CTN286 - Virtualization and the Cloud 2

Document Type:	District Master Course Outline
Proposal Type:	New Course
Requester(s):	Carol Koepke David Herman
College:	South
Origination Approved:	08/21/2012 - 9:06 AM

SEATTLE COMMUNITY COLLEGES
Central
North
South
SVI

BASIC INFORMATION

Requester(s):	Carol Koepke
	David Herman
College:	South Seattle Community College
Division/Dept:	Professional Technical
Dean:	Duncan G Burgess
Peer Reviewer(s):	Jay M Abram

COURSE INFORMATION

Proposed Course Number:

Prefix: **CTN**   Number: **286**

☐ Request a new Prefix

☐ This will be a common course

Full Title:	Virtualization and the Cloud 2
Abbreviated Title:	Virtualization & Cloud 2

Catalog Course Description:

Focused study and hands on experience with advanced management methods for virtualization technologies (ex. VMware ESXi, XenServer). Install, configure, manage, and troubleshoot virtualization server products and guest operating systems. Students receive practical experience with High Availability, VM migration, virtualized networking, SAN configuration and data security concepts. Prereq: CTN 276 (2.0 or better) or work experience equivalent or instructor permission.

Course Length: 11 Weeks   ☐ Request an Exception

Course Prerequisite(s):

Prereq: CTN 276 (2.0 or better) or work experience equivalent or instructor permission.

Topical Outline:

TOPICS	HOURS

I. Review of Virtualization Server offerings
 1. Overview of primary options for system virtualization.
 2. Realistic goals and choices for virtualization
          Defining goals and requirements
          Deciding on an infrastructure
  3. Compare licensing options, and support choices
	9

Open source and proprietary options compared	

II. Type 1 Virtualization Review
   1. Virtualization defined
   2. Comparison of Type 1 virtualization technologies
   3. Hardware-virtualization vs. para-virtualization
	3

III. Applied Virtualization (strong hands-on component)
   1. Hardware choices and requirements
   2. Installation methods, choices explained
   3. Initial configuration, in depth description of options
   4. Storage configuration, SANs, RAID and logical volumes
   5. Server Pools – advantages and concepts
   6. Managing the virtualization server using the command line
   7. Graphical tools for system management
   8. Using scripts for efficient server management
   9. Server backup methods
  10. High availability and VM migration
	23

IV. Building the virtual infrastructure
   1. Choosing reliable server hardware
   2. Hardware and virtualization trends
   3. Planning, design for growth and reliability
   4. Deployment planning and execution
   5. Maintenance
   6. VM clones, snapshots and copies
   6. Disaster planning and recovery strategies
	20

TOTAL HOURS	55

COURSE CODING

Funding Source: 1...................State

Institutional Intent: 22..................Vocational Supplemental

This Course is a requirement for the following program(s):
    (No Programs Selected)

☑ My Course Proposal is a requirement for a program not on this list
     Program Title/Description/Notes:
     Virtualization Certificate/ New certifiacte sbmitted with this course proprosal

Will this course transfer to a 4-year university?   **No**

Is this course designed for Limited English Proficiency?   **No**

Is this course designed for Academic Disadvantaged?

No
No

Does this course have a Workplace Training component?

CIP Code: 11.0901   ☐ Request Specific CIP Code

EPC Code: 527   ☐ Request Specific EPC Code

Credits:
   Will this course be offered as Variable Credit?   **No**
   List Course Contact Hours

Lecture (11 Contact Hours : 1 Credit)	55
Lab (22 Contact Hours : 1 Credit)	0
Clinical Work (33 Contact Hours : 1 Credit)	0
Other (55 Contact Hours : 1 Credit)	0
Total Contact Hours	55
Total Credits	5

COLLEGE SUPPLEMENTAL

Proposed Quarter of Implementation: Spring 2012   ☐ Request Provisional Exception

Class Capacity: 24

Modes of Delivery: (Check all that apply)
   ☑ Fully On Campus
   ☐ Fully Online
   ☐ Hybrid
   ☐ Other   Explanation:

Student Learning Outcomes:

Communication

Read and listen actively to learn and communicate
   Read and understand highly technical manuals and resource materials.
   Follow complex written and verbal instructions.
   Understand legal agreements related to licensing.

Speak and write effectively for personal, academic, and career purposes
   Explain detailed procedures to others using written and verbal methods.
   Be able to describe problems, ask questions effectively, and respond clearly to questions asked by others.

Human Relations

Use social interactive skills to work in groups effectively
   Students work in groups and provide a support infrastructure for each other.

Critical Thinking and Problem-Solving

Think critically in evaluating information, solving problems, and making decisions
> Demonstrate problem solving and troubleshooting skills as they relate to virtualization system design.
> Utilize critical and abstract thinking to formulate questions, research appropriate technologies and solve problems.

Technology

Select and use appropriate technological tools for personal, academic, and career tasks
> Be able to make responsible choices regarding server utilization and hardware resource management.
> Be able to configure, troubleshoot, analyze, and explain procedures, problems, and concepts of virtualized computing systems at an introductory level.

Personal Responsibility

Be motivated and able to continue learning and adapt to change
> Develop an interest in participating in users groups and industry forums.
> Recognize the need to continue to learning about virtualization technologies in order to improve skills.

Information Literacy

Access and evaluate information from a variety of sources and contexts, including technology
> Access and evaluate information from many sources. Ability to recognize and understand trends as virtualization software, hardware, usage, costs, and logistics change.

Program Outcomes:

- Install and properly configure network devices and related operating systems.
- Build, configure, and prepare a network server for a given role.
- Be able to install, configure, and use various Microsoft and open source operating systems.
- Select, configure, and use different operating systems.
- Select, implement appropriate troubleshooting tools and methods for problem solving.
- Be able to analyze and troubleshoot various Microsoft and open source operating systems
- Troubleshoot and solve problems occurring at any level of the OSI layers in a network.
- Correctly add/remove/change users and computers, sites, and domains in a network.
- Select components; install, configure, troubleshoot, and repair computers.
- Make use of software applications for utilitarian or presentation purposes.
- Use critical thinking for analysis of hardware, OS, or network problems.
- Access information efficiently and accurately to resolve computer problems.
- Work effectively with others to accomplish complex tasks.
- Develop logical thinking skills.
- Develop effective communication skills.
- Be able to explain and communicate problems accurately and the related solutions effectively.
- Use safety precautions while working in and around computers and people.

Course Outcomes/Objectives:

At the end of the course the sucessful student will:

1. Know basic virtualization administration commands.
2. Be able to install and complete initial configuration of virtualization server operating system and guest operating systems.

3. Understand concepts of computer system virtualization.
4. Be able conduct basic administration of a Xen Server (or VMware ESXi server) using graphical administration tools.
5. Be able to edit and troubleshoot scripts for automated system management.
6. Be able to participate in discussions of Virtualization System design.
7. Perform administrative tasks using the command line
8. Have an understanding of High Availability terminology and methods.
9. Recognize different storage technologies and their benefits/drawbacks.

Explain the student demand for the course and potential enrollment:

Virtualization and the Cloud 2 will provide in-depth coverage beyond what was covered in CTN 276 (Virtualization and the Cloud 1) including formal training in virtualization products. Network Administration AAS Program students have requested the in-depth information found in this course and are expected to be the primary enrollees along with IT professionals who have taken CTN 276. We expect this course to fill to capacity (24) each quarter that it is offered.

Explain why this course is being created:

This course is being offered to meet the need of the IT worker who wants to recieve formal training using one or more of the top three leading virtualization products. These products include VMware, Xen, and Hyper-V. (Hyper-V will be offered as a separate course.) We also want to allow our students to specialize in a given product to help in their job search.

What challenges, if any, do you foresee in offering this course:

We do not anticipate any challenges in offering this course.

This is to certify that the above criteria have all been met and all statements are accurate to the best of my knowledge.

Faculty involved in originating this program:

Carol Koepke	*Carol Koepke*	8/15/2012
Print Name	**Signature**	**Date**

David Herman	*David Herman*	8/15/2012
Print Name	**Signature**	**Date**

Dean:

Duncan G Burgess	*Duncan G Burgess*	8/20/2012
Print Name	**Signature**	**Date**

Results of SSCC Curriculum Coordinating Council Findings

Participating Faculty Response and Remarks

☐ Recommended for approval

☐ Not recommended for approval

☒ **X** This course did not go through Committee Review

Chairman, Curriculum Coordinating Council:

Print Name	**Signature**	**Date**

Vice President for Instruction:

Donna Miller-Parker	*Donna Miller-Parker*	8/21/2012
Print Name	**Signature**	**Date**