GROSSMONT COLLEGE

Official Course Outline

# COMPUTER SCIENCE INFORMATION SYSTEMS 120 – COMPUTER MAINTENANCE AND A+ CERTIFICATION

1. Course Number Course Title Semester Units Semester Hours

CSIS 120 Computer Maintenance 3 2 hours lecture: 16-18 hours

and A+ Certification 3 hours lab: 48-54 hours

32-36 outside-of-class hours

for lecture

96-108 total hours

2. Course Prerequisites

None

Corequisite

None

Recommended Preparation

None.

3. Catalog Description

Preparation for the A+ Certification exam, an industry-sponsored test that establishes a benchmark level of knowledge and competence expected of computer service technicians in entry-level positions. A+ Certification also serves as the foundation for computer service professionals who are pursuing other valuable industry certifications such as the Cisco Certified Networking Associate (CCNA), Network+, and Microsoft Certified Professional (MCP). Students will gain a comprehensive knowledge base in computer hardware, DOS and Windows operating systems, networking basics, printers, and customer service. Hands-on labs using the latest computer components and operating systems provide an opportunity for students to enhance their skills in assembling, disassembling, servicing, troubleshooting, and upgrading advanced computer and networking systems.

4. Course Objectives

The students will:

a. Differentiate between computer hardware components (motherboard, CPU, memory, power supply, attachment cards, peripheral devices), standards and models (form factors, Microsoft Windows conventions, components), and industry practices (assembly, preventive maintenance, customer support, etc.) that are used by the computer technician community and describe each of their characteristics and functions.

b. Describe the computer system hardware and software components necessary to complete a working computer system (including basic components, peripheral devices, connecting cables, operating system, applications software, etc.); identify each of their characteristics and functions, and utilize compatible components to build and troubleshoot a functioning computer system.

c. Design, build, operate and troubleshoot a limited wired and wireless computer network utilizing skills learned in class.

d. Identify prevailing security risks to computer systems (both hardware and software) and explain the precautions used to ensure adequate computer security that keeps data safe from viruses, loss or damage.

e. Develop a computer hardware and operating systems software solution to a real-world business computer resource selection, implementation and maintenance problem using computer component selection and optimization, component integration, test and troubleshooting procedures and techniques learned in class.

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5. Instructional Facilities

Standard computer lab with one internet-connected workstation per student with appropriate software installed.

6. Special Materials Required of Student

Flash/USB drive or cloud storage for backup of in-class work.

7. Course Content

a. Computer hardware

b. Computer operating systems

c. Working with people in a technical world

d. Form factors, power supplies, and working inside a computer

e. Motherboards

f. Supporting processors

g. Computer memory

h. Supporting storage devices (HD, Optical, RAID)

i. Installing and supporting peripherals

j. PC maintenance and troubleshooting strategies

k. Computer networking

l. Computer security

m. Supporting notebook computers and printers

n. Virtualization: Installing VirtualBox, Windows / Linux

o. Troubleshooting and optimizing Windows using system tools

p. CompTIA 220-­901 and 9022 Certification Practice Exam

q. TestOut PC Pro Certification Exam

8. Method of Instruction

a. Lecture and demonstration

b. Hands-on practice

c. Assignments

9. Methods of Evaluating Student Performance

a. Quizzes and exams including a final that measure students’ ability to use computer hardware and operating systems terminology, and explain computer concepts, plans, designs, implementation and troubleshooting concepts.

b. Practical exams that measure students’ ability to use computer hardware and operating systems knowledge and skills to demonstrate proficiency in computer hardware components and their interaction, installation, troubleshooting and maintenance as well as installation, troubleshooting and updating of operating systems software.

c. Projects that measure students’ ability to conceptualize, build, maintain, upgrade and troubleshoot computer wired networks

d. Exercises that measure students’ ability to identify security, reliability and availability concerns, and to address these concerns with practical solutions.

10. Outside Class Assignments

a. Read textbook and assignment instructions

b. Complete assignments and online quizzes

c. Review online resources, including videos

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11. Texts

a. Required Texts

1) *TestOut 220-901 and 220-902* combined online course license – Course assignments can be linked to Canvas modules.

b. Supplemental Texts and Workbooks

1) Prowse, David. *Exam Cram CompTIA A+ 220-901 and 902*. Downers Grove, IL, 2016.

*2) Authorized Practice Questions*. 5th edition. Hoboken, NJ: Pearson, 2016.

Addendum: Student Learning Outcomes

Upon successful completion of this course, our students will be able to do the following:

Design and evaluate a comprehensive project including hands-on/simulated installation, upgrade, troubleshooting, and maintenance of computer hardware and operating systems.

Date approved by the Governing Board: May 15, 2018