



# Department of Defense Education Activity

## Computer Service and Support Course Syllabus

**Computer Title:** Computer Service and Support  
**Computer Code:** VEE309  
**Grade Level:** 9 -12  
**Recommended Preparation:** No Preparation Required  
**Length of Course:** 18 to 36 Weeks

### COURSE DESCRIPTION:

This program is intended to prepare students for computer support careers. Students enrolled in this course will learn how to perform shop maintenance, repair computers, install operating systems and software, acquire employment skills, as well as operate a service and support business. The course will provide students with concepts and skills necessary to achieve A+ certification in PC Repair and Technical Support. This distributed learning model of instruction provides a blend of instruction with hands-on experiences that reflects current industry practices. During the course, students will identify and use hand tools, PC hardware and software, and will explore electronics theory. Installation, upgrade and repair will be explored in new and older personal computer systems as well as printers and networks. A number of operating systems also will be reviewed. Students will train in a simulated work environment using a distributed learning instructional model.

Students will be trained to use tools, electronic test equipment, and software to analyze and solve PC problems. Students will learn about computer architecture and the basic concepts of interconnectivity through hands-on training. During the course, students will analyze defective equipment, determine corrective measures, and make the equipment operational if possible. Students will build a PC as part of the requirements of this course.

Students will demonstrate their knowledge through computer-based instruction and exams, performance tests, hands-on service, and completion of various repair projects. Demonstration of performance and professionalism are major components of the student's evaluation.

### COURSE OBJECTIVES:

Upon completion of the course, students should be able to:

- Apply standard safety procedures.
- Accurately use and complete forms associated with computer repair.
- Correctly operate appropriate tools, equipment, and materials
- Demonstrate a fundamental knowledge of electronics and electronic circuits.
- Perform periodic maintenance on a computer workstation.
- Apply techniques used in the repair and building of electronic products
- Demonstrate knowledge of computer architecture, i.e., power supplies, motherboards, memory, processors, hard drives, modems, and bus and port connections.
- Apply business procedures for operating a service center.
- Apply techniques used in the repair and building of computers and their integrated components.
- Understand and install appropriate operating systems and drivers.
- Demonstrate knowledge of installation and maintenance of computer peripherals.
- Service, troubleshoot, and repair a variety of computer printers.
- Understand and troubleshoot basic computer networks.
- Successfully complete a battery of A+ Certification preparatory exams.

# COURSE OUTLINE:

## Level I - Orientation

### A. PERSONNEL

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|--|--|---|
| <b>1. Personnel</b><br>Exam  | The Homework Policy<br>The Assignment Schedule<br>The Competency Certificate | The Personnel Record<br>The Resume<br>Interview Preparation<br>The Job Interview<br>The Employment Contract |
| <b>2. Course Orientation</b><br>The Course Description<br>Required Materials<br>The Rules of Conduct<br>The Grading Policy | <b>3. Employment Opportunities</b><br>The Job Search                         |   |
|  | <b>4. Applying for a Job</b><br>The Job Application                          |   |

### B. PC TECHNICIAN TOOLKIT

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|---|---|--|
| <b>1. PC Technician Toolkit</b><br>Exam | <b>2. Tool ID, Use, and Care</b><br>Tool ID and Use | Tool Inventory<br>Using a Digital Multimeter |
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### C. ELECTRONICS

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|---|--|-------------------------------|
| <b>1. Electronics</b><br>Exam   | <b>3. Electronics Skills</b><br>Component Testing<br>Basic Soldering | <b>6. Transistor Circuits</b> |
| <b>2. Electronics Foundation</b><br>Scientific Calculator<br>Electronics Formulas | <b>4. Passive Devices</b>  | <b>7. Thyristors (SCR)</b>    |
|   | <b>5. Active Devices</b>   | <b>8. Integrated Circuits</b> |
|   |  | <b>9. IC Circuits</b>         |

## Level II - PC Service Fundamentals

### D. PC ANATOMY

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|------------------------------------|---------------------------------|
| <b>1. External Anatomy</b><br>Exam | <b>2. Gross Anatomy</b><br>Exam |
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### E. FORMS AND PUBLICATIONS

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|---|---|---|
| <b>1. Forms and Publications</b><br>Exam  | The Parts Kit Inventory Record<br>The Temporary Issue Receipt<br>The Out Record<br>The Supply Order Form<br>Using Technical Manuals | <b>3. Work Order Control</b><br>The Work Order Form<br>The Repairable Item Tag<br>The Job Control Log<br>The Julian Calendar<br>Job Dispatcher Software |
| <b>2. Documentation</b><br>The Time Card<br>The Homework Sheet<br>The Tool Inventory Record |   |   |

### F. THE PREVENTIVE MAINTENANCE INSPECTION

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|---|--|--|
| <b>1. The PC PMI</b><br>Exam                                    | Monitor<br>Mouse<br>Keyboard<br>Drive Maintenance<br>Diagnostics Testing | Workstation Setup  |
| <b>2. PMI Overview</b><br>Initial Workstation Inspection<br>CPU |  | <b>3. Performing the PMI</b><br>Computer Workstation PMI<br>Hard Drive Maintenance<br>Computer Diagnostics |

## Level III - Hardware and Software

### G. CPU DISASSEMBLY

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|---|---|---|
| <b>1. CPU Disassembly</b><br>Exam                             | CDROM<br>Floppy Drive<br>Hard Drive<br>Interface Boards<br>Mother Board | U-Processor & Memory                                |
| <b>2. CPU Disassembly Overview</b><br>Chassis<br>Power Supply |   | <b>3. Disassembling the CPU</b><br>Performance Test |

### H. OPERATING SYSTEM AND SOFTWARE

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|---|---|---|
| <b>1. OS and Software</b><br>Exam               | Linux<br>Device Drivers   | Network Client Software<br>Internet Browser Software<br>The Software Toolkit<br>Imaging a Workstation |
| <b>2. Operating Systems</b><br>MSDOS<br>Windows | <b>3. Application Software</b><br>Antivirus Software<br>Diagnostic Software |   |

## **I. PC UPGRADES**

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|--|----------------------|-------------------------------|
| <b>1. Upgrading PCs</b><br>Exam                      | Memory<br>Hard Drive | Disk Drive<br>SCSI            |
| <b>2. Installing PC Upgrades</b><br>Software Drivers | Video<br>Modem       | Specialized Interface Devices |

## **Level IV – Advanced PC Service Topics**

### **J. PC ASSEMBLY**

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|--|----------------------------|--|
| <b>1. PC Assembly</b><br>Exam          | Power Supply<br>Hard Drive | Mother Board<br>Video Interface Card           |
| <b>2. CPU Disassembly Review</b>       | Floppy Drive               | Sound Card                                     |
| <b>3. Assembling the PC</b><br>Chassis | CDROM<br>Memory Modules    | Network Interface Card<br>Computer Workstation |

### **K. PC TROUBLESHOOTING AND REPAIR**

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|---|---|---|
| <b>1. PC Troubleshooting</b><br>Exam  | PC Mouse<br>PC Video Interface                                      | OS Troubleshooting<br>Software Troubleshooting                                    |
| <b>2. Troubleshooting Hardware</b><br>Basic Troubleshooting<br>PC Power Supply<br>PC Mainboard<br>PC Keyboard | PC Audio Interface<br>Hard Disk Drive<br>Floppy Disk Drive<br>CDROM | <b>4. Advanced Troubleshooting</b><br>Troubleshooting Challenges<br>Faulted Parts |
|   | <b>3. Troubleshooting Software</b>                                  |   |

### **L. NOTEBOOK COMPUTERS**

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| <b>1. Notebook Computers</b><br>Exam                 | Battery<br>Keyboard         | Microprocessor<br>Floppy Disk Drive |
| <b>2. Servicing Notebooks</b><br>Notebook Technology | EMI Shield<br>Memory Module | Hard Disk Drive<br>CDROM Drive      |
| <b>3. Notebook Disassembly</b>                       | Heat Sink Blower            | Feature Cards                       |

## **Level V - PC Connectivity**

### **M. PC NETWORKING**

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|---------------------------------|--|---|
| <b>1. PC Networking</b><br>Exam | <b>2. PC Networks</b><br>Network Fundamentals<br>TCP/IP and the Internet | <b>3. PC Networking</b><br>Modems/Dial-Up PPP<br>Windows Networking |
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### **N. PC PRINTERS**

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| <b>1. PC Printers</b><br>Exam                      | Ink Jet Printers<br>Laser Printers                | <b>4. Troubleshooting Printers</b><br>Common Printer Problems |
| <b>2. Servicing PC Printers</b><br>Impact Printers | <b>3. Printing Techniques</b><br>Windows Printing |   |

### **O. A+ CERTIFICATION**

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| <b>1. A+ Certification</b><br>Preparatory Exam | <b>2. CompTIA A+ Preparation</b><br><b>3. Practice Exams</b> |
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## **CURRENT TEXT:**

CSS Course Material and Selected Online References