





About OST

O'Reilly Media, Inc. has enabled innovators to connect with one another and to share their knowledge with the world for over 30 years. With an academic approach to publishing, research, conferences, and spotting trends, O'Reilly continually helps propel the evolution of the internet. Discerning professionals the world over look to O'Reilly for guidance as they navigate the ever-changing landscape of information technology.

The academic style that O'Reilly brings to the IT industry made it an ideal home for the unique learning system that would eventually become the O'Reilly School of Technology. The O'Reilly School of Technology (OST) was originally founded in 1997 as a private educational company called Useractive. Working in close partnership with the University of Illinois at Urbana-Champaign, a top-tier computer science university and a pioneer in online learning, Useractive set out to build a new and exceptional school that would provide high-quality IT courses and certificates series to its students. Useractive developed the revolutionary "Sandbox" system where students are guided to make their own discoveries through constructivist methods—building theories through experimentation, and receiving help and feedback from instructors through Socratic exchanges—no passive lecturing or students hiding in the back row.

With the 2005 acquisition of Useractive by O'Reilly Media, these two IT leaders combined to create the O'Reilly School of Technology (OST). OST is a private continuing education and professional development institution providing aspiring IT professionals and adult learners with innovative online education that allows them to develop skills through practical application and instructor feedback. To date, over 5,000 students have completed courses through OST, and in

a 2011 survey, over 90% of respondents were satisfied with their OST learning experience and would recommend OST to others.

OST offers a diverse array of online courses and Certificates of Professional Development. OST helps students gain the knowledge and skills they need to begin IT careers or propel their existing careers further. OST students work on their own time, at their own pace, with dedicated instructor assistance and feedback. After completing one of our Professional Development programs, our students earn not only a certificate to verify their mastery of the skills required, but they also have a portfolio of completed, real-world projects that demonstrate their proficiency. This tan-



Tim O'Reilly, founder and CEO of O'Reilly Media, speaking at the Education 2.0 Summit

gible evidence of expertise has proven invaluable to our students as they seek employment or advancement in their careers.

As a prospective student, you are encouraged to review this catalog prior to signing an enrollment agreement. You are also encouraged to review the School Performance Fact Sheet, which will be provided to you prior to signing an enrollment agreement.

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Mission and Objectives

It is the mission of the O'Reilly School of Technology to facilitate learning for adult students as they work to master new career skills in the field of Information Technology. It is our goal to help our students become more confident, competent, and experienced programmers who are prepared to succeed at each new professional challenge they encounter. By combining experiential teaching techniques, cutting-edge learning systems, real-world portfolio development, and one-to-one instructor coaching, OST has designed an educational experience that empowers students to learn not only those skills directly related to their chosen subject matter, but also those needed to become independent learners and innovators.

All courses and Professional Development Certificate programs are completed online through independent, self-paced study, under faculty supervision, with no classroom attendance requirement. OST is committed to operate ethically and professionally, with academic integrity and respect for the profession, as well as the individual student.

Objectives

All programs offered at the O'Reilly School of Technology share common objectives that are continually shaped and informed by students, faculty, staff, employers, and changes within the IT field. Our current objectives are to:

- allow students to complete courses and Certificate programs at their own individual pace.
- enable students to meet coursework requirements successfully online, while minimizing requirements for specialized technical equipment as much as possible.



- make all materials and tools necessary to successfully complete course and program requirements available to students, and deliver them as seamlessly as possible to maximize learning efficiency.
- provide students a constructivist learning system and methodology that recreates the real-world experience of the discipline being learned, as closely as possible.
- give students access to dedicated faculty members, as well as administrative and technical staff to provide assistance and guidance when needed.
- utilize evaluation materials and formative assessment methods that require students to demonstrate creativity, critical problem solving, and effective integration of concepts and skills learned.
- instill in students the value of discovery, research, practice, making and overcoming mistakes, and life-long learning.

Academic and Administrative Staff

Executive DirectorScott Gray
 Academic Director Debra Woods
 Dean of Distance Learning.....Kerry Butson
 Senior Information
 Technology ManagerTrent Johnson
 Senior Software Manager.....Josh Nutzman
 Senior Development Manager,
 Operations/Marketing.....Trish Gray
 System Administrator Dan Barrett
 Senior Web Developer,
 Open Source Technologies..... Matt Roberts
 Software Engineer,
 Proprietary Technologies..... Michael Long
 Student Support Coordinator.....Georgia McClellan
 Faculty Manager Lorri Coey
 Process and Technical Editor Steve Miller
 Pedagogy and Style Editor..... Kerry Beck
 Instructor..... Kelly Hoover
 Instructor.....Kirby Urner
 Instructor..... Jared Loy
 Instructor..... Terry Mills
 Instructor..... Ben Hengst
 Instructor.....David Romano

Executive Director **Scott Gray** has a mathematics and education background spanning 24 years, and has spent the last 18 years as a technologist in the field of distance and computer-based learning. Scott has taught mathematics at the high school and undergraduate levels at both the University of Illinois and the Ohio State University, and has presented his visions on STEM education at national and international conferences since 1993. He has consulted in both e-learning strategy and instructional design for major Universities and fortune 500 companies. Scott was a founding member of Math Everywhere, Inc., producing college-level Mathematica-based courses, and he co-founded Useractive, which under his supervision transformed into OST in 2005. Scott holds

Bachelor of Science degrees in both Mathematics and Physics, and a Master of Science in Mathematics from the Ohio State University, reaching the level of Ph.D. candidate in Mathematics specializing in non-holonomic mechanics.

Academic Director **Debra Woods** has over 25 years of experience as an instructor in both online and face-to-face formats, and has actively developed curriculum for online courses for more than 15 years. Debra was the Director of Online Mathematics in the College of Liberal Arts and Sciences at the University of Illinois. She has presented online pedagogy at conferences both nationally and internationally, and has served on campus advisory committees for implementing e-learning into the University. She was Co-Director of the Math Teacher Link program, and has written many successful grants to build online training courses for educators as well as working with teachers on STEM education. Debra also has practical experience in the field of Engineering and Computer Science as a Member of the Technical Staff in the Aerospace Engineering Industry. Debra holds a Bachelor of Arts degree in Mathematics from University of California at Los Angeles, and a Master of Science Degree in Applied Mathematics from the University of Southern California



Faculty Bios

Peter Scott is the author and curriculum developer for the Perl Programming Certificate Series. He has over 30 years experience in software development and enterprise information systems. Since 1999 he has headed his own consultancy, teaching Perl in on-site trainings and at public conferences and special events. He is the author of the books *Perl Debugged* (2001), *Perl Medic* (2004), the creator of the DVD *Perl Fundamentals* (2009), and has attended every Perl Conference since the first one in 1997. With a Master's degree in Computer Science from Cambridge University, he worked at the Royal Greenwich Observatory and Griffith Observatory before becoming a systems analyst at NASA's Jet Propulsion Laboratory in Pasadena, supporting missions to the far reaches of the Solar System; he has been a member of several teams that have won NASA's Software of the Year awards. Peter has developed across the spectrum of languages and systems from the microprocessor onward, and has done extensive enterprise-scale infrastructure architecture with emphasis on database, directory, and provisioning integration. He is currently combining his insights into team dynamics with his Master's certificate in Neuro-Linguistic Programming to deliver executive and group coaching to the high-tech industry.

Steve Holden is the author and curriculum developer for the Python Programming Certificate Series. Steve is the author of the book *Python Web Programming* (New Riders, 2002). He has actively taught at Learning Tree International for almost 20 years and has served as the Chairman of the Python Software Foundation for the last 4 years. He has worked with computers for more than 40 years, writing everything from real-time device drivers, to bill-of-materials processing systems. Steve was a tenured faculty member at the University of Manchester from 1980-1985, teaching commercial information systems to undergraduate and graduate students. He lead the team that developed VUWriter,

the first specifically mathematical and scientific word processor, and supervised the first UK implementation of the Smalltalk-80 object-oriented programming language. He later served as Senior Technical Support Specialist for Sun Microsystems and as Vice President of Operations for a web services company. An entrepreneur throughout his career, he currently runs his own independent consulting practice while continuing to coordinate technical events and Python conferences in Portland, Oregon. Steve holds a B.Sc. Hons (1st class) in Computational Science from Leeds University.

Kerry Butson is the author and curriculum developer of the JavaScript 2: AJAX course, and the Dean of Distance Education for the O'Reilly School of Technology. She has over 12 years experience in online education and has instructed thousands of students in 25 different OST courses, including those that make up the Web Programming, Linux/Unix System Administration, Python Programming, Perl Programming, and PHP/SQL Programming Certificates. Kerry has been the lead instructor at OST since 2000, when it was known as Useractive. During that time she has been an integral part of the course development team, rewriting both the HTML and JavaScript courses, testing and editing new courses to ensure they meet quality standards, and managing faculty. In addition, Kerry works with authors, editors, and the technical team to create new courses, and is currently overseeing the development of the Mobile Applications, C++, and Network Security course series. She holds a Bachelor of Science degree in Chemistry from the University of Illinois School of Chemical Sciences, where she worked as a teaching assistant. Kerry developed a passion for programming while writing her senior thesis to control and collect data from mass spectrometers for the Department of Physical Chemistry.

Trent Johnson is the author and curriculum developer for the Unix for Web Programming course, and the lead systems architect for the Linux/Unix System Administration series. He has over 18 years experience managing a variety of server base systems, working most extensively with GNU/Linux and Windows Server platforms. Trent is currently the Senior Information Technology Manager for OST, and has managed systems for the institution since its inception as Useractive in 1998. Throughout his career, he has contributed to many open source projects, including development and maintenance for the NoMad Linux distribution from 1997-2001. Prior to his work with OST, Trent managed GNU/Linux and Solaris server systems for both the Mathematics department and the Database Research Laboratory at the University of Illinois at Urbana-Champaign. He holds a Bachelor of Science degree in Computer Science from the University of Illinois College of Engineering, with an emphasis in the management of information systems.

Josh Nutzman is the author and curriculum developer for the Database Administration Certificate Series. He has over 12 years experience working with databases, data warehouses, and a variety of languages including Perl, PHP, C/C++, C#, and front end technologies, such as HTML, CSS, and JavaScript. Josh is currently the Senior Software Manager for OST, where he designs and coordinates all software development efforts. Previously a software engineer for Useractive, he designed and implemented many internal systems that are still in use today at OST. Josh has also worked with several companies in the Chicago area on website development, database administration, and data warehouse integration projects. He holds a Bachelor of Science degree in Computer Science from the University of Illinois College of Engineering, with an emphasis in database systems and administration.

Trish Gray is the author and curriculum developer for the PHP/SQL Certificate Series. She has over 24 years experience programming in a variety of languages, working most extensively in the C++ and LAMP (Linux/Apache/MySQL/PHP) technologies, as well as front-end UI development in HTML, CSS, JavaScript, and AJAX. Trish is currently the Senior Development Manager, Operations/Marketing for OST. She has worked to build the school since its inception as Useractive in 1997, creating much of its UI, databases, e-commerce, and back-end software systems. In 2002, Trish was honored by the Small Business Association as the Young Entrepreneur of the Year for the Midwest region. Prior to her work with OST, she designed curriculum for Math Teacher Link, training high school and college teachers using a classroom/online hybrid method. She also managed the Netmath program within the UIUC Math Department, teaching Calculus to distance education students utilizing the constructivist methods later implemented at Useractive and then OST. Trish holds a Bachelor of Science degree with Honors in Computer Science from the University of Illinois College of Engineering, with an emphasis in object-oriented languages, algorithms, and data structures.

Michael Long is the curriculum developer and instructor for the Java Programming Certificate Series, as well as system architect for the C#.NET Programming Certificate Series. Michael has worked with electronics and computers for over 30 years, focusing primarily on the Java, C++, and C# languages since 1990. He is currently the Software Engineer, Proprietary Technologies for OST, developing the Eclipse Learning Sandbox for presenting courses within the Eclipse Integrated Development Environment. In addition to software development, Michael has 19 years of experience in the field of education, working as an instructional assistant at Butte College, as well as a Teaching Associate at California State University, Chico. While at CSU, Michael taught Computer Literacy, Beginning Java, Advanced Java, and advanced Theory of Computing.

He was also a tenure-track instructor for the Computer Science and Computer Technology programs at Western Nevada College. Michael holds a Bachelor of Science degree in Computer Information Systems from California State University, Chico, and served as President of the Chico Alpha Chapter of Upsilon Pi Epsilon, the honor society of the Computing Sciences.

Lorri Coey is the Faculty Manager at the O'Reilly School of Technology and curriculum developer for the Client-Side and Web Programming Certificate Series. Lorri has over 14 years experience in the HTML, CSS, JavaScript, and XML languages, as well as creating and managing websites, most notably for Wolfram Research and various companies within the medical, agricultural, and publishing industries. In addition, she has 15 years experience in the field of education, both in public K-12 classrooms and online with the Netmath program at the University of Illinois at Urbana-Champaign, where she managed registrations and student services for Calculus students worldwide. Lorri holds a Bachelor of Science degree from the University of Illinois in Agricultural Communications.

Kelly Hoover is the lead instructor for the Linux/Unix System Administration Certificate Series, Introduction to PHP, and UNIX for Web Development. She has also assisted in curriculum development for C, C++, Unix for Web Development, Linux/Unix System Administration, and Introduction to PHP courses. Prior to joining OST, Kelly worked as a developer and Quality Assurance manager for a number of companies in Champaign, Illinois and the San Francisco Bay Area. She co-developed and tested web applications in the LAMP environment, with a focus on PHP/Perl, MySQL/PostgreSQL, Server Deployment, and System Administration. Kelly earned a Bachelor of Science degree in Biology, with a minor in Chemistry, and performed graduate research in Microbial Molecular Genetics and Biochemistry at the University of Illinois Urbana/Champaign, where

she also gained considerable experience teaching biology students at the collegiate level.

Kirby Urner instructs all courses within the Python Programming Certificate series. He has spent the last 20 years supporting Portland's nonprofit and government agencies with information technology training and custom database software applications. His clients have included the Oregon Food Bank, youth shelters, a volunteer transportation system, and the Royal Government of Bhutan. While working for the Providence Health System, Kirby collaborated with cardiologists and statisticians to develop medical research databases and GUIs for use in the operating room. Kirby lectures on Python instruction internationally at EuroPythons, Pycon, and OSCON, and has taught Python for the Saturday Academy in Portland, Oregon. He has also worked as a high school math teacher in Jersey City's St. Dominic Academy, and in computer literacy publishing at McGraw-Hill in New York. Kirby has a Bachelor of Arts degree in Philosophy from Princeton University.

Jared Loy instructs Java Programming courses 1 through 3 as well as the Introduction to Object-Oriented Programming course, and assists in technical testing and curriculum development for the Java 3 and C#.NET 1 and 2 courses. Jared has been experimenting with computers for over 20 years, and studied telecommunication systems for several years in the early 90's. Jared has a background in media communications that serves him well at OST, where clear explanations of complex ideas and consistent encouragement are key components to his work as an instructor. Jared attended Watkins Film School in Nashville, Tennessee, where he honed his technical skills to facilitate the successful production of a short film. He went on to produce an internationally renowned internet podcast and supporting blog featuring in-depth interviews with popular musicians, eventually taking over technical production and hosting duties of

one of the longest running community radio shows on KDHX FM in St. Louis. Jared was previously a star graduate of the O'Reilly School of Technology Java Programming Certificate Series, and has authored for Make: Magazine within the O'Reilly Media umbrella.

Terry Mills instructs the OST courses DBA 1: Introduction to Database Administration, DBA 2: Administering MySQL, and PHP/SQL 1: Introduction to Database Programming. Terry has been programming since the early 1980s and was a librarian at a public library for 25 years before coming to the O'Reilly School of Technology. Terry has a Bachelor of Science degree in Psychology from Illinois State University, and Master of Science and Certificate of Advanced Study degrees in Library and Information Science from the University of Illinois at Urbana-Champaign. In his CAS paper, Terry introduced improvements to the way library collection use data is now considered; his paper has been cited in several library science books, journal articles, and doctoral dissertations. While working as a librarian, Terry developed his library's first website. He also assisted many local non-profit organizations in setting up their first websites in conjunction with a project where the library system provided free web hosting. Before becoming an instructor, he had completed over 20 OST courses and earned five Certificates of Professional Development.

Ben Hengst is an instructor for the PHP/SQL Programming Certificate series, and is currently assisting in LAMP-based software development for OST. Ben has over 20 years experience working with computers and information technology. For the last 10 years he has worked as a web developer and programmer for various companies including Norwegian Cruise Lines, Nike Golf, KEEN, and Powells.com. His educational experience includes PDXCritique, PDXHackathon, and several local Perl training sessions, as well as presenting talks at local user groups, including Portland Perl Mongers and the Portland PostgreSQL User Group.

Ben holds a Bachelor of Science degree in Multimedia and Web Design from the Art Institute of Portland.

David Romano is an instructor for the OST Perl Programming Certificate Series. He has been programming for more than a decade in languages such as C, C++, Pascal, Java, and PLT Scheme. David's interest in languages and technology led him to earn a Bachelor of Arts degree in General Linguistics from UC San Diego, where he minored in both Latin Literature and Electrical Engineering. He has since developed many programs in Perl, one of them being a package tracking and distribution system that is still used by all of the residence life offices at UC San Diego. David worked as a computational linguist before he decided to pursue a teaching career to share his passion for learning. He has tutored and taught language, science, mathematics, and technology to children, teens, and adults, and is a credentialed teacher in the State of California. David is currently pursuing a Master of Science degree in Education at Concordia University in Irvine, California.



How OST Courses Work

The Useractive Methodology

All of our courses are presented online and are self-paced. This means there are no class schedules; you may enroll in a course at any time and finish it as quickly as you like.

The O'Reilly School of Technology has developed an online learning technique called *useractive learning*. *Useractive* means that you, the user, are actively engaged in building and creating projects as the material is being presented. We avoid the use of presentational videos and simulations, and instead provide you with tutorial-style content and Learning Sandboxes® that contain easy-to-use, real, and open programming environments where you can experiment with examples and work on projects.

From the moment you enroll, you'll start programming, working through simple examples, learning by doing as you go. You'll be actively engaged in our Learning Sandbox® where you have permission to experiment, make mistakes, and learn from those mistakes. As you progress, you'll build more and more complex programs or system administration tasks. We'll guide you through every part of this process, step by step, until you get it right.

Your skills will be reinforced as you work on increasingly challenging projects and open-ended quizzes that you'll hand in to your instructor for evaluation. Your instructor will return your work to you for revision and improvement until you get it right and have a thorough grasp on the concepts. Once you master each project, you'll move on to the next step in the course, building on what you've learned.

You'll continue to make gradual progress in this way until you're ready to apply your skills beyond your OST coursework. And when you arrive at that point, you will have built an online professional portfolio that you can keep and share proudly, even after you've completed your OST course of study. Your portfolio can serve as a complement to your resume, or to keep

and use as a reference tool to return to when you want to brush up on your skills later.

Learning Sandbox® and Portfolio Accounts

Your learning takes place using our proprietary Integrated Development Environments (IDEs) called Learning Sandboxes®. Within these Sandboxes, you will go through lessons, experiment with the examples, and build your own IT portfolio of work, all in the same place. All quizzes and projects are handed in online there as well. In addition, you can monitor your progress, see your graded files online, and communicate with your instructor, all within the Sandbox. The course lessons themselves contain references to the Sandbox system too, so that you can learn by performing tasks that will improve your ability to work effectively within it. Our courses are completely self-contained and personalized for you to practice, make mistakes, and get specialized guidance from your instructor.

Currently, our Sandbox systems consist of the CodeRunner® IDE, the IDE used for most open-source languages and system administration; our Eclipse-based Ellipse® IDE, used for Java, Python, and DBA technologies; and our special Microsoft Visual Studio Sandbox, used for C# and .NET. We have created these robust, cutting-edge Sandbox applications with these goals in mind:

- **We want you to have the power to learn anytime.** When you enroll at OST, you are given 24-hour access to your coursework, your Sandbox account, and all the technologies and tools you need. Because instructor communication is asynchronous, you can hand in assignments or ask questions at any time, and your instructor will get back to you as soon as possible. There is no need for you to work around any schedule other than

your own, and you can complete your coursework as quickly as you like.

- **We want you to have the power to learn anywhere.** Because our Sandboxes are entirely web-based, you can log in from any browser. All of your files and coursework are stored remotely within your Sandbox portfolio account on our cloud-based network, to be retrieved within the Sandbox or downloaded if you prefer. We strive to make our Sandbox technologies as platform-independent as possible. For example, Windows-based programming projects can be built on a Mac, and Linux system administration can be practiced on a Windows machine. There is no need for you to manage external software or shuffle files between computers.
- **We want you to get started right away.** Once you've enrolled, most institutions will send you materials or have you download or buy them yourself. Then you are expected to set up and configure your own technologies on your machine before you can ever start learning anything—this is inconvenient at best, and catastrophically intimidating at worst. At OST, your Sandbox accounts are created the moment you enroll in a course; these accounts contain all of the course content and tools you need in or order to start learning and building immediately.
- **We want you to learn using the real thing.** Some learning methods will encourage you to read about technologies or watch videos about them, in hopes that you'll try the tools out some other time. Other methods will simulate the technology



for a particular example, but don't provide much opportunity to experiment on your own, which severely limits your creativity and ability to discover. At OST, we bring the *actual technology* to you through your browser, so that you're working on a real system, creating open-ended, real-world projects along the way, projects that you can keep for your own portfolio. This allows you to create, discover, make mistakes, and finally gain experience that in the past has been reserved solely for interns within the industry.

Instructor Communication

Second to you, the most important participant in each OST course is your highly qualified instructor, who guides you with feedback, motivation, and encouragement throughout your journey. Your instructor is like a personal tutor or coach, who thoroughly evaluates your quizzes and projects, and helps you with any questions or problems you may have. You will keep in email contact with your instructor throughout your course, and you'll receive timely and ongoing feed-

back from him/her after submitting any quiz, project, or question.

Similar to your Learning Sandboxes, your instructor uses an innovative system to evaluate assignments and communicate with students. This advanced system prevents technology from distracting from what's most important – you and the development of your skills. In fact, we examine and monitor every aspect of our instructor qualifications, training, tools, and evaluation methods carefully in order to meet these goals:

- **We want you to work with a person who knows you.** Other institutions might give you access to a “bank” of instructors, who function more like a customer support division in a corporation. At OST, you are assigned one instructor that coaches you throughout your course, and often an entire Certificate series. You can have daily contact with your instructor if you so choose. Your instructor will be the only person evaluating your assignments and communicating with you about your coursework. By interacting with a single instructor, you are able to build a real relationship with an instructor who is familiar with you and your individual ability. In course completion surveys, students have consistently cited their instructor relationship as one of the best aspects of their experience.
- **We want you to master the material.** At OST, all of our assignments are considered *formative assessment*: creative, open-ended, and subject to student improvement. This means that, rather than multiple-choice or canned-answer evaluations, you are

asked for full explanations of your solutions, in your own voice, and projects that reflect your individuality and problem-solving methods as you fulfill the objectives. After you've submitted a project for evaluation, your instructor may see ways for you to improve or grasp the concepts more thoroughly, in which case your assignment will be sent back to you for with feedback and guidance. You'll be encouraged to keep working until you get it right and both your instructor and you are confident that you've digested the information thoroughly. Once you pass an assignment, you know you have completely mastered the lesson and have a solid foundation on which to build for the next lesson's challenges.

- **We want you to enjoy learning.** Children learn by playing, creating, and making mistakes, and they have fun doing so. At OST, by making you the most active player in your own discovery, practice, and creation, we hope to bring that childhood joy of learning back to you as an adult, while at the same time improving your career skills in a way that encourages retention and immediate application of the knowledge you gain. And maybe, just maybe, you'll have *fun*.



General Information

Continuing Education Units

- After passing each course you will earn Continuing Education Units, or CEUs. CEUs are not the same as undergraduate or graduate credits, they are a measure of continuing education and professional development. CEUs are often used by employers (in the education field, for example) as a basis upon which to recommend career advancement for employees. CEUs will also enhance your resume, as they reflect your dedication to new career skills development.
- One CEU equals approximately 10-15 clock hours of student work. Unless otherwise indicated, OST's professional development courses consist of approximately 45 clock hours of student work, corresponding to 4 CEUs per course.

When you pass a course, your Student Start Page will offer you the opportunity online to request a hard copy of a CEU letter. This is an official letter that indicates how many CEUs you have earned, the course you have passed, the date you passed it, and your official grade. After you request this letter online, please allow 2-4 weeks for delivery to your physical address.

Certificates of Professional Development

Upon satisfactory completion of all courses in an OST Certificate Series, you will earn a Certificate of Professional Development. The certificate represents mastery of the associated skill. The work required to earn this certificate, combined with the worldwide recognition of O'Reilly Media as a leader in Information Technology, ensure that inclusion of this accomplishment on your resume will have real and significant impact.

Please note that Certificates of Professional Development are not the same as exam-based industry certifications. OST Certificates are based on successful completion of a set of fully robust post-secondary education courses, involving creation of a portfolio of real-world projects and open-ended assignments that are evaluated by an instructor.

When you complete an OST Certificate Series, be sure to request all of the CEU letters associated with each of the courses within that series. Once you request all the CEU letters, the corresponding certificate is requested for you automatically. Certificates take additional time to process, so please allow 6-8 weeks for your certificate to arrive.

Book and Library Access

At OST, all course content and curricula are authored and developed by highly qualified faculty, designed specifically to facilitate the Useractive methodology, and contained within the Learning Sandbox® systems that we've created for the particular technology being learned. Each course also comes with a companion O'Reilly e-book; this is a complimentary reference tool that you can access during your coursework and beyond.

Additionally, upon enrollment you will be given special codes that can be used for steep student discounts on all O'Reilly e-books, print books, and Safari Books Online subscriptions. Safari Books Online is a library subscription service that features an innovative user interface and access to over 16,000 online books and videos from both O'Reilly and Pearson Publishing.

Student Services

At OST, our top priority is to provide an excellent student experience. We are continually looking for new ways to make your learning experience better and your alumni experience more successful. As part of this ongoing effort, we currently offer these student services:

- **Portfolio account** – As an OST student, you are provided with a web-based Sandbox account, in which all of your project files and coursework are stored. You are able to organize these files however you like, they can be built into an attractive website, complete with a web address URL that can be presented to clients, employers, or the public as a professional quality display of your new skills. This account can be kept beyond the your course enrollment period for a small monthly fee.
- **Instructor recommendation** – OST does not offer career placement services, nor guarantee career placement upon course or certificate program completion. However, students may request a written recommendation upon course completion or certificate program graduation and may be provided for exceptional students, at the discretion of the instructor.

Public Services

- **Electronic newsletter** – OST produces an email-based newsletter that is sent periodically to all active students, alumni, and others who opt into this service. This newsletter provides updates on new courses and certificates available, upcoming events, newsworthy links, special promotions, Student of the Month honorees, and other information that may be of interest or benefit to students and alumni.
- **Blog** – OST dedicates a portion of its website to a blog in which our directors, faculty, staff, and other thought leaders in education and the IT industry contribute on a regular basis, and

encourage feedback from students and alumni. Posts in this blog range from in-depth analysis of OST's pedagogical history, to job market snapshots within the IT industry, to outside reviews of OST and calls for suggestions. <http://blog.oreillyschool.com>

- **Social media** – OST has an active and lively presence on several widely-used social media platforms, each of which has specific benefits for students:

The OST page on Facebook allows students and alumni to interact with each other and with OST faculty and staff, to build community and to stay informed and current about OST and the world of Information Technology. Posts range from descriptions of instructors' favorite student projects, to updates on OST's inner workings, to supplemental education materials that can be found on the Web. <http://www.facebook.com/oreillyschool>

OST's Twitter presence is focused on sharing tips and information about career and skills improvement in the Information Technology field, as well as wisdom from OST authors, bloggers, leaders in the IT industry, and even Tim O'Reilly himself. All students and alumni are invited to interact directly with OST at @oreillyschool, or through the hashtag #oreillyschool during special events, webcasts, or discussions. <http://www.twitter.com/oreillyschool>

OST's profile on LinkedIn provides students and alumni with a valuable professional network that helps them make connections with each other and with other professionals, companies, or employers in the IT field. <http://www.linkedin.com/company/o'reilly-school-of-technology>

Requirements

Admission Requirements

Currently, OST has an open admissions policy. To enroll in our courses, you need to:

- be able to use a browser proficiently
- be able to use email
- speak and read English fluently
- be self-motivated and ready to learn by experimentation and creation

In addition, students younger than 18 years of age and non-native English speakers will be subject to the academic policies specified in the Academic Policies section of this catalog. Admission and continuation of any student is entirely at the discretion of OST, and may be refused at any time.

Technical Requirements

When building and continually improving our Learning Sandbox systems, we do everything in our power to make them as platform-independent as possible. This table lists the current technical requirements for all OST courses:

Operating System:	Windows XP or newer, MacOS 10.4 or newer. Linux RedHat and Debian ok (see below).
Internet Connection:	Any internet connection will suffice.
Browser:	Firefox 3.xx, Safari 3.xx, or Internet Explorer 7.xx, or newer. Popup windows and cookies must be enabled in your web browser. Your browser must also support Java applets.
Note:	Students have success using the Linux operating system and Mozilla on a variety of platforms, such as RedHat and Debian. If you use a lesser-known flavor of Linux, be sure to try out the Learning Sandbox thoroughly to make sure it works for you. If it doesn't, simply let us know within 7 days for a full refund.

Time and Residence Requirements

OST uses a rolling admissions process, which allows you to register and begin courses or certificate programs at any time. All programs are self-paced, which means that you can advance and complete your programs as rapidly as your own schedule and ability permit.

We've calculated the number of student clock-hours we anticipate it will take to complete each course—most OST courses are listed at 45 clock-hours. You may require more or less time than posted for a course, but generally speaking, you should plan to spend the estimated clock-hours in order to complete each course and certificate series.

Upon enrollment in one or more OST courses, you are given a six-month enrollment period in which to complete all of them. You are not expected to take them concurrently, and you can approach them in any order you like, as long as you have the prerequisite skills for each course when you begin. If you enroll in all courses within a certificate series at once, you are given a 12-month enrollment period in which to complete those courses, sequentially. If at the end of that enrollment period you need more time to complete your coursework, you may extend your enrollment by paying a monthly fee for up to two years beyond the end of the original enrollment period.

OST students are not obliged to fulfill classroom attendance or on-campus residence requirements as they might at a traditional institution of higher learning. You will complete all of your course requirements using the appropriate Learning Sandbox technology on your web browser, under the guidance and supervision of your instructor.

Completing Coursework Requirements

To successfully complete a course, you must successfully complete every open-ended quiz and project within the course.

- To successfully complete a quiz, you must answer each question with insight and explanation.
- To successfully complete a project, you must create it with a professional portfolio in mind. Present a visually attractive project, while meeting the listed objectives and keeping content informative and relevant.

In accordance with our Useractive methodology and formative assessment, we believe you cannot learn a skill without making mistakes and then figuring out for yourself how to correct them. Therefore, if your instructor (at his/her discretion) finds your quiz or project below the standards stated above, you will be asked to improve the quiz or project in question and hand it in until you get it right. *Having your projects and quizzes returned for improvement is a normal occurrence and should not be misconstrued as failure in any way.* You will find that your instructor is patient and in fact, expects you to have such difficulties. It is part of the Useractive learning process. Your instructor will encourage you in a Socratic method, inviting dialogue and exchange of projects and ideas until you have master a selected skill. Before you move on to the next skill in the sequence of the course, you should be fully prepared to tackle the next step in your learning process.

Prerequisites and Credit Transfers

Courses in our catalog may list prerequisite skills that you'll need in order to be successful in that course. The prerequisite skills can often be attained by completing a corresponding OST course. If you are confident that you already have the prerequisite skills needed for a course, it is not necessary for you to prove those skills before enrolling in that course. However, if you or your instructor find that your current skills are not sufficient



to make progress in the course, you may be asked to withdraw and re-enroll in the prerequisite course.

If you are pursuing a Certificate of Professional Development, you must successfully complete all courses within that Certificate Series, regardless of prerequisite skills you may already have mastered. Currently, OST is unable to accept transfer or experiential credit for certificate programs.

NOTICE CONCERNING TRANSFERABILITY OF CREDITS AND CREDENTIALS EARNED AT OUR INSTITUTION

The transferability of credits you earn at OST is at the complete discretion of an institution to which you may seek to transfer. Acceptance of the certificate and/or Continuing Education Units you earn in this educational program is also at the complete discretion of the institution to which you may seek to transfer. If the certificate and/or Continuing Education Units that you earn at this institution are not accepted at the institution to which you seek to transfer, you may be required to repeat some or all of your coursework at that institution. For this reason you should make certain that your attendance at this institution will meet your educational goals. This may include contacting an institution to which you may seek to transfer after attending OST to determine if your certificate and/or Continuing Education Units will transfer.

Academic Policies

Withdrawal Policy

To cancel your enrollment agreement and withdraw from ALL courses listed above within the 7-day period, you must log into your Student Start Page (<https://oreillyschool.com/student/>) and follow the instructions listed under "Cancel Your Enrollment Agreement." You may be asked to submit a short survey and cancellation form. Once you submit this form, you will receive the agreed refund amount as soon as possible: within 1 week for credit card payments, and within 30 days for check payments.

If you opt to cancel within the first 7 days, you will not be eligible for course completion, Continuing Education Units, or certificate program graduation, regardless of the extent and amount of course material you have completed within any course.

To withdraw from any or all courses after the initial 7-day period, you must notify OST in writing. If you log into your Student Start Page (<https://oreillyschool.com/student/>), you'll find a link under "Withdraw from Course" leading to a form that you can download, print and sign. You may be asked to fill out a short survey and sign a cancellation form agreeing to the amount of refund that will be applied (in accordance with the stated Refund Policy listed below) and understanding the implications of cancellation and re-enrolling at a later date. Once we have received this signed and dated form, you will receive the agreed refund amount within 30 days of the date of receipt.

Termination Policy

You may be terminated or disqualified from your program of study for any of the following reasons:

- Failure to pay tuition, registration fees, and/or lab fees according to your enrollment agreement.
- Plagiarism in any form.
- Repeated failure to submit work according to the standards specified in the course materials and instructions provided by OST and your instructor.

- Falsification of records, contact/payment information, or coursework documents submitted for review or credit.
- Deceit, fraudulence, cheating, unethical or disruptive behavior, forgery or vandalism.
- Failure to demonstrate reasonable and successful academic progress.

Reinstatement Policy

If you voluntarily withdraw or are involuntarily withdrawn from your program for failure to meet financial or academic requirements and wish to be reinstated to an active status, you can request to do so through the Student Start Page (<https://oreillyschool.com/student/>) or by contacting OST directly. You may be assessed unpaid lab fees and/or a \$50.00 non-refundable account retrieval fee. You will also be required to meet the current academic requirements and standards established by OST. Previously completed coursework may be transferred into the current program when possible and applicable.

OST reserves the right to refuse admission or continuation to any student.

Student Leave of Absence

At OST, we understand that our students have other obligations, and that unexpected events can occur which may require a student to take a leave of absence. You can request a leave of absence through your Student Start Page (<https://oreillyschool.com/student/>), by freezing your account.

If you freeze your account during the enrollment period listed in your Enrollment Contract, the enrollment period will continue to be in effect and will end on the same date listed, regardless of when you return. If your enrollment period ends before you return, you may be assessed lab fees in order to continue your enrollment.

If you freeze your account after the enrollment period has ended, any monthly lab fees you are accruing will be stopped temporarily, and then will resume once you return to complete your coursework.

Professional Licenses, Certifications, and Credentials

Licensure, exam-based certifications, and credentialing requirements vary from district to district, state to state, and across different corporate entities. OST's coursework requirements have not been designed to meet any particular industry's exam-based certifications, nor any particular local, state, or national licensing or credentialing requirements. However, in some cases students and graduates have experienced success in qualifying for examinations or fulfilling other academic requirements as a direct or indirect result of the coursework completed at OST.

If you are interested in any type of exam-based certification, licensing or credentialing, we advise you to check with their respective industry sponsors, state agencies, school districts or professional associations before enrolling in an OST program.

Student Records

Your student records will be stored securely at our Illinois data center, which is compliant with all safety standards and privacy laws for the states of California and Illinois. In compliance with the California Private Postsecondary Act of 2009, we will maintain your detailed student records for a minimum of 5 years, and your transcript of grades, courses, and certificates earned permanently.

Foreign Student Policy

All OST students must be fluent in the English language. If English is not your native language, you must demonstrate college-level proficiency in written English within the first 7 days of enrolling in an OST course to ensure that you have the ability to progress successfully in that course. OST has the right to refuse enrollment or continuation to any student.

OST does not offer any type of remedial or specialized training in the English language, nor do we provide any type of visa services or assist with the verification of immigration status of any students' as it may pertain to the student's relationship with the United States Government.

Ability-to-Benefit Student Policy

If you do not have a high school diploma or G.E.D., California state law requires that you take an examination that demonstrates your ability to benefit from post-secondary coursework.

OST uses the Accuplacer Online test for your Ability to Benefit evaluation. The Accuplacer Online test consists of two parts, English and Math. It will take approximately 90 minutes to complete both parts of the test, however the test is not timed, so you need not rush through the test. For more information, please contact OST directly. For more information, you may also visit the Accuplacer website here: <https://www.accuplacer.org/cat/>

Academic Integrity Policy

At OST, academic honesty and integrity is crucial to the success of our students and our school. As a student, you are expected to conduct yourself in a mature, professional, and ethical manner.

You may be terminated or disqualified from your program of study for any of the following reasons:

- Failure to pay tuition, registration fees, and/or lab fees according to your enrollment agreement.
- Plagiarism in any form.
- Repeated failure to submit work according to the standards specified in the course materials and instructions provided by OST and your instructor.
- Falsification of records, contact/payment information, or coursework documents submitted for review or credit.
- Deceit, fraudulence, cheating, unethical or disruptive behavior, forgery or vandalism.
- Failure to demonstrate reasonable and successful academic progress.

Certificates of Professional Development



Client-Side Web Programming Certificate

This series is comprised of three courses spanning basic web design and front-end web development through complex user-interface manipulation and creation of a professional website. You'll learn the core technical skills necessary for a complete and practical understanding of front-end web development, from HTML and CSS to the JavaScript DOM and AJAX. This series will give you the skills and experience needed to create rich user experiences on the Web, from begin-

ning HTML to web services and social media APIs.

Upon completion, not only will you have earned CEUs and a Certificate of Professional Development, but you will also have built an attractive, robust website that can be displayed as part of your professional portfolio.

Prerequisites: No prerequisite skills or programming experience is required.

<i>Required Courses</i>	<i>Clock-hours</i>	<i>CEUs</i>	<i>Tuition</i>
Introduction to HTML and CSS	45	4	398.00
JavaScript 1: Introduction to JavaScript	45	4	398.00
JavaScript 2: AJAX	45	4	398.00
Totals:	135	12	1194.00

C#.NET Programming Certificate

The C#.NET Programming Certificate series consists of four courses covering basic-to-complex programming in C# and utilizing the .NET framework within the Visual Studio platform. In C# 1, you will learn the basics of the C# language with an introduction to classes and object orientation. You will also begin using the .NET base class libraries and will create simple Graphical User Interfaces (GUIs). C# 2 builds on the first course with a more in depth look into classes, objects, methods, and constructors. In C# 3 you will expand your understanding of object oriented concepts, and push the C# language to build more complex applications.

Finally, in C# 4 you will explore user interface design concepts using .NET, including XAML, WPF, and XML topics.

Upon completion of the series you will have created several complex .NET applications that can be displayed in a professional portfolio, and will have substantial experience programming in an object oriented language. You will also be proficient at using Visual Studio, the most popular Integrated Development Environment (IDE) from Microsoft.

Prerequisites: No prerequisite skills or programming experience is required.

<i>Required Courses</i>	<i>Clock-hours</i>	<i>CEUs</i>	<i>Tuition</i>
C#.NET 1: Introduction to Object Oriented Programming using C#	45	4	398.00
C#.NET 2: C# Programming in the .NET Framework	45	4	398.00
C#.NET 3: Advanced C# Programming	45	4	498.00
C#.NET 4: User Interface Design Using C#, XAML and WPF	45	4	498.00
Totals:	180	16	1792.00

Database Administration Certificate

The Database Administration Certificate series is comprised of four courses covering the core technical and theoretical skills necessary for a complete understanding of database administration using the popular open-source technologies MySQL, Talend Open Studio, and Mondrian.

The first course spans beginning table creation and manipulation through advanced database topics such as stored procedures, views, and pivots. In DBA 2, you'll perform common database administration tasks such as user management, security, backups, and restores. DBA 3 builds on the first two courses, taking you through the actual design and implementation of

a relational data warehouse. The final course introduces data mining as you learn how to build and query a multidimensional data warehouse.

This series will enable you to garner the skills, experience and confidence needed to build, administer, and analyze large-scale database systems. Upon completion, not only will you have earned CEUs and a Certificate of Professional Development, but you will have built a complex data warehouse that can be displayed as part of your professional portfolio.

Prerequisites: No prerequisite skills or programming experience is required.

<i>Required Courses</i>	<i>Clock-hours</i>	<i>CEUs</i>	<i>Tuition</i>
DBA 1: Introduction to Database Administration	45	4	398.00
DBA 2: Administering MySQL	45	4	398.00
DBA 3: Creating a Data Warehouse	45	4	448.00
DBA 4: Analyzing Data	45	4	448.00
Totals:	180	16	1692.00

Java Programming Certificate

The Java Programming Certificate series is comprised of four courses covering beginning to advanced Java and object-oriented programming concepts, as well as skills using the Eclipse open-source Integrated Development Environment, an IDE commonly used for development in a number of technologies. When you complete this certificate series, you will be able to create applications in Java that utilize object-oriented design, JDBC (Java Database Connectivity), multi-threading, interactive GUI (Graphical User Interface), I/O, and sockets.

Upon completion, not only will you have earned CEUs and a Certificate of Professional Development, but you will have built several robust Java applications that can be displayed as part of your professional portfolio.

Prerequisites: You must have basic skills in object-oriented programming in order to complete this series. You can meet this prerequisite by completing the OST course *Introduction to Object-Oriented Programming* or *JavaScript 1: Introduction to JavaScript*.

<i>Required Courses</i>	<i>Clock-hours</i>	<i>CEUs</i>	<i>Tuition</i>
Java 1: Introduction to Java and the Eclipse Development Environment	45	4	398.00
Java 2: The Java Programming Language	45	4	398.00
Java 3: Java Programming Foundations	45	4	398.00
Java 4: Java Applications Building	45	4	398.00
Totals:	180	16	1592.00

Linux/Unix System Administration Certificate

In the Linux/Unix System Administration Certificate series, you'll learn how to administer large-scale systems of networked servers as you gain experience with an actual root access server account. This four-course series starts with basic Linux/Unix file system commands, then takes you all the way through to advanced networking, Unix services, and admin-focused shell scripting. You'll work your way through real-world system administration challenges such as configuring user permissions, manipulating regular expressions, routing IP addresses, installing web

servers, managing email systems, data manipulation, and recursive searches.

This series will enable you to garner the skills, experience and confidence needed to build, network, maintain, and automate complex Linux or Unix based systems. Upon completion, not only will you have earned CEUs and a Certificate of Professional Development, but you will have built your very own server network as part of your professional portfolio.

Prerequisites: No prerequisite skills or programming experience is required.

<i>Required Courses</i>	<i>Clock-hours</i>	<i>CEUs</i>	<i>Tuition</i>
Linux/Unix 1: The Unix File System	45	4	398.00
Linux/Unix 2: Networking and DNS	45	4	398.00
Linux/Unix 3: Unix Services	45	4	398.00
Linux/Unix 4: Scripting for Administrators – Sed, Awk, and Perl	45	4	398.00
Totals:	180	16	1592.00

Open Source Programming Certificate

The Open Source Programming Certificate series covers Perl programming, SQL database programming, PHP programming, Python programming, and basic Linux/Unix system administration, so you can acquire the diverse skills necessary for a comprehensive understanding of programming using open source operating systems, languages, libraries, and databases. This series is comprised of five courses that span a wide range of programming and administration skills from the beginning to intermediate level, allowing you to combine the various languages and

technologies as you create database-driven websites on Linux or Unix platforms.

Upon completion, not only will you have earned CEUs and a Certificate of Professional Development, but you will have built attractive, robust web interfaces and database applications that can be displayed as part of your professional portfolio.

Prerequisites: You will need to have basic skills in web design using HTML and CSS in order to complete this series. You can meet this prerequisite by completing the OST course *Introduction to HTML and CSS*.

<i>Required Courses</i>	<i>Clock-hours</i>	<i>CEUs</i>	<i>Tuition</i>
Perl 1: Introduction to Perl	45	4	398.00
Python 1: Beginning Python	45	4	398.00
Linux/Unix 1: The Unix File System	45	4	398.00
Introduction to PHP	45	4	398.00
PHP/SQL 1: Introduction to Database Programming	45	4	398.00
Totals:	225	20	1990.00

Perl Programming Certificate

The Perl Programming Certificate series comprises four courses that enable you to start without any Perl knowledge and then progress to an advanced level that includes use and creation of objects and reusable code. Assuming that students have had no exposure to Perl and little programming experience, well-known Perl trainer and author Peter Scott takes you through exception handling, multiprocessing, and object-oriented programming principles to web page scraping, HTML parsing, email creation, database interaction, web form handling, and using the power of CPAN, the world's largest repository of open-source scripting code.

In this series, you will learn how to use regular expressions, and perhaps more importantly, how they work, which will provide you with the important mental model that many programmers lack. You will learn Perl's data types and how to form arbitrarily

complex data structures that model any problem. And you will learn how to recognize common Perl programming problems, their causes, and solutions. This series follows best practices for creating the most maintainable code, as honed by Peter Scott, and promoted by the most respected names in Perl. You will cultivate programming skills that are predominantly portable across all platforms running Perl, and topics in the final course are focused on the open-source LAMP (Linux, Apache, MySQL, Perl) stack.

Upon completion, you will have earned CEUs and a Certificate of Professional Development, and you will have built large-scale web interfaces and database applications in Perl that can be displayed as part of your professional portfolio.

Prerequisites: No prerequisite skills or programming experience is required. →

Perl Programming Certificate *continued*

<i>Required Courses</i>	<i>Clock-hours</i>	<i>CEUs</i>	<i>Tuition</i>
Perl 1: Introduction to Perl	45	4	398.00
Perl 2: Intermediate Perl	45	4	398.00
Perl 3: Advanced Perl	45	4	398.00
Perl 4: Applied Perl	45	4	398.00
Totals:	180	16	1592.00

Python Programming Certificate

As you progress through the four courses of the Python Programming Certificate series, you'll become increasingly proficient at this versatile and popular programming language. Author Steve Holden is a leader of the Python community with over thirty years of instructional experience. In these courses, you will learn everyday Python techniques with a progressively increasing emphasis on test-driven development. You can use and adapt these techniques to sit your own specific programming requirements.

The first course introduces the Python language, and by the end of the second you have created graphical user interfaces, accessed a relational database and

analyzed email messages. Python 3 increases your language mastery by explaining some of the secrets of the interpreter "under the hood." The final course rounds out the whole experience, providing you with a holistic knowledge of Python that will build your confidence in and command of Python.

Upon completion, not only will you have earned CEUs and a Certificate of Professional Development, but you will have built large-scale web interfaces and database applications in Python that can be displayed as part of your professional portfolio.

Prerequisites: No prerequisite skills or programming experience is required.

<i>Required Courses</i>	<i>Clock-hours</i>	<i>CEUs</i>	<i>Tuition</i>
Python 1: Beginning Python	45	4	398.00
Python 2: Getting More Out of Python	45	4	398.00
Python 3: The Python Environment	45	4	398.00
Python 4: Advanced Python	45	4	398.00
Totals:	180	16	1592.00



PHP/SQL Programming Certificate

PHP and MySQL complement each other; the former has been adapted carefully, through the efforts of the open-source community, to work with the latter. The PHP/SQL Programming Certificate series is comprised of four courses covering beginning to advanced PHP programming, beginning to advanced database programming using the SQL language, advanced relational database theory, and advanced User Interface (UI) techniques using PHP and SQL on the Unix/Linux MySQL platform. In this series, you'll learn the core technical and theoretical skills necessary for a complete understanding of database design and programming using the open-source LAMP (Linux, Apache, MySQL,

PHP) framework, object-oriented design patterns, social web APIs, and Web 2.0 UI techniques.

Upon completion, not only will you have earned CEUs and a Certificate of Professional Development, but you will have built complex web interfaces, large-scale database applications, RSS-based web services, and entire social media websites that can be displayed as part of your professional portfolio.

Prerequisites: You must have basic skills in web design using HTML and CSS in order to complete this series. You can meet this prerequisite by completing the OST course *Introduction to HTML and CSS*.

<i>Required Courses</i>	<i>Clock-hours</i>	<i>CEUs</i>	<i>Tuition</i>
Introduction to PHP	45	4	398.00
PHP/SQL 1: Introduction to Database Programming	45	4	398.00
PHP/SQL 2: Relational Theory and Logical Design	45	4	398.00
PHP/SQL 3: Seamless Web 2.0 Integration	45	4	398.00
Totals:	180	16	1592.00

Web Programming Certificate

The Web Programming Certificate series covers HTML/CSS, JavaScript, XML, SQL, PHP, and Unix, so you can acquire the diverse skills necessary for a comprehensive understanding of web programming, administration, and website development. This series spans a wide range of web design, front-end and back-end development, and web administration skills from beginning to intermediate level, allowing you to combine various languages and technologies, as you

create rich user interfaces and scalable database-driven websites.

Upon completion, you will have earned CEUs and a Certificate of Professional Development. You will also have access to the attractive websites and robust database applications that you've built and will be able to display as part of your professional portfolio.

Prerequisites: No prerequisite skills or programming experience is required.

<i>Required Courses</i>	<i>Clock-hours</i>	<i>CEUs</i>	<i>Tuition</i>
Introduction to HTML and CSS	45	4	398.00
JavaScript 1: Introduction to JavaScript	45	4	398.00
Introduction to XML	45	4	398.00
Introduction to PHP	45	4	398.00
PHP/SQL 1: Introduction to Database Programming	45	4	398.00
Unix for Web Programming	35	3	298.00
Totals:	260	23	2288.00

Course Catalog

Linux/Unix 1: The Unix File System

45 Clock-hours 4 CEUs 398.00

This first course in the Linux/Unix System Administration Certificate series familiarizes students with the Linux and Unix environments and covers the basics of system administration and user management. You will learn and perform on actual Redhat Linux systems that are provided by OST and accessed online through your Learning Sandbox portfolio account. This course covers topics including: Navigating Linux/Unix file system, permissions, text editors, shells, obtaining system info, pipes and grep, regular expressions, symbolic and hard links, tar and gzip, SSH and telnet, syslog, cron, and managing users.

Prerequisites: No prerequisite skills or programming experience is required.

Introduction to HTML and CSS

45 Clock-hours 4 CEUs 398.00

In this course, you will learn to create an appealing and organized website using basic and intermediate HTML and CSS. You will go from learning basic tags and how to create hyperlinks to image placement, tables, iframes, and forms. Then you'll go on to use Cascading Style Sheets (CSS) to control the look and placement of these HTML elements. Additionally, you'll learn about box properties, external style sheets, and how to create HTML source code that is both readable and upholds XHTML standards. Introduction to HTML and CSS covers topics including HTML tags and attributes, links, images, tables, iframes, forms, spans, divs, CSS style sheets, box properties, XHTML, HTML W3C standards, and more. From beginning to end, you'll learn by creating your own HTML based projects. These projects, as well as the final project, will bolster your portfolio and provide invaluable experience.

Prerequisites: No prerequisite skills or programming experience is required.

Introduction to Object-Oriented Programming

45 Clock-hours 4 CEUs 398.00

In this course, you'll be exposed to the concepts, fundamental syntax, and the thought processes behind true object-oriented programming. Completion of this course will give you the tools and basic knowledge you need to learn more specific object-oriented programming techniques in languages such as Java, C++, C#, and VB.NET. From beginning to end, you will learn by doing your own Java applet-based projects. These projects, as well as the final project, will bolster your portfolio and provide invaluable experience.

Prerequisites: No prerequisite skills or programming experience is required.

Introduction to C Programming

45 Clock-hours/ 4 CEUs 398.00

In this course, you will learn the fundamentals of programming and the basics of the C language. This course covers far-reaching topics from variable types and arrays, to retrieving input from a user, to more advanced topics such as pointers and recursion, all of which provide the framework needed to become a good C programmer. Other topics covered include compiling, variables, math, input/output, conditional statements, loops, and arrays. From beginning to end, you will learn by making your own C programming-based projects. These projects, as well as the final project, will improve and expand your professional portfolio.

Prerequisites: No prerequisite skills or programming experience is required.

C++ Programming 1: Introduction to C++

45 Clock-hours/ 4 CEUs 398.00

In this course, you will learn the fundamentals of object-oriented programming and the basics of the C++ language. This course covers everything from the different variable types, arrays, and functions, to getting input from users. Additional topics include, but are not limited to compiling, variables, math, input/output, conditional statements, loops, and arrays. From beginning to end, you will learn by doing your own C++ programming-based projects. These projects, as well as the final project, will enhance your professional portfolio and provide invaluable experience.

Prerequisites: No prerequisite skills or programming experience is required.

C#.NET 1: Introduction to Object-Oriented Programming Using C#

45 Clock-hours 4 CEUs 398.00

In this course, you will learn your way around both Visual Studio and the .NET Framework. You will work with a variety of form controls and base class libraries to create simple Graphical User Interfaces (GUIs). The course covers variables, relational operators, decision statements, classes, and methods and additional topics that will provide a foundation upon which you can build your knowledge of object oriented design concepts and the C# programming language. You will create several applications throughout the course, which will enhance your professional portfolio and help you advance toward certificate completion.

Prerequisites: No prerequisite skills or programming experience is required.

DBA 1: Introduction to Database Administration

45 Clock-hours/ 4 CEUs 398.00

Database administrators and programmers are often faced with tables and structures that were designed by other programmers. In order to conceptualize database objects and structures, you will need to understand the capabilities of modern database systems and how to retrieve database metadata. In this course, you will learn to design and create a database using basic SQL commands. You will also learn to manipulate data stored in tables, and return results that will allow you to analyze the data stored. You will learn by creating SQL-based projects in your own MySQL shell. These projects, as well as the final project – developing tables for a blog – will bolster your professional portfolio and help you to advance toward certificate completion.

Prerequisites: No prerequisite skills or programming experience is required.

Perl 1: Introduction to Perl

45 Clock-hours/ 4 CEUs 398.00

Perl has long been considered “the duct tape of the Internet.” It is used to do everything from building web pages to creating back-end applications and administrative scripts. Countless programs have been written in Perl over the last twenty years. In this course, you will learn the basics of scripting with Perl. Data types, conditionals, interpolation, arrays, lists, and hashes are all covered. You’ll then move on to cover subroutines, loops, formatted printing, data mapping, sorting, and working with external files. From beginning to end, you will learn by doing real Perl projects within the CodeRunner Learning Sandbox. These projects, as well as the final project, will bolster your professional portfolio and contribute toward certificate completion.

Prerequisites: No prerequisite skills or programming experience is required.

Python 1: Beginning Python

45 Clock-hours/ 4 CEUs 398.00

Python is a popular interpreted programming language used by many large organizations such as Google, O'Reilly, YouTube, Yahoo, CERN, and NASA. Python is fast and has several libraries and modules you can use to accomplish just about any programming task. In this course, you will learn the basics of programming with Python. Using the Eclipse-based Learning Sandbox we call Ellipse, you will learn about expressions, variables, conditionals, loops, lists, sets, dicts, functions, objects, and exceptions. From beginning to end, you will learn by doing real Python projects. These projects, as well as the final project, will enhance your professional portfolio and advance you toward certificate completion. By the end of the course, you will be ready to work on and build entire programs written in Python.

Prerequisites: No prerequisite skills or programming experience is required.

C#.NET 2: C# Programming in the .NET Framework

45 Clock-hours/ 4 CEUs 398.00

In this course you will gain a deeper understanding of object oriented programming. You will learn about data types and scope, and create programs using models, classes, objects, methods, and constructors, as well as the ways in which these elements relate to one another. File Input/Output (I/O) topics are also covered, allowing you to both read from and write to files. As you create increasingly complex projects, you will learn ways to debug your code as well. You will create several applications throughout the course, which will enhance your professional portfolio and also contribute toward certificate completion.

Prerequisites: *C#.NET 1: Introduction to Object-Oriented Programming Using C#*, or equivalent skills.

Linux/Unix 2: Networking and DNS

45 Clock-hours/ 4 CEUs 398.00

This is the second part in the Linux/Unix System Administration Certificate series. In this course, you'll continue to use real systems while learning to interface a Unix-based system with a network. You will start by learning about IP addresses and how to configure ethernet devices, discovering many of the services offered by a Unix server, and finishing up by configuring your very own DNS service from scratch. From beginning to end, you will learn by configuring a real Linux network. You will have root and console access to real machines, which will allow you to gain valuable real-world networking experience. The projects you complete throughout the course, as well as the final project, will enhance your professional portfolio and help you to advance toward certificate completion.

Prerequisites: *Linux/Unix 1: The Unix File System*, or equivalent skills.

DBA 2: Administering MySQL

45 Clock-hours/ 4 CEUs 398.00

In this course, you will learn to estimate database capacity needs and install a MySQL server. You will set up database users, grant permissions, and apply advanced security to database objects, as you learn to create and maintain database indexes. To ensure proper data security, you will learn to create backups and ways to restore data. You will also provide data to external systems using exports, and learn the processes that will allow you to include external data using imports. Finally, you will learn to track database performance, and ways to troubleshoot various problems you might encounter. From beginning to end, you will learn by creating projects in your own Unix and MySQL environments. These projects, as well as the final project - developing a complete database and demonstrating administrative tasks - will enhance your professional portfolio and bring you closer to certificate completion.

Prerequisites: *DBA 1: Introduction to Database Administration*, or equivalent skills.

Introduction to PHP

45 Clock-hours/ 4 CEUs 398.00

In this PHP class, you will learn basic to intermediate programming aspects of the hypertext preprocessor language. PHP is a versatile server-side programming language that works in conjunction with client-side web languages such as HTML/CSS and JavaScript. PHP can be used to create various dynamic web interfaces, and because of its open-source robustness, has become one of the most widely used programming languages for the Internet. Introduction to PHP covers topics including variables, operators, control structures, loops, arrays, strings, functions, files, cookies, sessions, and more. From beginning to end, you will learn by doing your own PHP based projects. These projects, as well as the final project – building a shopping cart - will bolster your professional portfolio and provide an invaluable foundation of knowledge and experience.

Prerequisites: *Introduction to HTML and CSS*, or equivalent skills.

Java 1: Introduction to Java and the Eclipse Development Environment

45 Clock-hours/ 4 CEUs 398.00

In this course, you'll learn the fundamental concepts and syntax of the Java Programming language. Throughout the course, you will learn by building examples using the Eclipse Java Development Environment, which is supplied as a Learning Sandbox called Ellipse. Upon completion of this course you will have a basic understanding of object-oriented techniques in Java, as well as the Eclipse IDE. From beginning to end, you will learn by doing your own Java projects, which will enhance your professional portfolio and provide invaluable experience.

Prerequisites: Some programming experience is required. If you are a beginner, we recommend com-

pleting either *Introduction to Object Oriented Programming* or *Javascript 1: Introduction to JavaScript* before enrolling in the Java 1 course.

Java 2: The Java Programming Language

45 Clock-hours/ 4 CEUs 398.00

In this course, you'll learn more concepts and syntax of the Java Programming language in greater depth. Throughout the course, you will learn by building examples using the Eclipse Java Development Environment, which is supplied as a Learning Sandbox called Ellipse. Completion of this course will give you an intermediate understanding of object-oriented techniques in Java, as well as using the Eclipse IDE. Java 2 covers Data Types, Logic, Arrays, and Loops. From beginning to end, you will learn by doing your own Java projects, which will bolster your professional portfolio and provide invaluable knowledge and experience.

Prerequisites: *Java 1: Introduction to Java and the Eclipse Development Environment*, or equivalent skills.

JavaScript 1: Introduction to JavaScript

45 Clock-hours/ 4 CEUs 398.00

In this course, you will learn the basics of JavaScript programming and ways to adapt that knowledge to meet your own professional goals and create projects. You will learn how to trigger JavaScript programs with web-based events, like clicks or mouse movements. You will explore the power of objects, methods, and properties, and how to use them to manage and manipulate the elements of a web page using the Document Object Model. From beginning to end, you will learn by doing your own JavaScript based projects. These projects, as well as the final project, will enhance your professional portfolio and will advance you toward certificate completion.

Prerequisites: *Introduction to HTML and CSS*, or equivalent skills.

PHP/SQL 1: Introduction to Database Programming

45 Clock-hours/ 4 CEUs 398.00

SQL (Structured Query Language) is the language used in databases such as Oracle, MySQL, and MS Access, to name a few. Knowing SQL is paramount to using these database management systems. In this course, you will learn basic SQL database creation and manipulation, as well as how to search databases and incorporate them into PHP-based programs and applications. From beginning to end, you will learn by doing your own SQL-based projects using PHP. These projects, as well as the final project, will enhance your portfolio and advance you toward certificate completion.

Prerequisites: *Introduction to HTML and CSS* and *Introduction to PHP*, or equivalent skills.

Unix for Web Programming

35 Clock-hours/ 3 CEUs 298.00

In this course, you will learn basic directory and file administration on the Unix or Linux platform, as well as web server configuration, maintenance, and base-line shell-scripting. You will also learn web and internet troubleshooting techniques to use on Unix-based web programming projects. From beginning to end, you will learn by doing your own Unix/Linux projects. These projects, as well as the final project, will enhance your professional portfolio and advance you toward certificate completion.

Prerequisites: *Introduction to HTML and CSS* and *Perl 1: Introduction to Perl*, or equivalent skills.

Introduction to XML

45 Clock-hours/ 4 CEUs 398.00

In this course, you will learn the fundamentals of XML, for use with XML-enabled applications or for general web use. This introductory course in XML provides a foundation in one of the primary tools used in web programming, web services, and APIs. Introduction to XML covers topics including basic XML syntax, format-

ting, comparing XML to HTML, elements, attributes, document types definitions (DTDs) and their usage, XML schemas, basic XSL, XML transformations, and XPath. From beginning to end, you will learn by doing your own XML-based projects. These projects, as well as the final project, will enhance your professional portfolio and will advance you toward certificate completion.

Prerequisites: *Introduction to HTML and CSS*, or equivalent skills.

Perl 2: Intermediate Perl

45 Clock-hours 4 CEUs 398.00

In this course, we build upon the foundation established in Perl 1: Beginning Perl so that you can create practical programs to interact with the user and the operating system. One example of this interaction might be reading and writing files and directories. You'll learn how to perform useful and important tasks without even writing programs, by calling Perl from the command line with brief "one-liners." The course introduces the powerful technology of regular expressions for matching and changing text, and expands your repertoire of Perl operators, functions, and looping constructs. From beginning to end, you will learn by doing your own Perl-based projects. These projects, as well as the final project, will bolster your professional portfolio and advance you toward certificate completion.

Prerequisites: *Perl 1: Introduction to Perl*, or equivalent skills.

Python 2: Getting More Out of Python

45 Clock-hours 4 CEUs 398.00

Python is a popular interpreted programming language used by many large organizations, including Google, O'Reilly, YouTube, Yahoo, CERN, and NASA. Python is fast and has several existing libraries and modules available. In this course, you'll learn more in-depth techniques and strategies for programming

with Python. Using the Eclipse-based Learning Sandbox we call Ellipse, you'll get hands-on experience with Python's modular unit testing features: file handling, storage, and archival; graphical user interfaces; and technologies for working with databases and email. From beginning to end, you will learn by doing your own Python-based projects. These projects, as well as the final project, will enhance your professional portfolio and advance you toward certificate completion.

Prerequisites: *Python 1: Beginning Python*, or equivalent skills.

C#.NET 3: Advanced C# Programming

45 Clock-hours 4 CEUs 398.00

This is the third course in the C#.NET Programming Certificate series. In this course, you will expand your understanding of object oriented concepts and push the C# language to build more complex applications. Topics covered will include multi-dimensional arrays, collections, sorting, inheritance and polymorphism, abstract and sealed classes, interfaces, regular expressions, exceptions, delegates, events, and simple database usage. Throughout the course, you will learn advanced C#.NET concepts by building projects within a special Learning Sandbox utilizing Visual Studio 2010. These projects, as well as the final project, will enhance your professional portfolio and advance you toward certificate completion.

Prerequisites: *C#.NET 2: C# Programming in the .NET Framework*, or equivalent skills.

C#.NET 4: User Interface Design Using C#, XAML and WPF

45 Clock-hours 4 CEUs 398.00

This is the fourth and final course in the C#.NET Programming Certificate series. In the course, you will explore user interface design concepts using .NET. This course will focus on using C# to teach basic interface design, and explore the Extensible Application Markup

Language (XAML) and Windows Presentation Foundation (WPF). Topics will also include the Extensible Markup Language (XML). Throughout the course, you will learn advanced C#.NET concepts by building projects within a special Learning Sandbox utilizing Visual Studio 2010. These projects, as well as the final project, will enhance your professional portfolio and advance you toward certificate completion.

Prerequisites: *C#.NET 3: Advanced C# Programming*, or equivalent skills.

Linux/Unix 3: Unix Services

45 Clock-hours 4 CEUs 398.00

The third course in the Linux/Unix System Administration Certificate series covers the fundamentals necessary to run an email server and a web server. The first part of the course is dedicated to email and how it works, as well as the role of sendmail, aliases, and procmail filters. In the second part of the course, you will install and configure your own Apache web server. You'll learn about the importance of access control and web server logs, as well as how to reconfigure Apache so that it works in conjunction with PHP and PostgreSQL. Other topics covered include email, sendmail, procmail, aliases, web servers, Apache, logs, and installing PHP and PostgreSQL. From beginning to end, you will learn by configuring real email and web servers. You will have root and console access to real machines, allowing you to gain real-world experience. The projects you complete during the course, as well as the final project, will enhance your professional portfolio and advance you toward certificate completion.

Prerequisites: *Linux/Unix 2: Networking and DNS*, or equivalent skills.

Linux/Unix 4: Scripting for Administrators – Sed, Awk, and Perl

45 Clock-hours 4 CEUs 398.00

In order to prevent a system administrator from becoming completely overloaded, tasks that are to be repeated need to be automated. This fourth course in the Linux/Unix System Administration Certificate series teaches some essential tools for automation, including the basics of sed, awk, and shell scripting. The majority of this course focuses on the undeniable power of Perl scripting in the hands of a system administrator. This course covers topics including Sed, Awk, shell scripting, Perl, loops, arrays and hashes, data manipulation, regular expressions, functions, directories and files, recursive searches, and more. You will have root and console access to real machines, allowing you to gain real-world experience. From beginning to end, you will learn by doing real sed, awk, and perl based projects. These projects, as well as the final project, will enhance your professional portfolio and will advance you toward certificate completion.

Prerequisites: *Linux/Unix 3: Unix Services*, or equivalent skills.

DBA 3: Creating a Data Warehouse

45 Clock-hours 4 CEUs 448.00

In this course, you will learn what makes up a data warehouse and gain an understanding of the dimensional model. You'll learn how to implement the dimensional model using standard ETL processes, how to handle special data warehousing situations, and finally, how to query relational data warehouses using standard SQL commands. From beginning to end, you will learn by doing projects using Talend Open Studio, an Eclipse-based tool for implementing data warehouses within the Ellipse Learning Sandbox. You will complete projects using Talend, developing your own complete data warehouses. The projects you'll complete throughout the course, along with the final

project, will enhance your professional portfolio and advance you toward certificate completion.

Prerequisites: DBA 2: Administering MySQL, or equivalent skills.

DBA 4: Analyzing Data

45 Clock-hours 4 CEUs 448.00

In this course, you will improve and expand the relational data warehouse you created in the previous course using Mondrian and JPivot, two popular tools used for multidimensional data analysis. First, you'll learn the basics of MDX, the query language of data warehouses, and then you'll build upon that knowledge to answer a variety of queries for fulfilling business goals. Finally, you'll learn how to write a schema for Mondrian - the XML document that bridges the relational and multidimensional worlds. You will learn by doing projects in your own Unix and MySQL environments within the Learning Sandbox. These projects, as well as the final project, will bolster your professional portfolio and contribute toward certificate completion.

Prerequisites: *DBA 3: Creating a Data Warehouse*, or equivalent skills.

Java 3: Java Programming Foundations

45 Clock-hours 4 CEUs 398.00

In this course, you'll develop your range of capabilities to use fundamental Java application tools. You will learn about the structure and purpose of various classes in the Java API. In-depth experience with user-interfaces, event and exception handling, Java I/O and the Collection Framework will provide you with a toolkit that will enable you to implement applications, as well as understand the source code of others. You will design programs using Java threads, client/server sockets, and database connectivity, all of which will provide you with a solid basis for application building. From beginning to end, you will learn by doing your own Java projects within the Eclipse-based Learning Sandbox we call

Ellipse. These projects will enhance your professional portfolio and provide invaluable experience.

Prerequisites: *Java 2: The Java Programming Language*, or equivalent skills.

Java 4: Java Application Building

45 Clock-hours 4 CEUs 398.00

In this Java course, you will learn about the structure and purpose of many of the classes within the Java API. You'll gain experience with user-interfaces, event and exception handling, database connectivity, multiple threads and synchronization. This experience will provide you with a toolkit that will enable you to implement applications and understand the source code written by others. You will design programs using Java threads, client/server sockets, and database connectivity, all of which will provide you with a solid basis for application building. From beginning to end, you will learn by doing your own Java projects within the Eclipse-based Learning Sandbox we call Ellipse. These projects will enhance your professional portfolio and provide invaluable experience.

Prerequisites: *Java 3: Java Programming Foundations*, or equivalent skills.

JavaScript 2: AJAX

45 Clock-hours 4 CEUs 398.00

In this course, you will learn advanced JavaScript and AJAX, and how to use them to achieve your professional and creative goals. You will learn how to use the HTTP request object to communicate with both XML documents and Perl scripts. You will also learn the importance of validating forms before storing data, and how to search for data using both full and partial search strings. By working with the Google Maps API, you'll learn to utilize outside APIs, as well as how to use cookies to store and recall information. From beginning to end, you will learn by doing your own JavaScript-based projects using AJAX. These projects will result in an impressive final application, which will

enhance your professional portfolio and advance you toward certificate completion.

Prerequisites: *JavaScript 1: Introduction to JavaScript*, or equivalent skills.



Perl 3: Advanced Perl

45 Clock-hours 4 CEUs 398.00

If you've taken the first two courses in the Perl Programming Certificate series or have equivalent experience, you already know the power of Perl. With this course, you'll approach a new level of Perl expertise as you:

- learn about slices.
- discover how to access and use information on files and on the operating system.
- unleash the awesome power of `grep()` and `map()` to manage and manipulate data.
- perform sleight-of-hand with references, hash references, and hashes of hashes.
- tap into the brilliance of subroutines.
- gain more insight into ways you can structure and optimize your data.
- become exceptional at exception-handling.
- master your command of command-line options.
- augment your general Perl knowledge and supercharge your specific knowledge about arrays, regular expressions, and one-liners.
- master the Eight Queens Problem.

From beginning to end, you will learn by doing your own Perl-based projects. These projects, as well as the final project, will enhance your professional portfolio and advance you toward certificate completion.

Prerequisites: *Perl 2: Intermediate Perl*, or equivalent skills.

Perl 4: Applied Perl

45 Clock-hours 4 CEUs 398.00

In this course, you will master the application of Perl by performing common complex tasks such as:

- Sending email
- Processing web page forms
- Interacting with a database
- Scraping web pages and parsing HTML
- Complex data and time handling

Because this type of programming requires the use of objects, you will learn how to use objects in Perl, and also how to create your own objects, so that you can create reusable code (or “modules”). This course covers the basics of object-oriented programming in Perl, as well as more advanced aspects such as inheritance, polymorphism, inside-out objects, and use of the Moose O-O system. Also, because some of the mod-



ules you’ll need do not come with the standard Perl distribution, in the course you’ll learn to retrieve any module from the Comprehensive Perl Archive Network (CPAN). All of this, plus multiprocessing in Perl and using its built-in debugger, awaits you in Perl 4. From beginning to end, you will learn by doing your own Perl-based projects. These projects, as well as the final project, will bolster your professional portfolio and advance you toward certificate completion.

Prerequisites: *Perl 3: Advanced Perl*, or equivalent skills.

PHP/SQL 2: Relational Theory and Logical Design

45 Clock-hours 4 CEUs 398.00

Programmers require a thorough understanding of the Relational Model and Logical Design in order to build databases that remain consistent and secure while handling massive amounts of data. A professional database programmer also needs skills in translating the theoretical Logical Design to an equally safe and secure physical design within SQL, one that fully utilizes all of the tools available in SQL and PHP to maintain consistency and security of the design. In this course, you will learn advanced database theory, design, optimization, and security. From beginning to end, you will learn by doing your own SQL-based projects using PHP. These projects, as well as the final project - a social networking site - will be an impressive addition to your professional portfolio and will also advance you toward certificate completion.

Prerequisites: *PHP/SQL 1: Introduction to Database Programming*, or equivalent skills.

PHP/SQL 3: Seamless Web 2.0 Integration

45 Clock-hours/ 4 CEUs 398.00

Success in the social media world depends on a successful user experience. To create a robust and scalable website, the database programmer cannot focus merely on programming; programmers must design for

all the possible environments and choices the user might make, as well as for the goals of the website itself - whether organizational or personal. Storing data is important, but just as important is how that data is gathered, organized, and presented. In this course, you will learn advanced User Interface (UI) techniques using PHP and SQL. You will also learn to build a dynamic website as a whole, using efficient and reusable code, while seamlessly integrating Web 2.0 design patterns, object-oriented PHP, web services, RSS feeds, and other advanced technologies and techniques. From beginning to end, you will learn by doing your own SQL-based projects using PHP. These projects, as well as the final project – a social bookmarking site - will enhance your professional portfolio and will help you advance toward certificate completion.

Prerequisites: *PHP/SQL 2: Relational Theory and Logical Design*, or equivalent skills.

Python 3: The Python Environment

45 Clock-hours 4 CEUs 398.00

Python is a popular interpreted programming language used by many large organizations, such as Google, O'Reilly, YouTube, Yahoo, CERN, and NASA. Python is fast and has numerous libraries and modules you can use to accomplish all sorts of programming tasks. In this course, you'll learn more high-end techniques and strategies for programming with Python. Using the Eclipse-based Learning Sandbox we call Ellipse, you'll learn to:

- use and parse command-line arguments and perform string validation.
- work with sophisticated structures like bunch classes.
- create your own APIs.
- hot-rod your code with iterables, iterators, and generators.
- slice and dice textual data with regular expressions.
- use object-oriented programming techniques.

- exchange binary data with other languages and systems.
- delve deeper into Python's special methods.
- work smarter with Properties.
- take advantage of the logging feature.
- use config and ini files to simplify user setups.
- calculate the number of days until your next birthday, and more.

From beginning to end, you will learn by doing your own Python-based projects. These projects, as well as the final project, will enhance your professional portfolio and contribute toward certificate completion.

Prerequisites: *Python 2: Getting More Out of Python*, or equivalent skills.

Python 4: Advanced Python

45 Clock-hours 4 CEUs 398.00

Python is a popular interpreted programming language used by many large organizations such as Google, O'Reilly, YouTube, Yahoo, CERN, and NASA. Python is fast and has lots of libraries and modules to help you accomplish almost any programming task. The final course in the Python Programming Certificate series builds on your existing Python knowledge, incorporating further object-oriented design principles and techniques that will broaden your programming skill set. In this course you'll learn techniques like recursion, composition, and delegation and put them into practice in your own test-driven programs. By the end of the course, you will have written a multi-processing solution to a significant data processing problem. Throughout the course, you will learn by doing your own Python-based projects. These projects, as well as the final project, will enhance your professional portfolio and advance you toward certificate completion.

Prerequisites: *Python 3: The Python Environment*, or equivalent skills.

Tuition and Fees

Tuition

Tuition is on a per-course basis, currently ranging from \$298 to \$498 per course. Tuition for each course must be paid in full before enrollment is fully activated.

- If paid by credit card via OST's web-based enrollment system, the enrollment is processed immediately and students may begin work on the course right away.
- If paid by check, wire transfer, purchase order, or money order, the enrollment will be processed and courses may be started once payment is received in full.

If pursuing a Certificate of Professional Development, tuition for all courses may be paid at one time, in which case all courses will be made available for completion immediately. Alternatively, each course within the certificate series may be taken individually as a single course, which allows the student the flexibility to pay for courses one at a time.

Additional Mandatory and Optional Non-Refundable Fees

Mandatory Registration Fee: Upon enrollment in one or more courses, an additional mandatory registration fee will be charged which is nonrefundable after 7 days. The fee amount will total 20% of tuition, up to no more than \$200 per transaction. This fee takes care of setup and maintenance charges for all Learning Sandbox and extra back-end accounts for the duration of the enrollment period, which is 6 months per course or 12 months per Certificate series.

Optional Lab Fees: If you reach the end of the enrollment period listed in your Enrollment Agreement and wish to continue completion of your coursework or keep your portfolio account, you may do so by paying a monthly lab fee to extend your Learning Sandbox and extra back-end account access for up to an additional 2 years. Currently, the lab fee cost ranges from \$9.95/month to \$24.90/month,

depending on the types of accounts needed to complete your coursework.

Reinstatement Fee: If you are voluntarily or involuntarily withdrawn from your program because of failure to meet financial or academic requirements, and you wish to be reinstated to an active status, you may be assessed a \$50.00 non-refundable fee, plus any tuition increases that have occurred since the original enrollment tuition.

California Mandatory Student Tuition Recovery Fund (STRF) Fee: If you are a California resident as defined in the below Student Tuition Recovery Fund section, you will be assessed a mandatory state STRF fee of \$2.50 per \$1,000 of institutional charges. This fee is nonrefundable after 7 days.

NOTICE: All tuition and fee amounts are subject to change without notice.

Student Right to Cancel

You have the right to cancel your entire Enrollment Agreement and all enrollments for a 100% refund within the first 7 days after enrollment.

To cancel this agreement and withdraw from ALL courses listed above within the 7-day grace period, login to your Student Start Page (<https://oreillyschool.com/student/>) and follow the instructions listed under "Cancel Your Enrollment Agreement". You may be asked to fill out a short survey and cancellation form. Once you have submitted this form, you will receive the agreed upon refund amount as soon as possible; within 1 week for credit card payments, or for check payments, within 30 days of the date your form is received by OST.

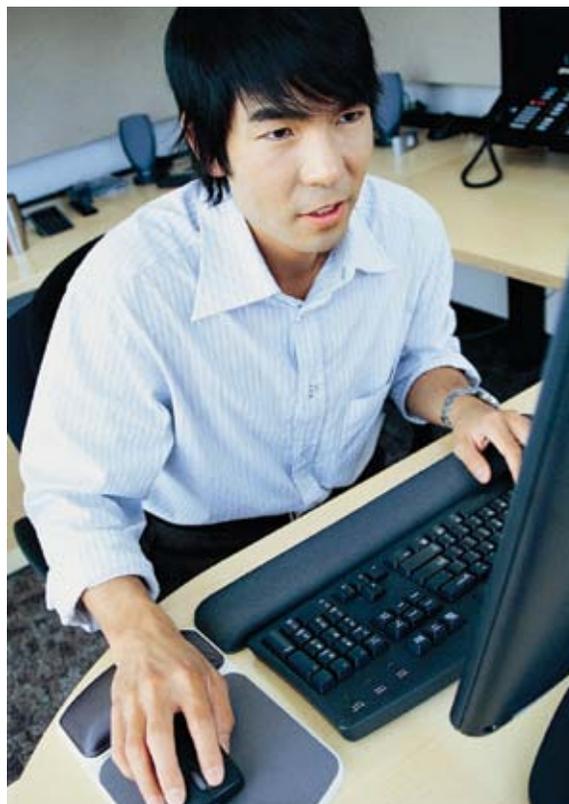
If you opt to cancel within the first 7 days, you will not be eligible for course completion, Continuing Education Units, or Certificate graduation, regardless of the percentage of coursework completed.

Refund Policy

If after 7 days you are still enrolled in 1 or more courses listed in the Enrollment Agreement, the following refund policy will apply:

- The registration fee of 20% tuition (up to \$200 maximum) paid will be nonrefundable.
- If you are a California resident as defined by the Student Tuition Recovery Fund section below, the STRF fee of \$2.50 per \$1,000 of institutional charges will be nonrefundable.
- If you withdraw from any course within the enrollment period listed above and have completed less than 60% of that course, you are entitled to a prorated refund of that course based on the percentage of the course not yet completed.
- The completion percentage is based on the number of assignments (quizzes or projects) that have been handed in at least once, divided by the total number of assignments in that course. Due to the self-paced nature of courses and periodic course updates, the number of assignments for a course may change at any time.
- If you have completed 60% or more of a course, you are no longer entitled to a refund for that course.
- After the enrollment period listed in your Enrollment Agreement has passed, no refunds shall be issued for any course tuition or registration fees, regardless of completion percentage. If additional time is requested to complete courses, monthly lab fees may apply as described above.
- If you withdraw from a course and then re-enroll at a later date, full tuition and registration fees may apply, regardless of previous completion and/or refund percentage.

To withdraw from any or all courses after the initial 7-day period, you must notify OST in writing. If you log into your Student Start Page (<https://oreillyschool.com/student/>), you'll find a link to "Withdraw from



Course" that leads to a form you can download, print, and sign to begin the withdrawal process.

You will be asked to fill out a short survey and sign a cancellation form agreeing to the amount of refund that will be applied and to verify that you understand the implications of cancellation and re-enrolling at a later date. Within 30 days from the date we receive this signed and dated form, OST will remit the agreed upon refund amount.

Student Tuition Recovery Fund (STRF)

The Student Tuition Recovery Fund (STRF) was established by the California State Legislature to protect any California resident who attends a private postsecondary institution from suffering a loss of prepaid tuition as a result of school closure, failure to live up to its enrollment agreement, or refusal to pay a court judgment.

To be eligible for STRF benefits, a student must be a "California Resident" and reside in California at the time that the enrollment agreement is signed or upon receipt of coursework materials at a California mailing address from an approved institution offering distance-based instruction. Students who temporarily reside in California for the sole purpose of pursuing an education, specifically, those holding student visas, are not considered "California Residents."

To qualify for STRF reimbursement, students must file a STRF application within one year of receiving notice from the Bureau for Private Postsecondary Education stating that an institution has been closed. If a notice is not received from the bureau, students have four years from the date of an institution's closure to file a STRF application. If a judgment is obtained, a STRF application must be filed within two years of a final judgment. Students should retain copies of enrollment agreements, receipts, financial aid documents, or any other information that documents monies paid to an institution. Questions regarding STRF may be directed to the Bureau for Private Postsecondary Education, P.O. Box 980818, West Sacramento, CA 95798-0818.

Obligations for Tuition Assistance

OST does not offer scholarships, grants, student loans, or tuition assistance of any kind. However, we are happy to assist you in filling out paperwork for any outside tuition assistance you may use for your OST education.

If you obtain outside tuition assistance or financial aid in order to pay for OST courses, then you are obligated to abide by the rules set forth by the institution, corporation, or organization providing those funds. These obligations include, but are not limited to, full repayment of all loans and interest, as well as repayment of any funds in the event of incomplete, withdrawn, or refunded courses. OST shall not be responsible for repayment of any financial aid or tuition assistance to any outside party.

If you are eligible for a loan guaranteed by the federal or state government and you default on the loan, both of the following may occur:

1. The federal or state government or a loan guarantee agency may take action against you, including applying any income tax refund to which you are entitled to reduce the balance owed on the loan.
2. You may not be eligible for any other federal student financial aid at another institution or other government assistance until the loan is repaid.

Tax Deductions for Educational Expenses

U.S. Treasury Regulation 1.162.5 permits an income tax deduction for educational expenses (registration fees, costs of travel, meals, and lodging) undertaken to:

- maintain or improve skills required in one's employment or trade or business.
- meet specific requirements of an employer or law imposed as a condition to retention of employment, job status, or rate of compensation.

Please check with your tax preparer/advisor/CPA and/or the Internal Revenue Service.

State Licensure

The O'Reilly School of Technology is a private institution that holds Institutional Approval to Operate by the Bureau of Private Postsecondary Education (BPPE) of the State of California.

Questions And Complaints

If you have any questions, comments, or complaints, you may contact OST here:

O'Reilly School of Technology
1005 Gravenstein Hwy North
Sebastopol, CA 95472
<http://www.oreillyschool.com/contact.php>
Phone: 707-827-7187
Toll Free: 800-998-9938 x. 7187
Fax: 707-829-0104
Email: info@oreillyschool.com

Any questions a student may have regarding this catalog that have not been satisfactorily answered by the institution may be directed to the **Bureau for Private Postsecondary Education** at:

Bureau for Private Postsecondary Education
1111 E Street, P.O. Box 980818
Sacramento, CA 95834
Website: <http://www.bppe.ca.gov>
E-mail: bppe@dca.ca.gov
Phone: (916) 431-6959
Toll Free: (888) 370-7589

A student or any member of the public may file a complaint about this institution with the Bureau for Private Postsecondary Education by calling (888) 370-7589 or by completing a complaint form, which can be obtained on the bureau's internet website <http://www.bppe.ca.gov>.



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