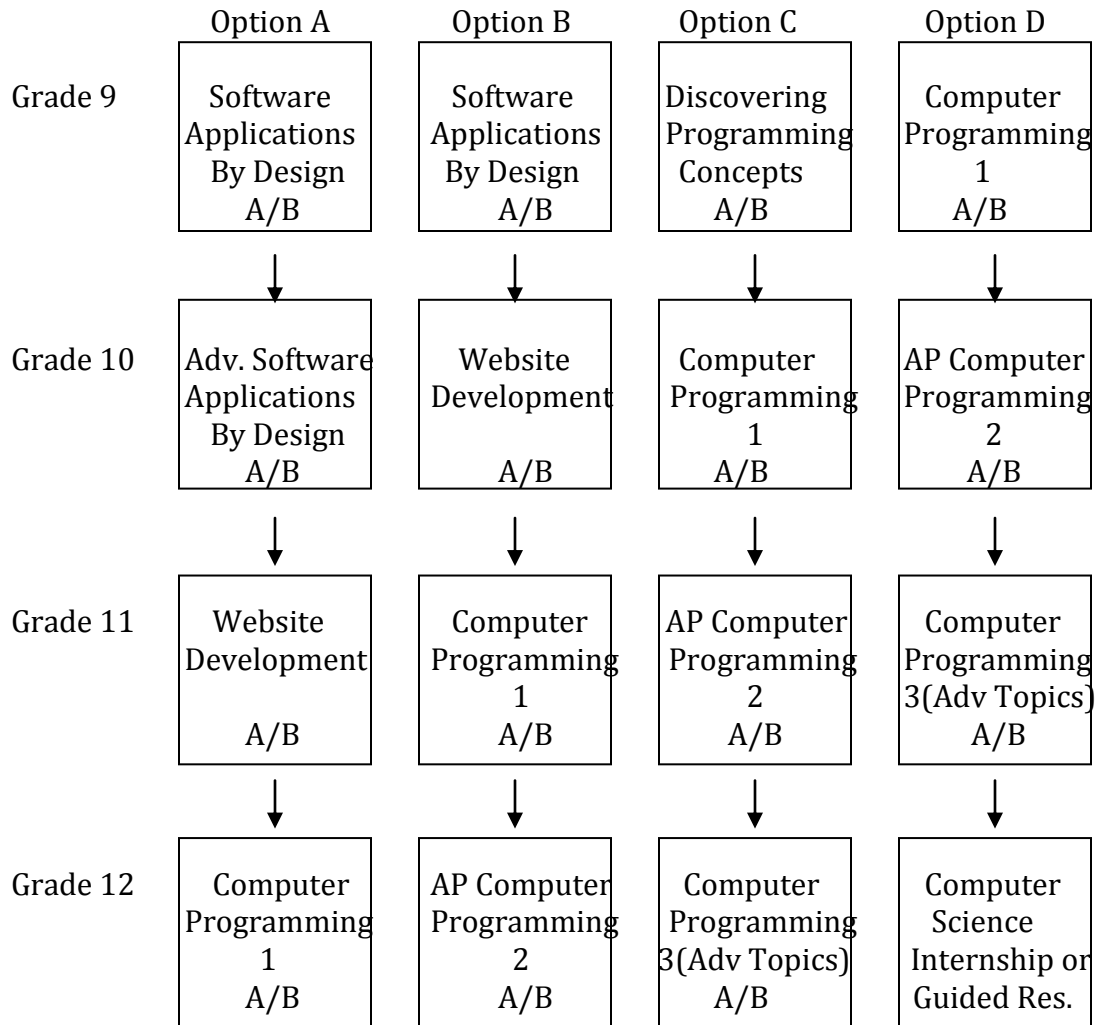
*Prerequisite: Teacher recommendation and coordinator permission.*

### **Web Site Development A & B (AT)**

Students develop comprehensive web sites, emphasizing design, project management, problem solving and teamwork. Appropriate web animation and graphics are used to enhance the web sites. A review of HTML/XHTML, Cascading Style Sheets (CSS), acceptable color and design rules, publishing to the World Wide Web (WWW), and much more. Programs used are Microsoft Front Page, Macromedia MX (Dreamweaver, Flash and Fireworks). This is a great class for beginners who are interested in Web Site Design. Prerequisite: None

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## COMPUTER SCIENCE COURSE SEQUENCE OPTIONS



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