

# UCLA Extension

## Application programming certificate 32 UNITS - 3 QUARTERS

To ensure that our programs and courses reflect the most current and relevant academic content, **you will be required to complete your program requirements within five years**, including any courses taken prior to establishing candidacy if you wish them to count toward your requirements.

This certificate program is designed to help students learn to develop software applications using high-level programming languages.

### This program is perfect for...

- Students who want to learn to create software applications based on user requirement specifications
- Those who want to find out how to test, debug, and execute programs on a variety of computer platforms and operating systems
- Students who are interested in learning more about developing software applications using an object-oriented methodology

### What you can learn.

- How to write small- to medium-sized computer programs with the Java programming language, using core programming concepts such as variables and control flow statements and object-oriented programming techniques such as encapsulation
- How to make and edit animated gifs, simple videos, and other images with Photoshop; ways to create responsive HTML5 web pages with Dreamweaver; and how to use Adobe Animate for non-Flash animation and Illustrator for layouts, graphics, and other images
- Basic Structured Query Language (SQL), an American National Standards Institute (ANSI) computer language for accessing and manipulating database systems, to write and execute queries—and how to write SQL Data Manipulation syntax
- The skills to develop C# applications using the Microsoft .NET platform, debug basic Android applications, and build a complete client-server database application using a Microsoft SQL Server database and a Windows desktop client application

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## Courses

1 course = 4 units

### Choose 5 Required Courses

Students must successfully complete 20 units of required coursework

[Java Programming I](#) COM SCI X 418.85A

[Introduction to SQL](#) COM SCI X 414.61

Typically Offered: Fall, Winter, Spring, Summer

[Website Development with Adobe Software: Photoshop, Dreamweaver, and Animate](#) COM SCI X 418.102A

[Programming in C# for Visual Studio .NET Platform I](#)

COM SCI X 418.735

[Programming in C# for Visual Studio .NET Platform II](#)

COM SCI X 418.735A

### Choose 3 Electives courses

Students must successfully complete 12 units of elective coursework. Any course numbered X 400 -499 in the COM SCI discipline may be applied as an elective toward this program.

[Data Science Fundamentals](#) COM SCI X 450.00

Typically Offered: Fall, Winter, Spring, Summer

[Digital Technology Internship](#) COM SCI X 460.100

Typically Offered: Fall, Winter, Spring, Summer

[Web Information Management](#) COM SCI XLC 246

[Neural Networks Using Tensorflow](#) COM SCI X 450.8

[Data Analysis Using Python](#) COM SCI X 418.106

[Numerical Computing Using Python](#) COM SCI X 418.107

[Learning and Reasoning with Bayesian Networks](#) COM SCI XLC 262A

[Java Programming I](#) COM SCI X 418.85A

[Java Programming III](#) COM SCI X 418.85C

[JavaScript](#) COM SCI X 418.88B

[Introduction to PHP with MySQL](#) COM SCI X 419.39

[Using FPGAs in Embedded Systems](#) COM SCI X 457.55B

[Internet Architecture and Protocols](#) COM SCI XLC 217A

[Databases and Knowledge Bases](#) COM SCI XLC 240A

[Machine Perception](#) COM SCI XLC M268

[Intermediate Google Android Development](#) COM SCI X 418.104G

[Programming in C# for Visual Studio .NET Platform I](#)

COM SCI X 418.735

[Programming in C# for Visual Studio .NET Platform II](#)

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COM SCI X 418.735A

[Fundamentals of Software Development](#) COM SCI X 414.20

[C++ Fundamentals for Visual Studio .NET](#) COM SCI X 418.735B

[Relational Database Management](#) COM SCI X 414.51

[Advanced Database Management Concepts](#) COM SCI X 414.56

[Introduction to SQL](#) COM SCI X 414.61

Typically Offered: Fall, Winter, Spring, Summer

[Advanced Structured Query Language \(SQL\) Syntax](#)

COM SCI X 414.65

[Advanced Linux/Unix: Networking](#) COM SCI X 417.29A

[Network Communications with TCP/IP](#) COM SCI X 417.96

[Java Programming II](#) COM SCI X 418.100

[Website Development with Adobe Software: Photoshop, Dreamweaver, and Animate](#) COM SCI X 418.102A

[HTML and CSS](#) COM SCI X 418.102AB

[Python Programming I](#) COM SCI X 418.104B

[iPhone and iPad Application Programming](#) COM SCI X 418.104D

[Google Android Development](#) COM SCI X 418.104F

[Advanced Computer Networks](#) COM SCI XLC 218

[Machine Learning Algorithms](#) COM SCI XLC 260

[Cybersecurity Lab \(Defensive Tools\)](#) COM SCI X 420.9

[Introduction to Data Science](#) COM SCI X 450.1

Typically Offered: Fall, Winter, Spring, Summer

[Exploratory Data Analysis and Visualization](#) COM SCI X 450.2

Typically Offered: Fall, Winter, Spring, Summer

[Hadoop and Managing Big Data](#) COM SCI X 450.3

Typically Offered: Fall, Winter, Spring, Summer

[Machine Learning Using R](#) COM SCI X 450.4

Typically Offered: Fall, Winter, Spring, Summer

[Predictive Analytics](#) COM SCI X 450.7

[Architecting Cloud Solutions Using AWS](#) COM SCI X 460.1

[Operating Systems Principles](#) COM SCI XLC 111

[Computer System Modeling Fundamentals](#) COM SCI XLC 112

[Computer Network Fundamentals](#) COM SCI XLC 118

[Database Systems](#) COM SCI XLC 143

[Fundamentals of Cybersecurity](#) COM SCI X 420.1

[3D Real-Time Animation](#) COM SCI XLC 172

[Information Systems Infrastructure Security Management](#)

COM SCI X 420.3

[Multi-Player Games](#) COM SCI XLC 188

[Network, Operating System, and Database Security](#) COM SCI X 420.5

[Network Protocol and Systems Software Design for Wireless and Mobile Internet](#) COM SCI XLC 211

[Cybersecurity Regulatory Compliance](#) COM SCI X 420.7

[Computer Security](#) COM SCI XLC 236

[Cybersecurity Lab \(Offensive Tools\)](#) COM SCI X 420.8

[Big Data Analytics](#) COM SCI XLC 249