COMPUTER SCIENCE (COMPUTER)

COMPUTER 1130 Introduction to Programming 3 Credits
An introduction to programming for students with no previous computer programming experience. Covers control structures, procedures, programming environments, and problem solving.
Components: Laboratory, Class

COMPUTER 1430 Programming in C++ 3 Credits
A technical course in computing, algorithms, data representation, and procedural programming. Modularity and abstraction stressed in algorithm development. Style and documentation stressed in program development. Weekly lab programs engrain the syntax and semantics of C++. A few larger, out-of-class programs tie the concepts together.
Components: Laboratory, Class
Prereqs/Coreqs: P: previous programming experience, such as that provided by COMPUTER 1130 is recommended

COMPUTER 1810 Microsoft Excel for Business 1 Credit
Course Description: This course is designed to teach students basic to advanced functionality of Microsoft Excel. An emphasis is placed on working with larger data sets. Topics covered include but are not limited to:* simple to advanced formatting* simple to advanced formulas using relative and absolute cell referencing and Excel functions* business charts and pivot tables* sort and filter techniques used with tabular data* importing and exporting datasets
Components: Class

COMPUTER 1830 Microcomputer Applications 3 Credits
A course recommended for all non-computer science majors that need to know how to use the microcomputer. The major emphasis will be on using microcomputers with the most popular kinds of computer software used in business and education today including word processing, spreadsheets and database management. (Not open to computer science majors.)
Components: Laboratory, Class

COMPUTER 2230 Programming in COBOL 3 Credits
To develop an understanding of, and provide practice in the use of proper strategies and techniques for business program design and development. To develop ability to apply the COBOL language to implement problem solutions. To gain the background for further study of software design and computer programming in a business environment. Emphasis on structured programming and program style.
Components: Class
Prereqs/Coreqs: P: COMPUTER 1430

COMPUTER 2340 Programming in VB.NET 3 Credits
An introduction to event-driven, object-oriented programming techniques using Visual Basic in the .NET Framework. Students will design, code, and debug Graphical User Interface (GUI) programs applicable to business applications.
Components: Class
Prereqs/Coreqs: P: COMPUTER 1430

COMPUTER 2430 Object-Oriented Programming and Data Structures I 3 Credits
Components: Laboratory, Class
Prereqs/Coreqs: P: COMPUTER 1430 with a C- or better

COMPUTER 2630 Object-Oriented Programming and Data Structures II 3 Credits
Continuation of the object-oriented programming and data structure topics from CS 2430. Coverage of pointers, templates, linked lists, trees, recursion, graphs, and algorithm analysis. Use of software engineering techniques within a group-based project environment.
Components: Laboratory, Class
Prereqs/Coreqs: P: COMPUTER 2430

COMPUTER 2990 Computer Science Special Topics 1-3 Credits
The subject matter and instructor for each instance of this class will be listed in the class schedule. Students should check with the instructor for details.
Components: Class
COMPUTER 3030 Artificial Intelligence 3 Credits
A study of knowledge representation, search techniques, expert systems, predicate calculus, and natural languages. Discussion of the successes and limitations of past and current AI programs. Programming assignments in one or more AI programming languages.
Components: Class
Prereqs/Coreqs: P. COMPUTER 2630 and MATH 2730

COMPUTER 3130 Systems Analysis and Design 3 Credits
Provide an understanding of the duties of the systems analyst and the specific methods and techniques for system development (preliminary survey through system design) with an introduction to utilizing CASE software throughout the entire process.
Components: Class
Prereqs/Coreqs: P. COMPUTER 2230

COMPUTER 3230 Computer Architecture/Operating Systems 3 Credits
This course combines the strengths of two areas: Assembler Language Programming and Operating Systems. The major areas of Assembler such as Architecture, Data Types, Logic and Control and Interrupts will be covered. The major areas of Operating Systems including Processes, Mutual Exclusion, Critical Sections, Parallel Processing, Real and Virtual Storage and Job Scheduling will be emphasized.
Components: Class
Prereqs/Coreqs: P. COMPUTER 2430

COMPUTER 3340 Windows Programming 3 Credits
Continuation of Windows programming techniques. Discussion of the Component Object Model (COM), Dynamic Link Library (DLL), and the Windows Application Programming Interface (API). Study also includes the Windows common controls, some Internet controls, and Dynamic HTML (DHTML).
Components: Class
Prereqs/Coreqs: P. COMPUTER 2630 or (COMPUTER 2340 AND COMPUTER 2430)

COMPUTER 3520 Programming Language Structures 3 Credits
A study of programming language topics which include data objects, data types, storage management, syntax, BNF descriptions, semantics, lexical analysis and parsing. Examples taken from traditional languages as well as more modern languages.
Components: Class
Prereqs/Coreqs: P. COMPUTER 2630

COMPUTER 3530 Systems Development and Implementation 3 Credits
Strategies and techniques of analysis and design for producing logical methodologies for dealing with complexity in the development and implementation of information systems. Use of software tools, file access methods and operating system facilities.
Components: Class
Prereqs/Coreqs: P. COMPUTER 3130

COMPUTER 3630 Database Design and Implementation 3 Credits
This course will explore fundamental concepts necessary for the design, use, and implementation of database systems. Study of database modeling and design, languages and facilities provided by the database management systems, and techniques for implementing database systems will be examined. Major database models will be discussed with primary focus on the relational database model and query languages.
Components: Class
Prereqs/Coreqs: P. COMPUTER 2430 and MATH 1630 or MATH 2130 or MATH 2730

COMPUTER 3720 Mobile Application Development 3 Credits
Mobile computing devices have become ubiquitous in our communities. This course is focused on the creation of mobile applications, e.g., different game apps and online shopping apps. Through hands-on projects, students gain experience with developing a mobile app using the selected platform. Topics include development framework, user interface design, architecture, data management, and app deployment.
Components: Class
Prereqs/Coreqs: P. COMPUTER 2630 or COMPUTER 3340

COMPUTER 3830 Data Communications and Computer Networks 3 Credits
An introduction to data communications and computer networks. Study of the basic principles with a focus on the layers, protocols, and security used in the Internet. Socket-based and other programming projects.
Components: Class
Prereqs/Coreqs: P. COMPUTER 2430
COMPUTER 3840 Introduction to Computer Security 3 Credits
An introduction to the principles of computer security. Topics include computer and system security, authentication, access control, malicious software, and software security. The course also examines how system designs, network protocols, and software engineering practices can result in vulnerabilities. The course explores how to design and implement systems to mitigate vulnerabilities. In addition, the course explores how to detect and mitigate vulnerabilities in existing systems.
Components: Class
Prerequisites/Corequisites:
P: COMPUTER 2430

COMPUTER 3870 Web Protocols, Technologies and Applications 3 Credits
The course will introduce the students to Protocols and Technologies in Web applications. The Client/Server concept and some advanced database concepts will also be covered. The emphasis of the course will be using tools such as ASP.NET for rapid development of Web Applications and Web Services. JavaScript and C# will also be employed.
Components: Class
Prerequisites/Corequisites:
P: COMPUTER 3630

COMPUTER 3920 Computer Graphics 3 Credits
An introduction to computer graphics including transformations; modeling; viewing and projection; color, lighting and shading; texture mapping; interaction; and animation. Use of a pipeline-based graphics library such as OpenGL. Several programming assignments, including some games-based projects.
Components: Class
Prerequisites/Corequisites:
P: COMPUTER 2630 and MATH 2640

COMPUTER 4110 Seminar 1 Credit
The course consists of lectures/discussions presented by both computer science faculty and students enrolled in the class.
Components: Seminar
Prerequisites/Corequisites:
P: Computer Science major/minor and junior/senior standing

COMPUTER 4230 Applications in Information Systems 3 Credits
Applications of computer programming and system development concepts, principles and practices to a comprehensive system development project. A team approach is used to design and develop a realistic system of moderate complexity. Also includes coverage of advanced features of the COBOL language.
Components: Class
Prerequisites/Corequisites:
P: COMPUTER 3530

COMPUTER 4830 Special Topics in Computer Science 1-3 Credits
The subject matter and instructor for each instance of this class will be listed in the class schedule. Students should check with the instructor for details.
Components: Laboratory, Class
Prerequisites/Corequisites:
P: junior or senior standing

COMPUTER 4930 Independent Study in Computer Science 1-3 Credits
For the student who wishes to delve more deeply into a specific area of study topics not available through the scheduled classes.
Components: Independent Study

COMPUTER 4990 Internship 1-6 Credits
Enhancement of the educational experience through specific work and observation with computers in a business, industry or institution. Prerequisites: upper-class standing.
Components: Field Studies
Prerequisites/Corequisites:
P: junior or senior standing; 18 or more hours of computer science credit