COP: COMPUTER PROGRAMMING

Courses

	Credit(s)	Contact	Lab
COP 1000C. INTRODUCTION TO PROGRAMMING CONCEPTS.	3	2	1

INTRODUCTION TO PROGRAMMING CONCEPTS A hands-on introduction to analyzing, designing, coding, and testing computer programs. Students will develop algorithms for problem solving with an emphasis on good programming practices. Students will use programming techniques including control structures, arrays, and subprograms to design and code basic programs using a modern computer language. Other topics include working with data, number systems, and an introduction to object-oriented and event-driven programming. This course prepares students for software development courses in programming and web development. (Special Fee: $66.00).

	Credit(s)	Contact	Lab
COP 1332C. VISUAL BASIC PROGRAMMING (FORMER TITLE INTRODUCTION TO VISUAL BASIC).	3	2	1

VISUAL BASIC PROGRAMMING (FORMER TITLE INTRODUCTION TO VISUAL BASIC) Prerequisite: Minimum grade of C in COP 1000C Study of the Visual Basic programming language with an emphasis on developing good programming practices. Topics include creating a graphical user interface, working with objects and events, decision and repetition structures, debugging and error handling, using multiple forms, data manipulation techniques, and an introduction to working with databases. Students will construct applications designed to run in a Windows environment. (Special Fee: $66.00).

	Credit(s)	Contact	Lab
COP 1812C. XML AND WEB SERVICES.	3	2	1

XML AND WEB SERVICES Prerequisite: COP 2822C This course explains and demonstrates Extensible Markup Language (XML). XML-based Web services are also covered. XML is platform independent and versatile. This course teaches how to use XML in data exchange applications on the Web, for e-commerce and in n-tier architectures by explaining XML theory reinforced with practical examples and real-life solutions. (Special Fee: $66.00).

	Credit(s)	Contact	Lab
COP 2047C. PYTHON PROGRAMMING.	3	2	1

PYTHON PROGRAMMING Prerequisite: Minimum grade of C in COP 1000C. Hands on study of the Python programming language as applied to business and scientific applications. Good programming practices, and problem solving with procedural and OOP programming will be emphasized. Topics include data types, control structures, lists, dictionaries, tuples, sets, OOP classes, objects, encapsulation, inheritance, abstraction, strings, functions, file I/O, Exception Handling, and GUI.

	Credit(s)	Contact	Lab
COP 2220C. C PROGRAMMING.	3	2	1

C PROGRAMMING Prerequisite: Minimum grade of C in COP 1000C or EGN 1007C Hands-on study of C Programming language as applied to business and scientific applications. Good programming practices and problem solving with procedural programming will be emphasized. Topics include data types, control structures, arrays, pointers, functions, file I/O operations, structs, and unions. (Special Fee: $66.00).

	Credit(s)	Contact	Lab
COP 2224C. C++ PROGRAMMING.	3	2	1

C++ PROGRAMMING Prerequisite: Minimum grade of C in COP 2220C Introduction to Object-Oriented Programming (OOP) using C++ programming language. Covers class hierarchies and single, repeated, and multiple inheritance. Focuses on abstraction and information hiding. Covers in detail polymorphism and dynamic binding. (Special Fee: $66.00).

	Credit(s)	Contact	Lab
COP 2341C. LINUX SHELL SCRIPTING.	3	2	1

LINUX SHELL SCRIPTING An introduction to the LINUX operating system. Topics include the history and philosophy of the LINUX Operating System, the file system, commands and files processing, multitasking, editors, shells, shell scripting, window systems and utilities. (Special Fee: $66.00).

	Credit(s)	Contact	Lab
COP 2360C. C# PROGRAMMING.	3	2	1

C# PROGRAMMING Prerequisite: Minimum grade of C in COP 1000C A hands-on study of Microsoft Visual C# programming language with emphasis on object-oriented programming. Topics include control structures, arrays, methods, exception handling and inheritance. Students will develop C# programs in both console and windows modes. (Special Fee: $66.00).

	Credit(s)	Contact	Lab
COP 2362C. ADVANCED C# PROGRAMMING.	3	2	1

ADVANCED C# PROGRAMMING Prerequisite: Minimum grade of C in COP 2360C Advanced topics using the C# language, including User eXperience (UX), collections, multi-threading, and interaction with databases and web services. Students will develop applications for Windows and the web using industry-standard software architecture. (Special Fee $66.00).

	Credit(s)	Contact	Lab
COP 2654C. IOS APP DEVELOPMENT.	3	2	1

IOS APP DEVELOPMENT Prerequisite: COP 2224C or COP 2360C or COP 2800C Hands-on application development for iOS devices including the iPhone, iPod Touch and iPad. Apps will be written in Objective C using Xcode, and executed in an emulator. Topics include the application architecture, user interface, data persistence, graphics, multimedia, and location-based services. Advanced apps will communicate with device sensors including the accelerometer, microphone and camera. The business of app development is explored, including distributing and marketing in App Store. Owning an iOS device is not required. Use of a Macintosh computer for development is required. On-campus computers are available for students who do not own a Macintosh. (Special Fee: $66.00).

	Credit(s)	Contact	Lab
COP 2660C. ANDROID APP DEVELOPMENT.	3	2	1

ANDROID APP DEVELOPMENT Prerequisite: Minimum grade of C in COP 2800C Hands-on application development for Android devices. Native Android apps will be written in Java and executed in an emulator. Topics include the application architecture, user interface, data persistence, graphics, multimedia, and location-based services. Advanced apps will communicate with device sensors including the accelerometer, microphone and camera. The business of app development is explored, including distributing in the Android Market. Owning an Android device is not required. (Special Fee: $66.00).

COP 2800C. JAVA PROGRAMMING.   3   2   1

JAVA PROGRAMMING Prerequisite: Minimum grade of C in COP 1000C or departmental approval A hands-on course in programming with the Java language for students who have completed a course in programming concepts or have some other programming experience. Students will create Java applications with emphasis on correct object-oriented programming techniques and will become familiar with object-oriented design, including the creation of classes in Java and the use of existing classes as provided in the current version of the Java API. (Special Fee: $66.00).

COP 2805C. ADVANCED JAVA PROGRAMMING.   3   2   1

ADVANCED JAVA PROGRAMMING Prerequisite: Minimum grade of C in COP 2800C. A continuation of COP 2800. Advanced topics in Java SE (Standard Edition) including Graphical User Interface, event handling, file input/output, collections, multi-threaded applications, and database connectivity, and nested classes. Object-oriented design and analysis is introduced using the Unified Modeling Language (UML). (Special Fee: $66.00).

COP 2822C. WEB DEVELOPMENT I.   3   2   1

WEB DEVELOPMENT I The student will learn to construct Web pages containing animated graphics, forms, frames, style sheets, XML, and Dynamic HTML. The course will also cover the software tools available to create Web pages, as well as the hardware and software requirements for setting up a Web site. (Special Fee: $66.00).

COP 2830C. SCRIPTING LANGUAGES.   3   2   1

SCRIPTING LANGUAGES Prerequisite: Minimum grade of C in COP 1000C and COP 2822C or departmental approval. The syntax and semantics of scripting programming language will be covered. Covers major scripting languages in current use. Students will learn to write scripting- language code, integrate the scripts into Web pages, and identify different uses and applications of scripts in Web sites and/or other multimedia projects. (Special Fee: $66.00).

COP 2833C. PHP AND MYSQL.   3   2   1

PHP AND MYSQL Prerequisite: Minimum grade of C in COP 2830C Students learn to develop data-driven websites using PHP and MySQL. Topics include PHP language features, integrating PHP with HTML forms, sessions, cookies, security, error handling, and database interaction. Administration of MySQL on a web server for use with PHP is covered. Students will develop a website using industry standard techniques for authentication, authorization, and e-commerce. (Special Fee: $66.00).

COP 2836C. WEB DEVELOPMENT II.   3   2   1

WEB DEVELOPMENT II Prerequisite: Minimum grade of C in COP 2822C and COP 1000C Continuation of Web Development I. Advanced topics in web development using frameworks, database, front-end concepts, components, back-end services, repositories, and hosting services to build a modern full-stack web application.

COP 2930. SELECTED TOPICS IN COMPUTER   1-3   variable
PROGRAMMING.

SELECTED TOPICS IN COMPUTER PROGRAMMING Selected topics in computer programming based on the needs and areas of interest of the class and the professor. May include laboratory and/or field work as part of the class. Multiple credit course. May be repeated for credit, but grade forgiveness cannot be applied.

COP 3275C. C/C++ PROGRAMMING FOR   3   2   1
ENGINEERING TECHNOLOGY.

C/C++ PROGRAMMING FOR ENGINEERING TECHNOLOGY Prerequisite: Minimum grade of C in MAC 2312 or minimum grade of C in EGN 3046 A comprehensive course in computer programming using the C and C++ programming languages. Structured programming in C, especially for solving numerical problems is covered in detail, and object-oriented programming in C++ is introduced. Computer programming is used to improve quantitative problem solving skills by developing algorithms that apply mathematical techniques. Minimum grade of C required if used to satisfy Electrical and Computer Engineering Technology, B.S. Degree requirement. (Special Fee: $77.00).

COP 3330C. OBJECT ORIENTED PROGRAMMING.   3   2   1

OBJECT ORIENTED PROGRAMMING Prerequisite: Admission to the B.A.S degree in Computing Technology and Software Development and a minimum grade of C in COP 1000C, or department approval. This course explores the concepts of object-oriented programming including abstraction, encapsulation, inheritance and polymorphism. The applications developed will focus on extracting objects from a problem domain and designing solutions based on passing messages between objects. Implementation will be done in a current object-oriented language. (Special Fee: $42.00).

COP 4530C. APPLIED DATA STRUCTURES AND   3   2   1
ALGORITHMS.

APPLIED DATA STRUCTURES AND ALGORITHMS Prerequisite: Minimum grade of C in COP 3330C or COP 2805C An overview of data structure concepts such as arrays, stack, queues, trees, and others. Discussion of the varieties, benefits, drawbacks, and performance implications of data structures. programming styles, and run-time representations. Algorithms for sorting, searching and manipulating data structures will also be examined.