Discipline: Computer Information Systems

Originator: James Cregg

RIVERSIDE COMMUNITY COLLEGE DISTRICT INTEGRATED COURSE OUTLINE OF RECORD

COMPUTER INFORMATION SYSTEMS 25

CIS-25 : Information and Communication Technology Essentials

College: RIV
Lecture Hours: 54.000
Units: 3.00
Pass/No Pass
Letter Grade

Course Description

Prerequisite: None

Advisory: CIS-1A

Course Credit Recommendation: Degree Credit

This course provides an introduction to the computer hardware and software skills needed to help meet the growing demand for entry-level ICT professionals. The fundamentals of computer hardware and software as well as advanced concepts such as security, networking, and the responsibilities of an ICT professional will be introduced. Preparation for the CompTIA A+ certification exams. 54 hours lecture. (Letter Grade, or Pass/No Pass option.)

Short Description for Class Schedule

Introduction to the computer hardware and software skills needed to help meet the growing demand for entry-level ICT professionals.

Entrance Skills:

Before entering the course, students should be able to demonstrate the following skills:

1. **Identify the fundamental computer concepts and terminology used for input, processing, output, and storage.**
2. **Identify the key features of a variety of software such as operating systems, word processors, spreadsheets, databases, communications and graphics.**
3. **Apply the principles of and solve problems with word processing, spreadsheet, database, communications and file management programs.**
4. **Create electronic presentations with presentation graphics.**
5. **Use the Internet to send electronic messages.**
6. **Demonstrate the principles of Internet research.**
7. **Understand the principles of computer security, ethics and privacy.**
8. **Understand and apply the principles of distance education software.**

Student Learning Outcomes:

Upon successful completion of the course, students should be able to demonstrate the following skills:

1. **Assemble components based on customer requirements.**
   - **Critical Thinking:** Students will be able to demonstrate higher-order thinking skills about issues, problems, and explanations for which multiple solutions are possible. Students will be able to explore problems and, where possible, solve them. Students will be able to develop, test, and evaluate rival hypotheses. Students will be able to construct sound arguments and evaluate the arguments of others.
   - **Communication Skills:** Students will be able to communicate effectively in diverse situations. They will be able to create, express, and interpret meaning in oral, visual, and written forms. They will also be able to demonstrate quantitative literacy and the ability to use graphical, symbolic, and numerical methods to analyze, organize, and interpret data.
2. **Install, configure, and maintain devices, PC's and software for end users.**
   - **Critical Thinking:** Students will be able to demonstrate higher-order thinking skills about issues, problems, and explanations for which multiple solutions are possible. Students will be able to explore problems and, where possible, solve them. Students will be able to develop, test, and evaluate rival hypotheses. Students will be able to construct sound arguments and evaluate the

arguments of others.

- **Information Competency & Technology Literacy:** Students will be able to use technology to locate, organize, and evaluate information. They will be able to locate relevant information, judge the reliability of sources, and evaluate the evidence contained in those sources as they construct arguments, make decisions, and solve problems.

3. **Understand the basics of networking and security/forensics.**
   - **Information Competency & Technology Literacy:** Students will be able to use technology to locate, organize, and evaluate information. They will be able to locate relevant information, judge the reliability of sources, and evaluate the evidence contained in those sources as they construct arguments, make decisions, and solve problems.
   - **Critical Thinking:** Students will be able to demonstrate higher-order thinking skills about issues, problems, and explanations for which multiple solutions are possible. Students will be able to explore problems and, where possible, solve them. Students will be able to develop, test, and evaluate rival hypotheses. Students will be able to construct sound arguments and evaluate the arguments of others.
4. **Properly and safely diagnose, resolve, and document common hardware and software issues while applying troubleshooting skills.**
   - **Critical Thinking:** Students will be able to demonstrate higher-order thinking skills about issues, problems, and explanations for which multiple solutions are possible. Students will be able to explore problems and, where possible, solve them. Students will be able to develop, test, and evaluate rival hypotheses. Students will be able to construct sound arguments and evaluate the arguments of others.
   - **Communication Skills:** Students will be able to communicate effectively in diverse situations. They will be able to create, express, and interpret meaning in oral, visual, and written forms. They will also be able to demonstrate quantitative literacy and the ability to use graphical, symbolic, and numerical methods to analyze, organize, and interpret data.
5. **Provide appropriate customer support.**
   - **Critical Thinking:** Students will be able to demonstrate higher-order thinking skills about issues, problems, and explanations for which multiple solutions are possible. Students will be able to explore problems and, where possible, solve them. Students will be able to develop, test, and evaluate rival hypotheses. Students will be able to construct sound arguments and evaluate the arguments of others.
   - **Communication Skills:** Students will be able to communicate effectively in diverse situations. They will be able to create, express, and interpret meaning in oral, visual, and written forms. They will also be able to demonstrate quantitative literacy and the ability to use graphical, symbolic, and numerical methods to analyze, organize, and interpret data.
6. **Understand the basics of virtualization, desktop imaging, and deployment.**
   - **Critical Thinking:** Students will be able to demonstrate higher-order thinking skills about issues, problems, and explanations for which multiple solutions are possible. Students will be able to explore problems and, where possible, solve them. Students will be able to develop, test, and evaluate rival hypotheses. Students will be able to construct sound arguments and evaluate the arguments of others.
   - **Information Competency & Technology Literacy:** Students will be able to use technology to locate, organize, and evaluate information. They will be able to locate relevant information, judge the reliability of sources, and evaluate the evidence contained in those sources as they construct arguments, make decisions, and solve problems.

Course Content:

1. PC hardware
   a. Identification orientation and operation of system boards.
   b. Identification orientation and operation of internal and external components.
   c. Hardware installation and upgrades.
   d. Modular concepts and applications.
   e. Selecting replacement computer components, and configurations for specialized computer systems.
   f. Computer assembly.
   g. Preventive maintenance.
   h. General guidelines for creating preventive maintenance programs.
2. Networking
   a. Provides an overview of network principles, standards, and purposes.
   b. Types of network topologies, protocols, and logical models, in addition to the hardware needed to create a network.
   c. Network software, communication methods, and hardware relationships.
   d. Configuration, troubleshooting, and preventive maintenance.
3. Laptops

a. Know how to configure, repair, and maintain these devices.
b. Service laptops and portable devices.

4. Printers
    a. How printers operate, what to consider when purchasing a printer, and how to connect printers to an individual computer or to a network.
    b. Web-based printing in Windows.
5. Operational procedures
    a. Document, procedures and operational guidelines.
    b. Disaster assess recovery management.
    c. Infrastructure for an IT security policy.
6. Operating systems
    a. Types of operating systems.
    b. Understanding and using the GUI interface.
    c. Installing and configuring operating systems.
    d. Installing and configuring applications and utilities.
    e. Maintaining and troubleshooting operating systems.
7. Security
    a. Security threats, adware, spyware, and phishing attacks.
    b. Identify viruses, worms, and virus protection software.
    c. TCP/IP attacks.
    d. Social engineering attacks.
    e. Security procedures and security policy requirements.
    f. Data encryption, data backups, and biometrics.
    g. How to troubleshoot security issues, and how to work with customers to ensure that the best possible protection is in place.
8. Mobile devices
    a. Know how to configure, maintain, and repair various mobile devices.
    b. The many features of mobile devices and their capabilities, including configuration, synchronization, and data backup.
    c. Become familiar with as many different mobile devices as possible.
9. Troubleshooting
    a. Steps for advanced troubleshooting computer components.
    b. Troubleshooting operating systems.
    c. Common problems and solutions for operating systems.
    d. Troubleshooting process to networks.
    e. Troubleshooting process to laptops.
    f. Troubleshooting process to security.
10. The IT Professional
    a. Relationship between communication skills and troubleshooting.
    b. Working with customer.
    c. Ethical and legal issues in the IT industry.
    d. Call center technicians.
    e. Apply a troubleshooting process to solve computer problems.

Methods of Instruction:

Methods of instruction used to achieve student learning outcomes may include, but are not limited to, the following activities:

- Class lectures/discussions/demonstrations to introduce and reinforce communications software/hardware /channels.
- Videos/films/slides/audio tapes to demonstrate LANs/WANs
- Pair and small group activities/discussion of the value of networks
- Class exercises to plan and analyze the present LAN with an eye to improving the design selected for analysis
- Reports and papers as homework and class reports to broaden the students understanding of present day communication scenarios.
- Handouts to assist and define important terms
- Cooperative learning tasks where teams of students develop and implement communication suites
- Individual conferences to assist and work through problems
- Guest lecturers to broaden student understanding that this is real world and not just classroom discussions

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Methods of Evaluation:

Students will be evaluated for progress in and/or mastery of student learning outcomes using methods of evaluation which may include, but are not limited to, the following activities:

- Problem solving and testing of how to design/layout/analyze communication hardware/software

- Oral reports/presentations/performance of design and analysis of communication suites of hardware and software
- Written reports/presentations of LAN and WAN communication codes/protocols
- Computer programs and analysis of the software suites of communications software
- Written assignments to define mastery of the ideas behind communications within a LAN or across a WAN
- Examinations designed to assess students' mastery of LAN/WAN communication design
- Projects to develop an understanding through research of LAN/WAN technologies

Sample Assignments:

Outside-of-Class Reading Assignments

- Students will be assigned case based assignments involving reading, computer manuals, and general textbook reading that covers network communications, network operations, network security, and network design essentials.

Outside-of-Class Writing Assignments

- The primary assignments for this course involve the development of a fictional network, including designing and applying an IP address scheme for assigned network topologies, develop network security policies, create a secure wireless connection, and assigning user account policies.
- Students will document work each step along the way.

Other Outside-of-Class Assignments

- Case studies will be assigned requiring outside research and readings like the following. You company has just come into some extra money (around 10K) and would like to upgrade their wireless network (that is currently running 802.11b).
- Give TWO wireless solutions that would meet your company's requirements. Explain the difference and similarities in the two choices you offered. The company current house only 25 employees but may expand in the near future.

Course Materials:

All materials used in this course will be periodically reviewed to ensure that they are appropriate for college level instruction. Possible texts include the following:

Andrews, J.. *A+ Guide to Managing & Maintaining Your PC* . 7th Course Technology, 2014.
Cisco Networking Academy. *IT Essentials.* 5th Cisco Press, 2014.
Meyers, M.. *CompTIA A+ Certification* . 8th McGraw Hill, 2012.

Codes/Dates:

CB05 MOV Transfer Status: N/A (not in college inventory) (D)
CB05 NOR Transfer Status: N/A (not in college inventory) (D)
CB05 RIV Transfer Status: Transfers to CSU Only (B)

Board of Trustees Approval Date: 01/16/2016
COR Rev Date: 01/19/2016