

# INFORMATION TECHNOLOGY

## Professional Certificate Program



in partnership with  Higher Education

UCSC Silicon Valley Extension's Information Technology Certificate features rich offerings in networking fundamentals, Linux system administration, data center technology and cloud computing, virtualization, storage networking, security technologies, IT automation and database management. This unique program is the only IT-specific credential of its kind available in Silicon Valley with University of California certification.

## Who Should Attend?

- Network and system administrators
- IT support and management professionals
- Network designers and developers
- Business security professionals
- Enterprise application developers
- Those who want to enter the growing field of information technology
- Individuals considering a career change

## Curriculum

### Certificate | 2 Quarters | 14 Units

#### Computer Networking Essentials | 3 Units

This course introduces computer networking, networking technologies, and the Internet, and explores the technical areas in data communications, wide-area networking, local-area networking, and protocol design. You will gain a strong foundation in networking protocols, hardware, cabling, industry standards, and connectivity solutions.

#### Mobile Payments, e-Commerce Security, and Cryptocurrency | 3 Units

This course covers advancements in mobile payment and transaction security and will help you engage in platform and application development. You'll learn the fundamentals of secure chip-card processing mandated by the major payment brands. The course emphasizes the pros and cons of Near Field Communication (NFC), secure element, Host Card Emulation (HCE), Bluetooth, QR codes, tokens and eWallets. You'll learn about online security risks; fraud prevention methods, biometrics, cloud-based security and Fast Identification Online (FIDO); and the role of cryptocurrency and future trends.

#### Cloud Computing | 0.5 Units

This course surveys technologies deployed by Amazon, Google, Microsoft, and various academic and opensource providers. It explains how cloud computing services can provide on-demand access to data storage, computing resources, and messaging. You'll also learn about the enabling technologies (Web 2.0, virtualization, grid and utility computing) that comprise the infrastructure behind a cloud computing service.

#### Computer, Network and Internet Security Fundamentals | 3 Units

This foundation course in computer, network and Internet security provides an in-depth discussion of traditional security domains, and examines the evolving security-threat environment and the tools, techniques, and mitigations available to all types of enterprises and home users. You'll also learn about malware, security protocols, firewalls and remote access, biometrics, virtual private networks, architecture defense, security policy, regulatory issues, and voice over IP (VoIP) security issues.

#### Linux, Introduction | 2.5 Units

This course introduces the Linux operating system. Linux is gaining popularity on personal computers, devices, embedded systems and enterprise servers. The course gives you an opportunity to use Linux for personal or professional purposes. You'll learn basic Linux administration, Linux file and directory structure, basic network configuration, shell programming, and various utilities available in Linux. The course provides a hands-on approach for learning Linux through assignments and projects.

#### TCP/IP Essentials | 2 Units

TCP/IP is the primary protocol for connectivity on the Internet and enterprise networks. This course presents an overview of the TCP/IP protocol suite, IP addressing, and subnetting. You will also learn about routing concepts, planning and configuring IP address assignments, name-resolution processing, and troubleshooting.



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### *Additional Curriculum*

#### **Certificate & OPT | 3 Quarters | 29.5 Units**

##### **Storage Technology in Data Centers | 3 Units**

This course explores the storage technologies needed to meet the challenges of data centers and introduces the building blocks of enterprise storage such as SAN and DAS. It demystifies the technology and the business aspects of storage performance, replication, backup, recovery, tiering and SLA. You will learn about storage and server virtualization environments and how to establish a baseline for performance, capacity and power criteria. The course also covers the blueprint of cloud computing and the implementation of public, private and hybrid cloud storage.

##### **VMware vSphere: Configuration and Management | 3.5 Units**

This course includes lectures and hands-on labs covering the installation, configuration, and management of VMware ESXi and vCenter Server. In hands-on lab sessions, you will have your own ESXi server, vCenter Server, and SAN storage to create standard and distributed virtual switches, establish storage access, and apply access controls. Virtual machines are created and used for resource monitoring, vMotion, load balancing, and high availability. This course can help prepare you for the VMware Certified Professional 5 - Data Center Virtualization (VCP5-DCV) exam and satisfies the VCP5-DCV course requirement.

##### **Linux System and Network Administration | 3 Units**

This course provides the foundation for building and maintaining a server for Linux professionals and system administrators in a business environment. The course focuses on basic network configuration, services security, remote access configuration and administration of a Linux server. You'll perform basic administrative tasks for users, file systems, security policy, shell and Perl scripts, and network facilities such as NFS, DNS and DHCP. By the end of the course, you'll be able to administer and manage networked services on Linux-based platforms in a business environment.

##### **Wireless Communications and Mobile Antenna Design, Introduction | 3 Units**

This course presents a fundamental approach to understanding wireless communications and standards. It also covers antenna and transceiver design principles and practices in mobile devices. The course briefly reviews amplitude modulation (AM) and frequency modulation (FM), which are essential in understanding IQ modulation used in virtually all modern radios (WiFi, OFDM, CDMA, TDMA, 4g, 5g, etc.). Building on these fundamentals, the course examines the industry's digital wireless standards, including but not limited to IS-136, IS-95, Bluetooth, 4G, 5G, 802.11(a, g, n), and long term evolution (LTE).

##### **Switching and Routing | 3 Units**

Bridges, switches, and routers comprise the foundational hardware that make up layers 2 and 3. This course focuses on the operation of devices, protocols, and algorithms that make these layers interoperate. The course is taught using Cisco routers and switches in the lab. You will gain hands-on experience working with operational premises, algorithmic decisions, configuring routing protocols and troubleshooting the network.

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

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