

Computer Integration (CPMT 2333)



Credit: 3 semester credit hours (2 hours lecture, 4 hours lab)

Prerequisite/Co-requisite: None

Course Description

Integration of hardware, software, and applications. Customization of computer systems for specific applications such as engineering, multimedia, or data acquisition.

Required Textbook and Materials

1. *Getting Started with VMware Workstation: VMware Workstation 10* from VMware, www.vmware.com, 2013
 - a. <https://www.vmware.com/pdf/desktop/ws10-getting-started.pdf>
2. *Using VMware Workstation: VMware Workstation 10* from VMware, www.vmware.com, 2013
 - a. <https://www.vmware.com/pdf/desktop/ws10-using.pdf>
3. *VMware KVM* from VMware, www.vmware.com, 2013
 - a. <https://www.vmware.com/pdf/desktop/vmware-kvm.pdf>
4. *Using vmrun to Control Virtual Machines* from VMware, www.vmware.com, 2013
 - a. https://www.vmware.com/support/developer/vix-api/vix112_vmrun_command.pdf
5. Computer Networking and Troubleshooting Technology students are required to have one portable external Hard Drive with a capacity of 500GB or larger to be used for the duration of the time to complete their respective degree.

Course Objectives

Upon completion of this course, the student will be able to:

1. Integrate special applications in the areas of multimedia, data acquisition, or engineering.
2. Install and maintain various hardware and software components for specialized applications.
3. Analyze and test system operations.

Course Outline

- A. Introduction to Network Addressing
 - 1. IPv4 addressing
 - 2. IPv6 addressing
 - 3. Network ID
 - 4. Host ID
 - 5. MAC Address
- B. Introduction to Network Communication
 - 1. Subnet addressing
 - 2. NAT
- C. The Technology Behind Virtualization
 - 1. What is virtualization?
 - 2. Controlling Multiple Guest Operating Systems
 - 3. Hypervisor Methods of Virtualization
- D. Introduction to VMware
 - 1. Host System Requirements
 - 2. Virtual Machine Features and Specifications
- E. Installing and Using Workstation
 - 1. License Key
 - 2. Installing with other VMware products
 - 3. Upgrading a Host OS
 - 4. Integrated Virtual Debuggers
 - 5. Installing Workstation
 - 6. Upgrading Workstation
 - 7. Uninstalling Workstation
 - 8. Start Workstation
 - 9. The Workstation Window and Help feature
- F. Creating Virtual Machines
 - 1. Understanding Virtual Machines
 - 2. Features of a Typical Virtual Machine
 - 3. Create a Typical Virtual Machine
 - 4. Easy Install
 - 5. Manual Installation
 - 6. VMware Tools
 - 7. Install Software in a Virtual Machine
- G. Using Virtual Machines
 - 1. Start and Shut Down a Virtual Machine
 - 2. Pause and Unpause
 - 3. Suspend and Resume
 - 4. Drag-and-Drop
 - 5. Copy and Paste
 - 6. Add a Host Printer
 - 7. Removable Devices
- 8. Virtual Machine Display
- 9. Using Folders to Manage VMs
- 10. Snapshots
- 11. Closing VMs and Exiting Workstation
- H. Configuring and Managing Virtual Machines
 - 1. Power Option and Settings
 - 2. Display Preferences
 - 3. Unity Mode
 - 4. Encrypting Virtual Machines
 - 5. Moving Virtual Machines
- I. Configuring and Managing Devices
 - 1. DVD, CD-ROM, and Floppy Drives
 - 2. USB Controller
 - 3. Virtual Hard Disks
 - 4. Adding a Physical Disk to a Virtual Machine
 - 5. Virtual Symmetric Multiprocessing
 - 6. Modify Hardware Settings
- J. Configuring Network Connections
 - 1. Understanding Virtual Network Components
 - 2. Common Networking Configurations
 - 3. Bridged Networking
 - 4. Network Address Translation
 - 5. Host-Only Networking
 - 6. Addressing in Host-Only and NAT Configurations
 - 7. MAC Addressing
- K. Using Remote Connections and Sharing Virtual Connections
 - 1. VMware Workstation Server
 - 2. Remote Server
 - 3. Shared Virtual Machines
 - 4. Privileges and Permissions
- L. Using the VMware Command
 - 1. Run the command
 - 2. Workstation Startup Options
- M. VMWare KVM
 - 1. Using VMware KVM
 - 2. Setting the Hot Keys and Log File
- N. VMware vmrun Utility
 - 1. Commands
 - 2. Setting Up vmrun

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3. Specifying the VMware Product Platform

4. Virtual Machine Run Reference

Grade Scale

| | |
|----------|---|
| 90 – 100 | A |
| 80 – 89 | B |
| 70 – 79 | C |
| 60 – 69 | D |
| 0 – 59 | F |

Course Evaluation

Final grades will be calculated according to the following criteria:

| | |
|------------------|-----|
| 1. Labs | 25% |
| 2. Chapter Tests | 35% |
| 3. Final Exam | 35% |

Course Requirements

1. Demonstrate proficiency through hands-on labs as assigned.
2. Complete Study Guides.

Course Policies

1. No food, drinks, or use of tobacco products in class.
2. Beepers, telephones, headphones, and any other electronic devices must be turned off while in class.
3. Do not bring children to class.
4. No late assignments will be accepted.
5. Certification. If a student passes the certification test that is associated with this class, you will receive an “A” on the final exam and credit for 25% of your labs. If you have missed a previous test, you must still take the final exam to substitute for that grade.
6. Attendance Policy. Three absences are allowed. If a student is tardy to class or departs early three (3) times, it will be equal to one (1) absence. Each absence beyond three absences will result in a 2 point deduction from your final grade.
7. If you wish to drop a course, the student is responsible for initiating and completing the drop process. If you stop coming to class and fail to drop the course, you will earn an ‘F’ in the course.
8. Labs. Due dates will be announced by the instructor.
9. Tools. Return all tools and/or software to their designated place.
10. A grade of ‘C’ or better must be earned in this course for credit toward degree requirement.

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11. Additional class policies as defined by the individual course instructor.

Disabilities Statement

The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409) 880-1737 or visit the office in Student Services, Cecil Beeson Building.

Course Schedule

| Week of | Topic | Reference |
|---------|---|----------------------------|
| Week 1 | Course introduction and policies | |
| | Introduction to IP Addressing | Lecture |
| | Network Communication | Lecture |
| Week 2 | VMware Networks | Lecture |
| | The Technology Behind Virtualization | Handout |
| Week 3 | Review and Test 1 | |
| Week 4 | Introduction to VMware | pp. 5 – 14 Getting Started |
| | Installing and Using Workstation | pp. 15 – 34 |
| Week 5 | Creating Virtual Machines | pp. 35 – 52 |
| Week 6 | Using Virtual Machines | pp. 53 – 74 |
| Week 7 | Test 2 | |
| Week 8 | Configuring and Managing Virtual Machines | pp. 89 – 112 Using VMware |
| Week 9 | Configuring and Managing Devices | pp. 113 – 146 |
| Week 10 | Configuring Network Connections | pp. 147 – 180 |
| Week 11 | Test 3 | |
| Week 12 | Using Remote Connections and Sharing Virtual Machines | pp. 181 – 200 |
| | Using vmware Command | pp. 201 – 202 |
| Week 13 | VMware KVM | pp. 5 – 8 VMware KVM |
| Week 14 | Using vmrun to Control Machines | pp. 7 – 18 Using vmrun |
| Week 15 | Test 4 | |
| | Labs Due | |

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| Week of | Topic | Reference |
|---------|------------|-----------|
| Week 16 | Final Exam | |

Contact Information:

Program Director: Lauri Arnold
Program Director
Computer Networking and Troubleshooting Technology

Office: Office 103C, TA-4

Telephone: (409) 839-2050

E-mail: lauri.arnold@lit.edu

Additional Course Policies

Additional policies may be determined by individual course instructors. These policies will be indicated in the syllabus that is issued at the start of the course.