



**South Portland, Maine 04106 Information
Technology**

Title: Virtualization Fundamentals

Catalog Number: CMIT 140

Credit Hours: 3

Total Contact Hours: 45

Lecture (or Lab): Zoom Meetings

Instructor: Rebecca Test

Office Hours : Send an email

Contact Information:

By Appointment – Zoom- Google Hangout

Email: rtest@smccme.edu

Course Syllabus

Course Description

This course focuses on concepts surrounding virtualization with emphasis on Desktop Virtualization. Virtualization is abstracting hardware from operating systems. Technology, procedures, and methods of implementation will be examined. Subsections will include managing CPU's, memory, storage, and other peripherals. Specific labs include: basic installation, setup and configuration of a PC Virtual Machine. Required knowledge includes PC experience, PC architecture, and how programs use PC resources

Pre-Requisites: CMIT100, CMIT105

Co-Requisites: MATH125, ENGL050, ENGL075

An ability to demonstrate core IT competency in client computing and user support

1. Carry out trouble-shooting strategies for resolving an identified end-user IT problem.
2. Differentiate among various operating systems.
3. Explain the process of authentication and authorization between end-user devices and computing network resources
5. Identify basic components of an end-user IT system.
6. Implement a hardware and software configuration responsive to an identified scenario.
7. Summarize life-cycle strategies for replacement, reuse, recycling IT technology and resources.
8. Summarize strategies to support or train users with their IT resources.
9. Use a variety of practices for making end-user IT systems secure.

An ability to demonstrate core IT competency in digital media and immersive technology

19. Differentiate among data types, data transfer protocols and file characteristics specific to the targeted use.

An ability to demonstrate core IT competency in networking and convergence

- 24. Diagram the components of an integrated IT system.
- 25. Differentiate among various computer networking models.
- 26. Differentiate among various techniques for making a computer network secure.
- 27. Summarize the flow of data through a computer network scenario.

An ability to demonstrate core IT competency in servers, storage and virtualization

- 35. Differentiate among strategies for business continuity provisioning of IT resources at the enterprise level.
- 38. Implement an application of virtualization.

An ability to engage in continuous learning as well as research and assess new ideas and information to provide the capabilities for lifelong learning

- 46. Discuss significant trends and emerging technologies and their impact on our global society.

An ability to demonstrate business awareness and workplace effectiveness

- 50. Summarize the role of IT in supporting the mission and goals of an organization.

After successfully completing the course, the student should be able to:

- 1. Understand and explain a Hypervisor
- 2. Understand and define a Virtual Machine and its interaction with a Hypervisor
- 3. Understand and explain virtualization and cloud computing topics
- 4. Configure a Virtual Machine
- 5. Install Windows O/S and Linux O/S as a Virtual Machine
- 6. How to manage and fine tune CPU, memory and other peripherals
- 7. Explain what a stand-alone Hyper-V server is
- 8. Explain what an ESXi server is

Topical Outline of Instruction

The following schedule of lecture topics and reading/homework assignments is preliminary and **may be changed as the semester progresses depending on the availability of the VMware infrastructure**. Labs may also be altered to accommodate the online and Zoom schedule this semester. **Please review the assignments on Brightspace several times a week**. Students are expected to have read the listed material before starting any assessments or completing the labs.

Course Outline

Note: course schedule and course content are subject to change in accordance with industry standards as well as access to the virtual environment.

Week	Lecture Topics	Readings
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1	Understanding Virtualization	Complete the Brightspace Training Read Chapter 1 Review Lecture Videos Review PowerPoint Files Complete Chapter Labs Respond to the Discussion Board.
2	Understanding Hypervisors	Read Chapter 2 Review Lecture Videos Review PowerPoint Files Register your license key with Infosec Complete Chapter Labs Respond to the Discussion Board.
3	Understanding Virtual Machines	Read Chapter 3 Review Lecture Videos Review PowerPoint Files Complete Chapter Labs Respond to the Discussion Board.
4	Creating a Virtual Machine	Quiz 1 - Chapters 1, 2, & 3 Read Chapter 4 Review Lecture Videos Review PowerPoint Files Complete Chapter Labs Respond to the Discussion Board.
5	Installing Windows on a Virtual Machine	Read Chapter 5 Review Lecture Videos Review PowerPoint Files Complete Chapter Labs Respond to the Discussion Board.
6	Installing Linux on a Virtual Machine	Read Chapter 6 Review Lecture Videos Review PowerPoint Files Complete Chapter Labs Respond to the Discussion Board.

7	Managing CPUs for a Virtual Machine Introduction Amazon Cloud Services	Read Chapter 7 Review Lecture Videos Review PowerPoint Files Complete Chapter Labs Respond to the Discussion Board.
8	Managing Memory for a Virtual Machine Introduction Amazon Cloud Services I	Quiz 2 - Chapters 4, 5, 6, & 7 Read Chapter 8 Review Lecture Videos Review PowerPoint Files Complete Chapter Labs Respond to the Discussion Board. Study For The Midterm Next Week
9	Midterm Introduction Amazon Cloud Services II	Read Chapter 9 Complete the Midterm Chapters 1 - 7 Respond to the Discussion Board.
10	Managing Storage for a Virtual Machine Amazon Cloud Services III	Read Chapter 9 Review Lecture Videos Review PowerPoint Files Complete Chapter Labs Respond to the Discussion Board.
11	Managing Networking for a Virtual Machine	Read Chapter 10 Review Lecture Videos Review PowerPoint Files Complete Chapter Labs Respond to the Discussion Board.

12	Copying a Virtual Machine	<p>Quiz 3 Chapters 8, 9 & 10</p> <p>Read Chapter 11 Review Lecture Videos Review PowerPoint Files Complete Chapter Labs Respond to the Discussion Board.</p>
13	Managing Additional Devices in Virtual Machines Amazon Cloud Services IV	<p>Read Chapter 12 Review Lecture Videos Review PowerPoint Files Complete Chapter Labs Respond to the Discussion Board.</p>
14	Understanding Availability Amazon Cloud Services V	<p>Read Chapter 13 Review Lecture Videos Review PowerPoint Files Complete Chapter Labs Respond to the Discussion Board.</p>
15	Understanding Applications in a Virtual Machine	<p>Quiz 4 Chapters 11, 12,13 & 14</p> <p>Read Chapter 14 Review Lecture Videos Review PowerPoint Files Complete Chapter Labs Respond to the Discussion Board.</p>
16	Final	<p>Final Exam Chapters 1 – 14</p> <p>Discussion Board</p>

Course Requirements

Students will need to complete weekly readings, weekly Lab exercises, four quizzes, Discussion Board assignments, and a Midterm and Final Exam.

Student Evaluation and Grading

A	93 - 100	C+	77 – 79
A-	90 - 92	C	73 – 76
B+	87 - 89	C-	70 – 72
B	83 - 86	D+	67 – 69
B-	80 - 82	D	63 – 66
		F	0 – 62

Measure	% of total	Basis
Lab Assignments	30	Performance on labs
Quizzes	20	Percent Correct
Attendance	10	Based on participation in the Discussion Board or in-class attendance
Discussion Board	15	Detailed Responses to Discussion Questions or in-class labs
Final exam	25	Percent Correct

Total = 100 points

Text, Tools and / or Supplies

Required Text:

Required - Virtualization Essentials Matthew Portnoy / Wiley & Sons Inc.
ISBN 978-1-118-17671-9

InfoSec License

This may be purchased from the bookstore. More information can be found on Brightspace.

Required Computer Supplies

The student should have Internet access for class communication purposes. You will need a Windows PC/Laptop running Windows 10 or Macintosh client running a recent version of the MAC OS.

Attendance Policy Online Course

To avoid an AF as a final grade, attendance in an online course is defined as completing weekly graded work such as a test, discussion board, or assignment. If you do not complete weekly work, then you have not attended class for that week. **Online attendance grades will be based on participation in the weekly Discussion Board. If you miss 2 consecutive weeks of class work, you will be dropped from the course with an AF. If you miss 3 weeks of nonconsecutive class work, you will be dropped from the class.**

Attendance Policy In-Person Course

In-person classes require students to attend to all Zoom meetings unless they have received permission from the instructor to miss an in-person Zoom meeting. Students registered in the Zoom classes who don't attend class will receive a zero for their attendance grade unless the absence has been excused. **If you miss 2 consecutive weeks of class, you will be dropped from the course with an AF. If you miss 3 weeks of nonconsecutive classes, you will be dropped from the course with an AF.**

Students who arrive 7 minutes or later to class will receive a 50 percent deduction on their attendance grade unless the late arrival has been excused by the instructor.

If you have work commitments that conflict with this class schedule, please send me an email.

Snow Day Policy

If SMCC cancels class due to power outages or weather, **Zoom classes will still meet.** Please check Brightspace as there may be a modified schedule to allow students to compensate for snow removal and childcare.

Expectations

Students are expected to engage in all discussion board/assignments. Readings/tasks should be done each week as assigned. Late work will receive a 10 percent penalty each day it is turned in beyond the due date. Please email me if you have any problems finishing the course work on time or if you need help. **I am available for assistance if you send me an email and schedule a time to assist you.** If you have difficulty with your password or accessing the SMCC network, you need to contact the SMCC IT Helpdesk. You should create a helpdesk ticket and notify your instructor of the ticket number. Note that if you wait until the end of the week to request assistance, late work will not be excused. **You should start your labs at the beginning of the week. You must notify me no later than 3 days before an assignment is due if have a technical issue with your VM that isn't related to your skill set.** Please start your assignments early. **All assignments and correspondence should be done with your SMCC account.**

Zoom Class Requirements

Students who attend the Zoom sessions should have the ability to listen and watch the Zoom meetings. A phone option may be available if a student is not able to connect with their laptop or desktop. Students must identify themselves when attending a Zoom meeting. This means that you should login with your real name. Use your SMCC account and when asked for a name that will be used in the class, use your first and last name. Don't use nicknames like Bugs Bunny, etc. These names will be blocked from the class.

End-of-Course Evaluation

Students complete evaluations for each course attended at SMCC. Evaluations are submitted online and can be accessed through the student portal. Students can access the course evaluations beginning one week before the end of classes. The deadline for submission of evaluations occurs Monday at 5 PM following the last day of the class. You will receive an email to your student email account when course evaluations are available.

ADA Syllabus Statement

Southern Maine Community College is an equal opportunity/affirmative action institution and employer. For more information, please call 207-741-5798. If you have a disabling condition and wish to request accommodations in order to have reasonable access to the programs and services offered by SMCC, you must register with the Disability Services Coordinator, Sandra Lynham, who can be reached at 741-5923. Further information about services for students with disabilities and the accommodation process is available upon request at this number.

Course policies about online testing are modified to suit each individual's accommodations.

SMCC Pay-for-Print Policy

Per Page Costs

Each semester students receive a \$20 printing credit. The balance resets at the end of the semester and any remaining credits are removed. The cost varies depending upon page size and whether printing is done in black and white or color.

- a. There is a \$0.10 per page fee for standard 8.5" by 11" black and white documents.
- b. The reverse sides of duplex (double-sided) documents are free.
- c. There is a \$.50 per page fee for standard 8.5" by 11" color documents.
- d. There is a \$.20 per page fee for 8.5" by 14" (legal) or 11" by 17" (tabloid) black and white documents.
- e. There is a \$1.00 per page fee for 8.5" by 14" (legal) or 11" by 17" (tabloid) color documents.

Duplex charges (printing on both sides of a page) work in the following fashion: One page is \$0.10, two pages are \$0.10, three pages are \$0.20, and four pages are \$0.20, etc. The flipsides are free, but another sheet of paper is \$0.10. Please be aware that a document with any color at all (when printed to a color printer) will by default be printed in color. You are responsible for setting the print job to print black and white if you do not need color. For directions, please go to the IT Help tab in My SMCC. How does it work?

The College's pay-for-print system monitors printing on all printers (including those in general access labs, library printers, the Academic Achievement Center, Noisy Lounge and technology labs). Students can check the number of pages they have printed by using the Printing Balance tool available on SMCC computers (located in the lower right corner of the screen, near the clock). Departments with work study students who need to print documents for the department should contact the Help Desk at 741-5696 to have a special account set up.

Refunds

Print jobs are eligible for a refund in the event of mechanical or electronic error on the part of the printer, print server, or software used to submit the job. Jobs are not eligible for a refund in cases where the job was not set up correctly, was submitted multiple times, or the student is not satisfied with the result. To request a refund, please bring the offending print to the IT Department in the basement of the Ross Technology Center. Refunds will be granted in the form of a credit to the student's account. Why is SMCC charging for printing?

The pay-for-print system is an effort to control escalating printing costs. Charging for printing helps offset the increasing cost of supplies and encourages students to conserve resources. To find ways to reduce your printing charges, please go to the IT Help tab on My SMCC. If you have questions about the pay-for-printing policy or your printing charges, please contact the Help Desk at 741-5696 or send an email to helpdesk@smccme.edu.

Be sure to log OUT of the system when you've finished your printing, to prevent unauthorized access to your account.

Add-Drop Policy

Students who drop a course during the one-week "add/drop" period in the fall and spring semesters and the first three days of summer sessions receive a 100% refund of the tuition and associated fees for that course. Please note any course that meets for less than the traditional semester length, i.e., 15 weeks, has a pro-rated add/drop period. There is no refund for non-attendance.

Withdrawal Policy

A student may withdraw from a course only during the semester in which s/he is registered for that course. The withdrawal period is the second through twelfth week of the fall and spring semesters and the second through ninth week of twelve-week summer courses. This period is pro-rated for shorter-length courses. To withdraw from a course, a student must complete and submit the appropriate course withdrawal form, available at the Enrollment Service Center (no phone calls, please). The designation “W” will appear on the transcript after a student has officially withdrawn. A course withdrawal is an uncompleted course and may adversely affect financial aid eligibility. Failure to attend or ceasing to attend class does not constitute withdrawal from the course. There is no refund associated with a withdrawal.

Plagiarism Statement

If an instructor suspects that a student has knowingly committed a violation defined in the Maine Community College System Policy on Student Grade Appeals and Academic Misconduct, the instructor has the authority to review the alleged misconduct and determine the grade that the student should receive for the assignment and the course. The instructor may assign a failing grade for the assignment or course and may require the student to complete additional work for the course. The instructor may consult with the department chair and/or the College’s chief academic officer prior to making such decisions. If a student seeks to challenge an instructor’s determination, the student should submit a grade appeal. Grade appeal forms are available in the Advising Office on the South Portland Campus or in the administrative offices in the Learning Commons on the Midcoast Campus. An instructor may also refer the matter to the College’s disciplinary officer for review under the procedures of the MCCS Student Code of Conduct.