INTERNET PROGRAMMING & DEVELOPMENT
Post-Graduate Certificate Program

UC SANTA CRUZ SILICON VALLEY CAMPUS
UCSC Silicon Valley extension

in partnership with **ec** *Higher Education*

Our Internet Programming & Development certificate program offers comprehensive training geared to developers working on e-commerce, enterprise applications, interactive websites and cloud applications. Courses cover all major platforms and frameworks. We offer training on Internet programming languages, server development, Rich Internet Applications (RIA) or dynamic Web technologies, cloud services, Web app testing and e-commerce security.

Who Should Attend?

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 apps
- Study for Java EE and .NET certifications
- Enter the field with confidence
- Learn programming for personal applications
- Project managers working with programmers or managing software projects

Curriculum

Certificate & OPT | 3 Quarters | 28.5 Units

JavaScript and AJAX, Comprehensive | 3 Units
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, you'll learn how to create and manipulate objects and write functions to handle user-initiated events such as mouse rollovers, clicking on a link, or submitting a form. You'll learn the Document Object Model and how to walk the W3C DOM tree, manage nodes, and use event listeners.

Developing Java & Java EE Applications with Spring Framework & Hibernate | 3 Units
This course introduces tools for developing Java EE applications and covers the core concepts of Spring, including Inversion of Control (IoC) and dependency injection. You will learn by building a sample Java EE application that creates RESTful Web services using JAX-RS, as well as the Tomcat application server and MySQL database. Learn how to work with databases using Hibernate and gain hands-on experience with open-source and demo tools, servers and databases. Advanced topics include scaling concepts and Web services security via OAuth.

Developing JavaScript-based Rich Web UI with JQuery | 2 Units
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 reviews the inner workings of document object model (DOM) and HTML content, including traversal, modification, user interactions and event handling. You'll 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.

Cloud Computing, Intro | 0.5 Units
This course introduces the concepts and technologies involved in cloud computing, which refers to scalable and virtualized computing over the Internet. The course surveys technologies deployed by Amazon, Google, Microsoft, and various academic and opensource providers. It explains how cloud computing services can provide on-demand access to data storage, computing resources, and messaging. You'll also learn about the enabling technologies (Web 2.0, virtualization, grid and utility computing) that comprise the infrastructure behind a cloud computing service. You'll get to examine case studies and technical business models.

Designing, Building and Integrating RESTful API | 2 Units
The course introduces the data exchange mechanism and common data formats. For Web exchange, you will learn the HTTP protocol, including how to use SOAP with XML. The course compares SOAP and REST, then covers the concepts of stateless transfer. The course focuses on RESTful API design and implementations that follow the JAX-RS standard, Java API for RESTful Web Services. You will learn how to build and consume JAX-RS services using JSON and XML, and integrate RESTful API with different data sources like relational databases, NoSQL databases, and REST wrappers for SOAP Web services through hands-on labs.

Introduction to Web Programming: JavaScript and PHP | 2 Units
This course covers basic concepts and programming skills that you need to know to program dynamic Web pages, showcasing and analyzing demos of dynamic Web pages that use JavaScript and PHP. It covers basic programming syntaxes. You'll discuss functions, events, decision making and repetition, and you'll learn to build forms and objects, take inputs and reset forms. When using PHP for server-side scripting, you'll also learn to handle user input and process form data, creating an all-in-one form.

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Curriculum continued

Programming for Cloud Computing: Amazon Web Services | 2 Units

This course reviews cloud computing that focuses on Infrastructure-as-a-Service (IaaS). Discussions will address the various AWS computing, storage, database, networking, messaging, monitoring, and deployment services as well as APIs, including EC2, Auto-Scaling, EBS, S3, SimpleDB, RDS, ElastiCache, Load Balancing, VPC, SQS, SNS, SES, CloudW atch, and Beanstalk. You will design, code and deploy a cloudfocused tool or application in an in-class project, and learn the concepts and programming techniques used by both IT professionals and application developers.

Ruby and Ruby on Rails | 2 Units

Ruby on Rails is a popular framework for creating dynamic Web 2.0 database applications. It delivers working, bare-bones Web applications out of the box, ready to be developed in your application. After an introduction to the Ruby language and the Ruby on Rails framework, this course follows a Web application build process with RoR. You will learn the key functionalities, major Web development tasks, and advanced dynamic Web features using the framework. The course covers configuration, debugging, testing, databases, AJAX on Rails, and other advanced topics.

Java Programming for Beginners | 2 Units

This course is an introduction to Java programming, starting with programming concepts and Eclipse IDE. The instructor introduces basic and intermediate Java syntax, and then methodically addresses abstraction, object-oriented paradigm, procedural programming, elementary data structures, and more. Other useful topics include graphics user interface, collections and generics. You will gain a strong conceptual foundation in these areas while starting to write programs for real applications. The course includes programming exercises.

HTML Fundamentals | 2 Units

In this hands-on course, you'll learn to code HyperText Markup Language (HTML) to meet the most current standards and practices of coding as set by the World Wide Web Consortium (W3C). It covers all the major topics of coding and validating HTML, including meeting accessibility mandates and improving search engine optimization (SEO). The course also examines the new elements introduced by HTML5. The course is for students who have not coded Web pages before, as well as for those who would like to review and update their HTML coding skills.

Java Programming, Comprehensive | 3 Units

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. You'll 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.

User Experience Design Fundamentals | 3 Units

User experience design is a major factor in creating winning industry products. This course focuses on using user-centered design strategies and methods to create effective websites and Web applications that provide an excellent user experience. The course will also expose you to the multi-disciplinary nature of the user experience design process, design thinking, and the steps you can take to succeed. The course covers methods and strategies of six overlapping phases: problem identification, information collection, idea generation, prototyping, evaluation/testing, and implementation.

Designing with Cascading Style Sheets, Fundamentals | 2 Units

Cascading style sheets (CSS) are a mandatory method for a Web designer to control the look and feel of a modern website. Combined with proper HTML markup, CSS allows for precise control over a Web page's appearance without the use of tables. This beginning course provides demonstration 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.

Internships (unpaid) | 3 Units Minimum 90 Hours Per Quarter

Enrolling in a certificate program allows you to participate in multiple unpaid internships at local companies in your field of study. Internships are available across a variety of sectors, generally at mid-sized companies, such as Agylytyx, Crowdera Inc, Innowest, and YMedia Labs. Good internships are much sought after and highly competitive. To stand the best chance of securing your preferred placement, our Internship Coordinators are on hand with expert support and guidance.

Courses in the certificate programs are subject to change based on schedule availability and/or student aptitude. Equivalent course substitutions will be made to accommodate.