COURSE INFORMATION FORM

DISCIPLINE
Computer Science and Information Systems

COURSE TITLE
Virtualization and Cloud Computing Concepts

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CATALOG DESCRIPTION
This course covers a variety of technologies found on modern networks. Topics include cloud computing, virtualization, virtual networks, wireless networking, remote management, and network troubleshooting. Students will gain experience implementing and managing a virtual data center using industry standard tools. This course helps prepare students for the CompTIA Cloud+ certification exam.

PREREQUISITES
CSIS 172 with a grade of C or better

EXPECTED STUDENT OUTCOMES IN THE COURSE (ESO)
Upon completion of this course, the student will be able to:

Revised 8/3/15
1. Describe modern cloud computing concepts.

2. Describe and apply virtualization fundamentals.

3. Describe virtual networking, and remote access.

4. Implement components of a virtual data center.

5. Manage virtual data center using industry standard tools.

6. Install and upgrade network operating system software, including Windows OS, Linux OS, and modern hypervisors.

7. Determine and implement upgrade paths for current systems.

8. Diagnose and troubleshoot network problems.

GENERAL EDUCATION OUTCOMES (ESO)
Specify which general education outcomes, if any, are substantially addressed by the course. Numbers in parentheses identify the Expected Student Outcomes linked to the specific General Education Outcome.

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<th>Outcomes</th>
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PROGRAM-LEVEL OUTCOMES
CAREER AND TECHNICAL EDUCATION PROGRAM OUTCOMES
Specify which Career and Technical program outcomes, if any, are substantially addressed by the course by completing the “Career and Technical Education template” to show the relationship between course and program outcomes to assessment measures.

1. Use industry specific software and/or apply troubleshooting skills to solve problems.

CLASS-LEVEL ASSESSMENT MEASURES
Student accomplishment of expected student outcomes may be assessed using the following measures. (Identify which measures are used to assess which outcomes.)

1. Examination/Quizzes (1-8)
2. Class Discussion/Participation (1-8)
3. Exercises/Projects (1-8)
4. Written/Oral Reports (1-8)
Individual instructors may order this outline as fits the needs of their individual courses. In addition, they may place more emphasis on some areas than on others. What is assured is that this particular list is covered in the course. Other topics may be added to a course as the instructor sees fit, and as time and interest allow. An asterisk can be used to mark an item as optional.

I. Cloud Concepts and Models
   A. Cloud delivery models and services
   B. Cloud characteristics and terms

II. Virtualization
   A. Type I and Type II hypervisors
   B. Virtual machines and devices
   C. Virtual resource migration*
   D. Benefits of virtualization in a cloud environment
   E. Virtual components used to construct a cloud environment

III. Infrastructure
   A. Storage technologies
   B. Storage configuration concepts
   C. Storage provisioning
   D. Network configuration
   E. Network optimization
   F. Troubleshooting basic network connectivity issues
   G. Common network protocols, ports, and topologies
H. Hardware resources and features used to enable virtual environments

IV. Resource Management
   A. Resource monitoring techniques
   B. Physical (host) resources best practices
   C. Virtual (guest) resources best practices
   D. Tools for remote access

V. Security
   A. Network security concepts, tools, and best practices
   B. Storage security concepts, methods, and best practices
   C. Encryption technologies and methods
   D. Access control methods
   E. Guest and host hardening techniques

VI. Systems Management
   A. Policies and procedures as they relate to a cloud environment
   B. Physical host performance
   C. Performance concepts as they relate to the host and the guest
   D. Testing techniques when deploying cloud services

VII. Business Continuity in the Cloud
   A. Disaster recovery methods and concepts
   B. Solutions to meet availability requirements