



Engineering & Technology

Applications Programming Certificate

This 8 course (32-unit) certificate 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.

Applications programs are usually written in a high-level language that can run with few changes on a variety of computer operating systems. This program focuses on developing C# using Visual Studio.NET and Java.

Applications Programming Certificate

Recommended Courses

Recommended if you have no programming experience.

X 414.20	Fundamentals of Software Development
X 414.51	Relational Database Management

Required Courses

X 418.85A	Java Programming I
X 414.61	Introduction to SQL
X 418.735	Programming in C# for Visual Studio .NET Platform I
X 418.735A	Programming in C# for Visual Studio .NET Platform II
X 418.102A	Website Construction with Adobe Software: Photoshop, Dreamweaver, and Animate

Electives

Any COM SCI X 400-level course in information systems offered by UCLA Extension may serve as an elective toward this certificate upon approval by the department. For those needing guidance, recommended electives are listed in this brochure.

Upon payment of the candidacy fee, the student will not be subject to subsequent changes in program/curriculum requirements.

A GPA of 2.0 or better is required for all core courses and electives. The program must be completed in 5 years.

Certificate Completion

Once the candidacy fee has been paid and you have completed the last course in this program, you may begin the process of obtaining your UCLA Extension certificate. Contact the department at (310) 825-4100 or email: et@uclaextension.edu

Approved for International Students

This certificate is approved for international students and meets the I-20/F1 visa requirements. A minimum of 12 units per quarter is required. Attend class on or near the UCLA campus and study alongside American students—many who are working professionals in the field.

Further Information

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Email: crawford@uclaextension.edu

Recommended Courses

Recommended if you have no programming experience.

Fundamentals of Software Development

COM SCI X 418.20 ▪ 4 units

The course provides a comprehensive introduction to computer programming and software development. It benefits individuals pursuing programming and software development as a career, as well as anyone in the IT field who works with programmers and systems analysts in important areas that precede actual programming, including problem-solving approaches; specifications and requirements; user interface design; and structured program design using such tools as hierarchy, Nassi-Schneiderman, and UML charts. Instruction covers programming concepts common to modern languages, including C, C#, Java, Visual Basic, and shell scripting. In addition to creating procedural programs (using C as the example language) and object-oriented programs (using Visual Basic), students produce small business applications in these two environments plus a commercial-level application by course's end. Instruction presents programming fundamentals including variables and expressions; flow of control, including looping and selection; event-driven programming in the Windows .NET environment; file processing; and modular development. The course also covers the development cycle itself, including unit test and integration, alpha/beta testing, and software defect tracking and classification, plus examples of C#, Java, and SQL programming. This introductory course requires weekly programming assignments and prepares students for future coursework in C, C++, C#, Java, Visual Basic, or any other high-level language.

Relational Database Management

COM SCI X 418.20 ▪ 4 units

Understanding client-relational database design is vital to system design and implementation. Learn relational database technology, data modeling, SQL, data normalization, and the translation of logical designs to physical storage structures. Additional topics include indexes, storage management, transactions, database integrity, concurrency control, recovery, client/server relational database management, and introduction to query optimization.

Required Courses

Introduction to SQL

COM SCI X 414.61 ▪ 4 units

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. An overview is presented of SQL and how SQL statements are used 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, subqueries, if and case statements, cast and covert statements, and much more.

Prerequisite: Basic knowledge of Windows is recommended.

Website Construction with Adobe Software: Photoshop, Dreamweaver, and Animate

COM SCI X 418.102A ▪ 4 units

This course explores a hands-on introduction to Adobe's trio of web software programs: Dreamweaver, Fireworks, and Flash. These programs are 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 introduced 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. This course uses the most current version of the software.

Programming in C# for Visual Studio .NET Platform I

COM SCI X 418.735 ▪ 4 units

This course provides new developers and application developers unfamiliar with the C# language with 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, and XML web services. Upon completing the course, students learn how 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.

Programming in C# for Visual Studio .NET Platform II

COM SCI X 418.735A ▪ 4 units

This course benefits intermediate C# developers and covers more advanced techniques in developing Windows forms applications, client-side and server-side components, web forms, and XML web services. Students examine form and control usage, MDI, GDI+, printing techniques and report development, client-side and server-side components (custom .NET controls and DLL development), memory management, deployment methods, threading, and asynchronous programming. ADO.NET is used to access data in various databases. Upon completing the course, students gain knowledge of client-side control usage, building effective components, methods to print information, using data in C# applications, and deploying applications. *Prerequisite:* X 418.735 Programming in C# for Visual Studio .NET Platform I or previous experience using C#.

Java Programming I

COM SCI X 418.85A ▪ 4 units

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.

Electives

Any X 400-level course in information systems offered by UCLA Extension may serve as an elective toward this certificate upon approval by the department. For those needing guidance, the following is a sample of recommended electives for this certificate.

JAVA Programming II

COM SCI X 418.100 ▪ 4 units

Java Programming II examines at a more advanced level object oriented programming; collections and generics; graphical user interface design; threading and asynchronous processing; and files, streams, database usage and object serialization. Students learn to develop platform/framework neutral applications for desktop, web and mobile situations. On course completion students are able to choose the appropriate Java technology to solve their business problem; develop complex GUI interfaces using swing; connect to a database and execute SQL queries; and write efficient and maintainable Java code.

iPhone and iPad Application Programming

COM SCI X 418.104D ▪ 4 units

This course explores the fundamentals and provides a broad perspective of the iPhone/iPad 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 advance to learn about views, view controllers, navigation controllers, and other complex classes. Quartz graphics, multimedia, mapping, GPS functionality, and use of the accelerometer are examined. The course also introduces the newest API classes of the latest production SDK from Apple. *Prerequisite:* Knowledge of at least one object-oriented programming language: C/C++, C#, Java, or Objective C.

Programming in C# Developing Web Applications Platform II

COM SCI X 418.735D ▪ 4 units

This course benefits intermediate C# developers the knowledge and skills to develop web applications using ASP.NET and XML web services. Using Visual Studio .NET, learn how to create web forms, use server controls effectively in an ASP.NET web form, validate web form controls, use ADO.NET to access data, call an XML web service from a web application, and configure and deploy web applications. Upon completing the course, students gain knowledge of the Microsoft .NET framework libraries needed for web application development, how to effectively create and use web forms, data access techniques using ADO.NET, and methods to call web services. *Prerequisite:* X 418.735 Programming in C# Fundamentals for Visual Studio .NET Platform I or previous experience in using C#. Some knowledge of HTML and database concepts is extremely useful.

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