

Internet Programming and Development

Free Program Overview

Software Development (including Internet Programming and Development)

This free event is an informal information session for new or returning students who are interested in our software development programs, including Computer Programming, Internet Programming and Development, Software Engineering and Quality, Linux Programming and Administration, and Database Systems. During this interactive session, instructors and staff will highlight new content developments in each area. They will also explain the curriculum, requirements, recommended course sequences, and certificate completion timeframes. In addition to understanding specific training benefits, you will learn how these programs can help you advance your current career or break into a new field.

Course 3085
and 22404



ENGINEERING AND TECHNOLOGY



Keep Pace with the Rapid Evolution of Web Technology

UCSC Extension Silicon Valley offers an Internet Programming and Development certificate program to help you keep pace with the rapid evolution of Web technologies. Whether you are a working Web professional or just entering the field, you will acquire powerful skills to help you get ahead—and stay there. Along the way, you will receive comprehensive training geared to professionals working on e-commerce, enterprise applications, and interactive Web sites.

Comprehensive Coverage of Major Platforms and Architectures

The program encompasses the major development frameworks and software architectures on the Internet today. Courses cover all major platforms, including Java Enterprise Edition, Microsoft .NET, and open source. Individual course topics range from basic programming languages and server development to Rich Internet Applications (RIA) and Web 2.0 client-side technologies.

Hands-On Learning from Silicon Valley's Top Professionals

Our instructors come from the front lines in the industry. They share their knowledge with you by organizing the vast information in their expertise areas into engaging lectures, exercises and labs. Specialized lab courses augment learning with hands-on instruction using open source or commercial tools. New courses are introduced regularly.

Benefits of Studying at UCSC Extension

- Unique certificate in a growing field
- Silicon Valley's richest curriculum in Internet and enterprise software architectures
- Acquire broad knowledge of e-commerce and Web 2.0 technologies
- Convenient course schedules and Silicon Valley location

Who Should Attend This Program

This certificate program is for professionals who want to:

- Keep up with emerging Internet technologies
- Develop interactive and dynamic Web sites
- Develop enterprise and commercial applications
- Study for Java EE and .NET certifications
- Enter the Internet field with confidence

Unique Focus on Internet Technology

The program has several targeted technology courses, but it also shares courses with our certificates in Computer Programming, Web Design, and Linux Programming. It is the one place where the key Internet platforms and application programming courses are combined in one rich curriculum.



About UCSC Extension Silicon Valley

The vital learning community at UCSC Extension Silicon Valley is well known for its collegial atmosphere and rigorous preparation. Our faculty of expert practitioners teaches state-of-the-art solutions to the everyday problems confronting technology professionals working in Silicon Valley. The professional education programs we offer build expertise, open doors to new opportunity, and deliver tangible value. Our broad portfolio of open-enrollment courses and certificates, affordable pricing, experience-based instruction, and central location in Silicon Valley help turn jobs into careers.

Internet Programming and Development Certificate

Certificate Requirements

To obtain the certificate in Internet Programming and Development, you must complete a minimum of 14 units from electives. In order to be eligible for this certificate, you must (1) complete all course work within three years of filing the application to establish candidacy, and (2) achieve an overall 3.0 grade point average (GPA) for all courses. In addition, all courses applying toward the certificate must have been completed within five years of the date on which the certificate is issued.

Prerequisites

Each course has different prerequisites. Please review the course descriptions to ensure that you meet the requirements, whether through job experience or education. For details see full course descriptions at ucsc-extension.edu/engineering.

Recommended Course Sequence

We recommend you take courses in the order presented on the course chart. However, the sequence may vary based on student background and professional interest.

Note: Some courses may be listed in more than one program, however, only one course may be shared between two Engineering and Technology certificate programs unless otherwise noted.

Program Contact

Engineering and Technology Department,
(408) 861-3860 or e-mail
program@ucsc-extension.edu

Curriculum

***Choose one of these three core courses** **Units** **Course**

Internet Architecture

Web Technologies, Introduction	1.0	.....22623
Cloud Computing, Introduction	0.5	.....22413
Programming for Cloud Computing	1.5	.....23094
User Experience Design for Web Applications	2.0	.....3113

Java EE Framework

Enterprise Solutions Using Java EE*	3.0	.....6933
Developing Java and Java EE Applications with Spring Framework	3.0	.....20063
Java Programming, Comprehensive	3.0	.....6634

Rich Internet Applications

JavaScript and AJAX, Comprehensive*	3.0	.....1500
Developing JavaScript-based Rich Web UI with JQuery	2.0	.....22865
Developing UI for Windows and the Web with WPF and Silverlight.....	2.0	.....20027

.NET Framework

C# .NET Programming, Comprehensive	3.0	.....5408
C# .NET Programming, Advanced.....	3.0	.....19026

Open Source Framework

Linux Based Web Application Development—Apache, MySQL, PHP*	3.0	.....21958
Ruby and Ruby on Rails, Advanced.....	2.0	.....21342
Web Application Development with Groovy and Grails.....	2.0	.....23390

Internet Programming Languages

Programming with Java for Beginners	1.5	.....5185
Ruby, Introduction.....	0.5	.....21341
PHP (Hypertext Preprocessor) I.....	2.0	.....21343
Perl Programming I	2.0	.....2856
Perl Programming II	2.0	.....2110
Python Programming for Beginners	1.5	.....20776
Python for Programmers.....	3.0	.....3064
HTML/XHTML: Building Blocks for Web Development.....	2.0	.....20816
Designing with Cascading Style Sheets (CSS) I	1.5	.....6673
XML Essentials	2.0	.....3279

C# .NET Programming, Advanced

For students who have learned the basic C# language and the C#.NET integrated development environment, this course provides an opportunity to extend their C# and .NET skills by learning advanced C# features and programming techniques. The course introduces the components of the .NET framework, database connectivity and Web application development.

Course 19026

C# .NET Programming, Comprehensive

This course introduces beginning and intermediate programmers to .NET programming using Microsoft's C# programming language. The instructor explains the Visual Studio development environment and reviews the basic constructs of C# language with detailed explanations of the C# regular expressions, delegates, events, generics and collections. The course also covers exception handling, threading and synchronization. Sample applications will be used to illustrate core concepts and the instructor will present real-world code examples in class.

Course 5408

Cloud Computing, Introduction

This course introduces students to the concepts and technologies involved in cloud computing, which refers to scalable and virtualized computing over the Internet. The course begins with surveys of technologies deployed by Amazon, Google, Microsoft, and various academic and open-source providers. It explains how cloud computing services can provide on-demand access to data storage, computing resources, and messaging. It also introduces the enabling technologies: Web 2.0, virtualization, grid and utility computing that comprise the infrastructure behind a cloud computing service. The course examines various case studies and technical-business models.

Course 22413

Designing with Cascading Style Sheets (CSS) I

Cascading style sheets (CSS) are a mandatory method for a Web designer to control the look and feel of a modern Web site. Combined with proper HTML markup, CSS allows for precise control over a Web page's appearance without the use of tables. This beginning course includes demonstrations and hands-on exercises covering the application and syntax of CSS; hand-coding CSS properties for font, text formatting and backgrounds; the box model; creating vertical and horizontal navigation menus and two and three column page-layouts.

Course 22865

Course Descriptions

Developing Java and Java EE Applications with Spring Framework

Spring Framework and Hibernate are two of the most popular open source frameworks for developing Java and Java EE 5 applications. Spring simplifies enterprise application development and promotes good programming practices. Hibernate is a high-performance object/relational persistence and query service, mapping from Java classes to database tables. Topics include Bean Container and inversion of control, aspect-oriented programming and transaction management, Spring MVC, hibernate and architecture, objects and persistence mapping, and query language.

Course 20063

Developing JavaScript-based Rich Web UI with JQuery

JQuery is a JavaScript library that simplifies the rapid development of rich web applications. JQuery can be used in web applications regardless of the language or technology employed on the server side. After an overview of the JQuery framework, this course goes into the inner workings of document object model (DOM) and HTML content, including traversal, modification, user interactions and event handling. Students learn to leverage the browser event model, perform AJAX requests, add effects and animations, use JQuery plug-ins, and work with CSS and form data.

Course 22865

Developing UI for Windows and the Web with WPF and Silverlight

The Windows Presentation Foundation (WPF) provides programmers with a set of tools and APIs within Visual Studio.NET that support the development of exciting user interfaces. Silverlight is Microsoft's platform for the development of Rich Internet Applications (RIAs). The Silverlight runtime supports many different browsers and operating systems. This course introduces WPF and the Silverlight development environment, tools, concepts, techniques, and the Extensible Application Markup Language (XAML). Through hands-on projects, you will learn the fundamentals needed to build UI pages, access databases and the network, using both Silverlight and WPF.

Course 20027

Enterprise Solutions Using Java EE

Java Enterprise Edition supports the development of robust, secure and scalable Web-based enterprise business applications. This course starts with the Java technologies used in Web applications, including Servlet, JSP, JBoss application server and database API. It introduces the Struts framework for implementing Java EE Web applications. Emphasis will be on the current Enterprise JavaBeans (EJB) 3 release and its powerful Java Persistence API. The course covers message services, interceptors, injection, transactions, Web services and security. Students will gain hands-on experience with tools, servers and databases.

Course 6933

HTML/XHTML: Building Blocks for Web Development

In this hands-on course, students create structurally sound and valid Web pages. The instructor discusses the history, power and limitations of basic Web page development using the Web's foundation languages, Hypertext Markup Language (HTML), Extensible Hypertext Markup Language (XHTML) and HTML5. This course is for students who have not coded Web pages before and is a review for students who have some HTML coding knowledge and want to build on that knowledge as the foundation for learning XHTML or HTML5.

Course 22865

JavaScript and AJAX, Comprehensive

This comprehensive course covers JavaScript as a programming language for creating dynamic Web pages. After getting up to speed with the language syntax, data types, operators, and programming constructs, students learn how to integrate JavaScript with HTML/CSS and write functions to handle user-initiated events such as mouse rollovers, clicking on a link, or submitting a form. Students learn the Document Object Model and how to walk the W3C DOM tree, manage nodes, and use event listeners. AJAX is introduced to create asynchronous calls to the Web for fast interactivity.

Course 1500

Java Programming, Comprehensive

Java is the premier language for Web servers, enterprise servers, network applications, embedded devices, appliances and wireless applications. This course covers the Java fundamentals, including language syntax, constructs, and the development environment. It also extends to the Java platform, including client/server communication and managing XML data. The course begins with Java's implementation of object-oriented concepts such as classes, data and function access controls and inheritance. Students build graphical user interfaces and program in the Java event-handling model. Additional topics include the Java class library, collection frameworks, Internet communication, and multithreaded programming.

Course 6634

Linux Based Web Application Development—Apache, MySQL, PHP

Linux, Apache, MySQL and PHP, collectively known as LAMP, comprise the majority of servers, databases and scripting languages on the Internet today. LAMP belongs to open-source and is very robust, and easily configured. This course teaches LAMP basics including installation, deployment and development of a Web site. Students learn the basics of programming MySQL (a popular Web database) and PHP (Hypertext Preprocessor, a Web site scripting language). Teaching method includes theory, practices and case studies. Students will be able to develop basic to intermediate level 3-tier Web sites and Web applications with a database in the back-end.

Course 21958

Perl Programming I

This course introduces users, programmers and system administrators to the popular interpreted language called Perl, the Practical Extraction and Report Language. Perl is hailed as the system administrator's language and is the de facto standard for writing dynamic Web pages. This practical course is also useful for anyone working with UNIX text files, databases and processes. Although the course is taught on a UNIX system, Perl is very portable. The fundamental topics covered in this course are data types, operators, regular expressions and pattern handling, conditional and looping constructs, file handles and filters, file testing, command-line arguments, sub-routines and packages, the UNIX system interface, formatting and database management files.

Course 2856

Perl Programming II

This hands-on course is designed for those interested in advanced applications for Perl. It is a highly beneficial continuation of the "Perl Programming I" course. Students learn to read and write Perl modules, both procedural and object oriented. Topics covered include Perl subroutines and packages, references (pointers), objects, modules, pragmas and the standard Perl library. Students learn how to document their programs using Perl's Plain Old Documentation format and store them in a library. There will be an overview of the Perl DBI for connecting to any database and performing SQL queries, retrieving result sets, and displaying the results in a browser using the CGI.pm module.

Course 2110

PHP (Hypertext Preprocessor)

PHP is one of the best server-side technologies for handling Web content. It is used by millions of sites worldwide. The course starts by covering the development environment, language syntax and programming constructs. It introduces the concepts of OOP in PHP at different levels, including the PHP library and unit tests. It also covers interactions with databases and working with HTML forms and tables. Other topics include advanced Web programming tasks using PHP, such as user authentication, sessions, encryption, and handling Web services and XML.

Course 21343

Programming for Cloud Computing

This course begins with a review of cloud computing concepts and the three common languages used in Web applications (Python, Java and C#). The instructor then explores the core concepts of Web applications and Web services or Web APIs. The Representational State Transfer (REST) concepts and programming are presented. The instructor will go over the Application Programming Interfaces and platform services of three major cloud computing vendors: Amazon EC2/S3, Google App Engine and Microsoft Azure. The course includes a hands-on project to develop an application in a functional cloud.

Course 23094

Programming with Java for Beginners

This course is intended for those who are new to programming or need a refresher. Java, a widely popular programming language, will be used to generate solutions to real, practical problems. The course begins with the concepts of programming, computer science, and software engineering. It introduces the basic Java syntax, and then delves into abstraction, object-oriented paradigm, procedural programming, elementary data structures, recursion, and more. Students will gain a strong foundation and learn to write programs for real applications. The course includes lab exercises.

Course 5185

Python Programming for Beginners

This course is intended for newcomers to programming. The course covers the important concepts and programming mechanisms that exist in all programming languages: reading and writing to standard I/O, using operators, controlling the flow of execution, using functions, reading and writing files, and object-oriented programming concepts. It also includes Python specific facilities such as code re-use, built-in sequence types, and iteration. This is a hands-on lab-based course.

Course 20776

Ruby, Introduction

Ruby is a dynamically-typed, object-oriented programming language which has recently experienced a surge in interest because the popular Rails web programming framework is written in Ruby. It can be used for command scripts, system administration, text processing, GUI programs, networked and distributed applications, and web development. Ruby works well with Test-Driven Development and Agile Methodologies. This course is an introduction to Ruby and will provide a solid foundation for further study. Programming with a dynamic language is different and we'll try to jump-start your learning by emphasizing material not easily found elsewhere.

Course 21341

Ruby and Ruby on Rails, Advanced

Ruby on Rails is an increasingly popular framework for creating dynamic Web 2.0 database applications in the Ruby language. It delivers working bare-bones Web applications out of the box, ready to be developed into your application. This course will show what "opinions" Rails has, when it is an appropriate solution, and how to use it to build real Web applications quickly. The course also covers configuration, development, testing, deployment, scaling, security and trouble-shooting techniques. Other topics covered include supporting tools, e.g., Rake, Rubygems, third party plugins, and ActionMailer.

Course 21342

User Experience Design for Web Applications

Web applications are becoming the de facto standard for delivering software functionality to users. This project-oriented course provides an overview of the design process and best practices for Web app development. In addition to the lectures, you'll create and design your own web app using graphical and Web tools to address a real-world business problem. The course explores the key phases of the user experience design process, including strategy, competitive and user research, persona development, UI (user interface) framework and design, usability testing and rapid prototyping.

Course 3113

Web Application Development with Groovy and Grails

Groovy and Grails are the emerging Web development language and framework for the Java platform. The first part of this course introduces the dynamic language features of Groovy, including the basic syntax, data types, and control structures. It then goes into more advanced features such as closures, GDK, and meta programming. The second part covers the major components of the Grails framework for Web development, including controller, view, GSP (Grails Server Pages), and AJAX support. Students learn the powerful and high-productivity features of this framework for Web application development.

Course 23390

Web Technologies, Introduction

This course provides an introduction to the major technologies used in the production of Web applications. The course builds basic knowledge of the different Web technologies without teaching programming. It starts with Internet fundamentals, followed by HTML basics and Cascading Style Sheets (CSS). It shows how JavaScript and AJAX work to create dynamic Web sites. It explains the Web server interface through Common Gateway Interface (CGI), Hypertext Preprocessor (PHP) and Perl scripting. The course also covers the implementation of database access and e-commerce tools.

Course 22623

XML Essentials

This course is an introduction to the power of XML and its importance to the Web. The course begins with the history and background of XML and the advantages of moving toward the XML standard. The course introduces basic tags as well as syntax rules for XML and XML environments. Practical examples will be used to demonstrate the basics of working with XML, cascading style sheets and document-type definitions. The course briefly addresses the Document Object Model (DOM) concept and the data manipulation capability.

Course 3279

Programs Update and Enrollment Information

Visit ucsc-extension.edu/engineering, for the most up-to-date information about our courses and programs, including textbooks, instructors, schedules and locations.

Enroll online at ucsc-extension.edu.

Send questions to program@ucsc-extension.edu