# EDUCTIVE - UCLA Extension

## CF 045  application programming certificate

This 32-unit certificate program is designed for application programmers -- individuals who take the specifications provided by the systems analyst and design, test, and debug computer programs as needed to meet user requirements. While the systems analyst defines what needs to be done, the applications programmer decides how to do it.

Applications programs are usually written in a high-level language that can run with few changes on a variety of computer operating systems. High-level languages used in database products, web tools, et al.

### Requirements:

Students who have no programming experience are required to take X 414.20 Business Programming and Software Development.

### Courses

| Required | Units |
|---|---|
| **MGMNT X 418.85A Fundamentals of Programming Using Java: Hands-On** <br> Powerful enough to build large N-tiered Internet and intranet applications, Java is a well-designed object-oriented language that allows rapid development of programs. Due to its simplicity, it also is an excellent first-time programming language to learn. This hands-on course presents the fundamentals of programming using Java and covers object-oriented programming, classes, constructors, flow control statements, data types, methods, inheritance, data hiding, abstraction, and the Java library. Students gain experience through a number of programming projects during the course and instruction stresses practical programming skills to prepare them for follow-on Java courses. <br><br> *Prerequisite: Requires computer work outside of class as well as a computer with any operating system that supports Java; familiarity with that operating system; and the ability to create files and folders, use an Internet browser and email, create zipped files to send as email attachments, and download software from the Internet for class and programming assignments.* | 4.00 |
| **MGMNT X 414.61 Using Structured Query Language (SQL) Syntax** <br> Structured Query Language (SQL) is an American National Standards Institute (ANSI) standard computer language for accessing and manipulating database systems. SQL works with such database programs as Microsoft Access and SQL Server, DB2, Informix, Oracle, and Sybase. Designed for individuals with little or no SQL experience, this hands-on course covers SQL syntax. Students receive an overview of SQL and learn how to use SQL statements to retrieve and update data in a database. Students begin by creating basic select statements and progress into the more advanced detailed and complex features of SQL, including using keywords such as SELECT, UPDATE, DELETE, INSERT, WHERE, and others. The course also covers table joins, sub-queries, if and case statements, cast and covert statements, and much more. | 4.00 |
| **MGMNT X 418.735 Programming in C# for Visual Studio .NET Platform I** <br> ncludes instructor's materials and instructions on obtaining Dream Spark access to Microsoft software. <br><br> This course provides new developers and application developers unfamiliar with the C# language the knowledge and skills to develop C# applications using the Microsoft .NET platform. Focusing on C# program structure, language syntax, and object-oriented concepts, students build projects using console applications, Windows forms, web forms, | 4.50 |

and XML web services. Upon completing the course, students should be able to list the major elements of .NET framework; analyze the basic structure of a C# program; and use the IDE to debug, compile, and run simple applications.

*Prerequisite: Experience in other programming languages, such as Visual Basic, C, C++, and Java, is useful.*

### MGMNT X 418.735A Programming in C# for Visual Studio .NET Platform II
Includes instructions on obtaining Windows 7 Operating System and Visual Studio academic software.

This course covers intermediate-level topics in desktop application development using the latest version of Microsoft Visual Studio and the C# programming language. Students should already be familiar with variable declaration, initialization and assignment, expressions, reference and value types, and conditional and looping constructs, and have a basic understanding of classes and interfaces and how they support inheritance and polymorphism. After a brief review of these concepts, students explore key features of the .Net framework including delegates, events, lambda expressions, generics, enumerating collections and Language Integrated Query (LINQ), and learn how to apply these techniques in designing and building .Net applications. Windows Presentation Foundation (WPF) is then introduced as the Microsoft's current user interface technology for implementing Windows desktop client applications. Students learn to design and build relational databases using Microsoft SQL Server and develop SQL queries and stored procedures for manipulating data. Finally, students learn how a Windows application can be integrated with this database directly through ADO.Net and alternatively using the new Entity Framework (EF). Upon completion of this material, students should be able to design and construct simple but complete and professional-quality database applications using these technologies.   **4.50**

*Prerequisite: X 418.735 Programming in C# for Visual Studio .NET Platform I or previous experience using C#.*

*Required text: Visual C# 2010 Step by Step by John Sharp.*

### MGMNT X 418.102A Website Construction with Adobe Software: Dreamweaver, Flash, and Fireworks
Adobe Creative Suite 6 is used.

This course provides a hands-on introduction to Adobe's trio of web software programs: Dreamweaver, Photoshop, and Flash. These programs have become the choice of many website development professionals and each provides unique tools. Dreamweaver is renowned for its HTML and web page layout capabilities and provides advanced automatic HTML, CSS (cascading style sheets), DHTML, and JavaScript code generation. Flash is the preferred technology for creating web animation and provides multiple options for creating interactivity. Photoshop is an ideal vehicle for generating image files for HTML documents and provides tools for editing both bitmap and vector image files. It also creates and exports HTML and JavaScript code. The most current version of the software is used.   **4.00**

| Recommended Electives (11.00 units from the following list) | Units |
|---|---|

### MGMNT X 414.65 Advanced Structured Query Language (SQL) Syntax
Structured Query Language (SQL) is an American National Standards Institute (ANSI) standard computer language for accessing and manipulating database systems. It works with such database programs as MS Access, DB2, Informix, MS SQL Server, Oracle, and Sybase. Designed for those with some knowledge of SQL, this hands-on course covers advanced SQL statements used in inserting, retrieving, and updating data in a database. Students learn how to use advance features of SQL commands, including using operators such as IN, AND, OR, BETWEEN, LIKE, DISRINCT, AGGREGATE, CONCAT, SUBSTRING, HAVING and others. In addition, instruction covers advanced   **4.00**

usage of table joins, sub-queries, if and case statements, and cast and covert statements, as well as stored procedures, triggers, functions, and cursors. You also learn how to stream text into a field, retrieve and send results in email, create search function using full text index, and create pivot tables with hyperlinks.

*Prerequisite: X 414.61 Using Structured Query Language (SQL) Syntax; some experience in SQL; or consent of instructor.*

### MGMNT X 418.104B Learning Python

Python is a high-level, dynamically typed, and portable programming language that excels when the cost of software development outweighs performance considerations, which is quite often in practice. Python covers similar territory as Perl and is similarly an open-source product, but it is considered easier to learn, write, and maintain. NASA, Industrial Light and Magic (ILM), Honeywell, and many other companies all use Python to handle jobs for which classical programming languages are not well-suited. This course introduces Python and its libraries as a general programming environment, then applies Python to real-world problems, such as website development, database access, text processing, XML editing, GUI development, and system administration

4.00

### MGMNT X 418.104D iPhone and iPad Applications Programming

Iphones and iPads are everywhere. Learn the fundamentals for developing on this popular platform. Instruction provides an overview of the Objective-C language and progresses into the details of the UIKit, as well as several other frameworks essential for development on the iPhone and iPad platforms. Beginning with fundamental objects, such as buttons and text fields, students then learn about views, view controllers, navigation controllers, and other complex classes. Students also learn about quartz graphics, multimedia, mapping, GPS functionality, as well as using the accelerometer. The course also introduces the newest API classes of the latest production SDK from Apple.

4.00

*Prerequisite: Knowledge of at least one object-oriented programming language: C/C++, C#, Java, or Objective C.*

*Enrollment limited. All assignments require an Apple Macintosh Computer. Students may wish to bring a laptop to class.*

### MGMNT X 418.74 Object-Oriented Analysis Methods and the Unified Modeling Language (UML)

This course provides an introduction to object-oriented analysis and its impact on software engineering, with emphasis on the emerging unified modeling language (UML). Object-oriented concepts are presented in a formal way, showing how those concepts are represented within the UML. Classes, objects, attributes, associations, generalization/specialization, and aggregation are examined, as well as how UML can be used to describe them. Constraints and their central role in UML are explained, along with business rules and their elucidation within UML. Techniques for dynamic modeling, including state transition diagrams and various kinds of interaction diagrams, such as sequence diagrams, collaboration diagrams, activity diagrams, etc., are discussed and illustrated with examples. The central role of use, case scenarios, and activity diagrams also are discussed, along with such various process hints as recursive software development and class/responsibility/collaboration cards. The course features many examples and the use of a commercial CASE tool.

3.00

*Prerequisite: No programming experience is assumed, although it is helpful to have worked on software engineering problems in real-world projects.*

### MGMNT X 418.88A Scripting Languages and Technologies

This course covers several popular scripting languages and technologies, including PHP (PHP: Hypertext Preprocessor), ASP (active server pages) SQL (structured query language), JavaScript, and AJAX (asynchronous JavaScript) for rich Internet applications. Course exercises apply these technologies to server-side interactions with

2.50

databases and spreadsheets. PHP and ASP are two of the most popular server-based technologies for creating dynamic web page content, such as searches and e-commerce. In addition, the course covers popular uses of scripting technologies on the client-side for web page applications

### MGMNT X 418.134 AJAX (Asynchronous JavaScript and XML)

This course provides students with the knowledge and skills necessary for Dynamic HTML (DHTML) using advanced JavaScript, XML, CSS, DOM scripting, and server-side languages to develop dynamic web-based applications. Topics include learning to code fly-out menus with animated effects; triggering functions from the keyboard events and other HTML form choices; detecting mouse events; the use of asynchronous JavaScript; how to use the Document Object Model; using XML in web page requests; how to code and use server-side languages (e.g., PHP, Java) to query and return information from a database; and how to design and develop new AJAX applications.

4.00

### MGMNT X 419.39 Introduction to PHP with MySQL

This course provides an introduction to the fundamentals of the PHP scripting language that dynamically controls the presentation of web pages based on user input and data stored on a server. Students learn the basics of SQL using the MySQL database; how to create, access, and manipulate MySQL data from within a PHP program; and how to set up and use HTML forms to gather input from a web page user. Special topics include file handling, how to handle data in a grid-like (spreadsheet) format in a web page, PHP security, and a brief overview of using AJAX with PHP.

4.00

### MGMNT X 418.51 Building the Database-Powered Website

This course covers the use of web pages that do not need to be updated manually because they are coded to change automatically when an underlying database changes. Topics include PHP, MySQL, IIS, DSN, ODBC, ASP, VBScript, HTML, ADO, SQL Server, shopping carts, and converting existing database applications into web applications. After learning the basics, Dreamweaver is used as a code generator to create pages with PHP and MySQL on a remotely hosted Apache web server. Students create several websites that rely on database content. The various pages created for these sites are capable of selecting, updating, or inserting new database records.

4.00

*Prerequisite: Proficiency in HTML or SQL or at least one programming language.*

### MGMNT X 418.62A Introduction to Adobe Dreamweaver

Dreamweaver is a powerful website design and production package and the leading software for creating and managing web pages and websites. In this hands-on course, students construct, modify, and upload simple websites as they learn methods for web page composition and formatting using cascading style sheets (CSS). Instruction also covers how to insert graphics, video, Flash, links, JavaScript, and Spry widgets and effects. Other topics include asset management, templates, library items, pop-up menus, Flash rollovers, framesets, forms, and tables.

4.00

*Prerequisite: Students must have a solid understanding of Windows. No prior knowledge of Dreamweaver or HTML is required. Owning the software is not necessary to take the course.*

### MGMNT X 418.104C Ruby Programming Fundamentals

Ruby is an object-oriented scripting language that has rapidly grown in use and favor across a wide variety of applications in the past few years. Perhaps the biggest use or Ruby is within the Rails framework, where it provides the programming power behind web-based applications that can be quickly and efficiently written. This hands-on course covers the basics of the Ruby language for various software developers and personnel. Since it is very much an object-oriented language, instruction concentrates on its implementation of objects after covering the fundamental syntax and structures of the language, comparing and contrasting them to Perl and Java. The course also examines the use of Ruby on the web, including Ruby on Rails; using Ruby to handle relational databases through SQL; and graphic user interfaces, such as Ruby/Tk.

4.00

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**MGMNT X 418.24A Information Technology Management II**
Successful IT professionals and managers require skills in business, management, finance, and project management. This course provides students with the necessary knowledge and skills to effectively manage IT departments and successfully communicate with technical staff, business customers, vendors, and different levels of management. Topics include strategic and short-term IT planning, application development and management, infrastructure management, portfolio management, staffing and skill levels, vendor and contract management, outsourcing, IT metrics, change management, IT governance, and customer service. The course also provides a review of IT project management, budgets, IT benchmarking, business case development, and IT management best practices.

4.00

*Prerequisite: Two years of IT experience or consent of instructor.*

*Required course in Information Technology Management Certificate. May be used as a substitute elective for Information Systems Certificate Programs*

### Electives

In addition to the 21 units of required core coursework, students must successfully complete a minimum of 11 units in elective coursework. Any course in information systems offered by UCLA Extension may be applied as an elective toward this program (upon approval of the program advisor).