Degree Applicable

Glendale Community College
March 2010

COURSE OUTLINE

COMPUTER SCIENCE/INFORMATION SYSTEMS 198
Advanced Networking: Virtualization

I. Catalog Statement

Computer Science/Information Systems 198 is a course designed to acquaint the student with virtualization of workstations and servers. This course focuses on installation, configuration and administration of virtualized systems in the modern networked computer environment. It includes practical experience with several current workstation and server operating systems as well as several virtualization systems.

Units – 3.0
Lecture/Demonstration Hours – 3.0

Recommended Preparation: CS/IS 190 or equivalent.

II. Course Entry Expectations

Skills Level Ranges: Reading 5; Writing 5; Listening/Speaking 5; Math 2.

III. Course Exit Standards

Upon successful completion of the required coursework, the student will be able to:

1. install, configure, maintain, and troubleshoot a virtualized server supporting multiple operating systems;
2. install, configure, maintain, and troubleshoot a virtualized workstation supporting multiple operating systems.

IV. Course Content

Total Contact Hours = 48

A. Introduction to Virtualization — 3 hours
   1. Virtual servers
   2. Virtual workstations

B. Platform Virtualization — 12 hours
   1. Full virtualization
   2. Hardware-assisted virtualization
   3. Partial virtualization
   4. Paravirtualization or hypervisor
      a. VMware
      b. Xen
      c. Denal
   5. Operating system-level virtualization

a. FreeVPS
b. OpenVZ
c. FreeBSD jail

C. Application Virtualization — 5 hours
1. Portable application
2. Cross-platform virtualization
3. Emulation or simulation

D. Virtual memory and Memory Virtualization — 3 hours

E. Storage Virtualization — 5 hours
1. Host-based
2. Storage device-based
3. Network-based

F. Network Virtualization — 12 hours
1. Clustering
2. VLAN (Virtual Local Area Network)
3. Microsoft Virtual Server

G. Desktop Virtualization — 8 hours
1. Citrix
2. VMware
3. Parallels

V. Methods of Presentation

The following instructional methodologies may be used in the course:
1. lecture and demonstration;
2. online;
3. multimedia.

VI. Assignments and Methods of Evaluation

1. Projects (e.g. system installation, configuration, and maintenance with multiple server and workstation operating systems (Windows and Linux).
2. Quizzes.
3. Midterm examination.
4. Final examination.

VII. Textbook

Haletky, E., VMware ESX Server in the Enterprise, Current Ed.
Upper Saddle River, NJ: Prentice Hall, 2008.
12th Grade Textbook Reading Level. ISBN: 0-13-230207-1.

Wolf, C., and E. Halter, Virtualization: from the Desktop to the Enterprise, Current Ed.
New York: Apress, 2005.
12th Grade Textbook Reading Level. ISBN 1-59-059494-7.

VIII. Student Learning Outcomes

Upon successful completion of this course, the student will be able to:
1. install, configure, maintain and troubleshoot a virtualized server running multiple operating system instances;
2. install, configure, maintain, and troubleshoot a virtualized workstation, running multiple operating system instances.