

COMPUTER SCIENCE

SOFTWARE APPLICATIONS BY DESIGN A/B (Grades 9-12)

2903/2904

.5 credit/.5 credit

This is a full year course.

Prepared computer programs are used in this introductory course. Programming ability and experience are not required. The focus is the use of applications software such as database, spreadsheet, and word processing packages. Skill in recognizing the potential of application software by completing several individual and group projects related to academic programs and personal interest is developed.

ADVANCED SOFTWARE APPLICATIONS BY DESIGN A/B (Grades 9-12)

010001/010002

.5 credit/.5 credit

Tentative plans for the course involve, Microsoft Office Specialist Expert level as well as continued use of multimedia features of Power Point. Advanced Software Application by Design B topics may include MS Excel at the Expert level as well as the development of a digital portfolio that students could use for college or career.

COMPUTER PROGRAMMING 1A (Grades 9-12)

2961

.5 credit

Prerequisite: Geometry Co-requisite: Honors Geometry or Pre IB Geometry

Software development and programming are ever changing computer science fields. In this course, students explore advanced programming topics involving the C++ programming language. Students write programs using structured programming techniques to solve problems. This course introduces the fundamental principles of object-oriented programming such as syntax, control statements, and simple and structured data types, including arrays. Emphasis is placed on developing effective problem solving techniques through individual and team projects. Attainment of the outcomes of this course is required for Computer Programming 1B.

COMPUTER PROGRAMMING 1B (Grades 9-12)

2962

.5 credit

Prerequisite: Attainment of the outcomes of Computer Programming 1A

The program development cycle introduced in the Programming 1A course is expanded. Students use a problem-solving approach to implement one or more large programs using the C++ language. Attainment of the outcomes of this course is required for Programming 2A.

COMPUTER PROGRAMMING 2A (Java) (Grades 10-12)

2901

.5 credit

Prerequisite: Attainment of the outcomes of Computer Programming 1B

Continuing the programming and software development begun in the Computer Programming 1B (Foundations of Programming B) course, 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 explore the power of an industry-standard programming language that is cross-platform and web-friendly. Emphasis is placed on continuing the development of effective problem-solving techniques individually and in project teams. Attainment of the outcomes of this course is required for Computer Programming 2B.

COMPUTER PROGRAMMING 2B (Java) (Grades 10-12)

2902

.5 credit

Prerequisite: Attainment of the Objectives of Computer Programming 2A

This course builds on the concepts learned in Computer Programming 2A, continuing the innovative approach to problem solving that stresses systematic, data-directed program design. These concepts include abstract data types, recursion, searching and sorting algorithms, and program efficiency. Specified class behaviors, interrelated objects, and object hierarchies also are explored. This course provides a gentle transition path to the Java Advanced Placement exam that is changing from C++ to the Java programming language in May, 2004. Attainment of the outcomes of this course is required for Computer Programming 3A, Advanced Placement Computer Science. Computer Programming 2A and B prepare students to take the AP Computer Science exam in May, 2004.

COMPUTER PROGRAMMING 3A/B AP (Grades 11-12)**2965/2966****.5 credit/.5 credit***Prerequisite: Attainment of the outcomes of Computer Programming 2B/3A*

Students study programming methodology, the features of programming languages, primitive data types, dynamic allocation of memory, data structures, and the comparison of searching and sorting algorithms, using the Java programming language. Attainment of Computer Programming 3A is required for Computer Programming 3B. In Computer Programming 3B, students' experience with the applications of data structures are expanded to include searching, sorting, and numerical algorithms. The topic of graphics is introduced through the Advanced Placement case study. Problems solving techniques required in the selection and adaptation or development of appropriate algorithms or data structures are studied. Students may elect to take the AB version of the Advanced Placement Computer Science exam upon successful completion of this course.

GUIDED RESEARCH A/B (Grades 10-12)**2977/2978****.5 credit/.5 credit**

Students are required to know DOS and Windows 95. Students are taught to install, configure, and troubleshoot both software and hardware. Students are required to support end users. Students will be taught to install, configure, maintain, and troubleshoot Novell Networks. Students should be able to pass the CNA exam by the end of the semester if they participate in the self-study program available in the class. A grade point average of 2.0 or higher is required for enrollment in this class.

INTRODUCTION TO COMPUTER APPLICATIONS**CA 120****3 semester hours at MC / 0.0 credits at RMHS**

This class is assessed via portfolio. Portfolio Learning Assessment allows students to do work for a class based on the objectives of the course, without sitting in on any classes and they can earn the credits for the class if they pass. This is only for students who have a great deal of knowledge about an application and there is no guarantee of passing. Depending on the course and the evaluator, a student puts together a portfolio of both already completed work, assignments assigned by the evaluator and/or takes some sort of hands on test or performs a demonstration of the application in front of an evaluator. The work that needs to be completed will be assigned by your evaluator. All work submitted will not be returned and will become the property of Montgomery College. *This course is taken at Montgomery College for college credit. Students must qualify for admission to Montgomery College. No high school credit will be earned for this course. See your counselor or Ms. Olmsted for information regarding attending Montgomery College.*

WEB DESIGN A/B (Grades 10-12)**2991/2992****.5 credit/.5 credit***Prerequisite: Software Application by Design A/B*

Students learn basic Hypertext Markup Language (HTML) authoring for creating World Wide Web pages. They upload those files to the World Wide Web using such utilities as the File Transfer Protocol (FTP). They also learn creation of graphic images. Second semester includes introduction and extensive practice with Web authoring software, more advanced graphics operations, including animation, and more complex design elements such as Java Scripts. Participants ultimately learn how to create and maintain an attractive, functional website, based on industry accepted criteria. Permission of the instructor is required.