

Syllabus

Computer Science Information Technology 975

Information Storage and Management for Computer Networks

Course: CSIT 975, 8525, Fall 2015, 3 Units

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Office Hours: Tuesday, Wednesday, Thursday from 3pm to 5pm

Introduction

Information Storage and Management (ISM) is the only course of its kind to provide a comprehensive understanding the varied storage infrastructure components in classic and virtual environments. It enables participants to make informed decisions in an increasingly complex IT environment. It provides a strong understanding of underlying storage technologies and prepares participants for advanced concepts, technologies, and products.

Participants will learn the architectures, features, and benefits of intelligent storage systems; storage networking technologies such as FC SAN, IP SAN, NAS, and object-based and unified storage; business continuity solutions such as backup and replication; the increasingly critical area of information security and management, and the emerging field of Cloud computing.

This unique, open course focuses on concepts and principles which are further illustrated and reinforced with EMC product examples.

This is the second of four courses for students pursuing a WLAC virtualization and cloud computing certificate. In addition, this course also prepares student for the EMC Proven Professional Information Storage Associate v2 (EMCISA).

The course and EMCISA certification exam topics include:

- Storage architectures and key data center elements
- Physical and logical components of a storage infrastructure including storage subsystems, RAID, and intelligent storage systems
- Storage networking technologies such as FCoE, object-based and unified storage
- Business continuity solutions, backup, replications, and fixed content archive
- Characteristics of cloud services, deployment models, and infrastructure components
- Information security requirements and solutions, key parameters for managing and monitoring storage infrastructure

Audience Profile:

This course is intended for:

- Experienced storage professionals who may not have exposure to all of the segments of modern storage infrastructure.
- Experienced IT professionals managing storage infrastructure in both classic and virtualized environments.
- Students and IT professionals who want to build their career in the storage industry
- Organization-wide IT teams directly or indirectly responsible for planning, designing, deploying, managing, or leveraging information infrastructure.
- Individuals seeking EMC Proven Professional Information Storage Associate v2 (EMCISA) certification.

Course Student Learning Outcomes – SLO's:

At the end of the course, successful students will be able to:

- Motivate business stakeholders and IT teams to recognize the critical role of the 'information' infrastructure.
- Differentiate, select, and deploy various storage networking solutions based on application requirements.
- Immediately contribute to business continuity planning and determine optimum information availability strategies.
- Discuss benefits of, and deploy cloud computing models and service offerings.
- Discuss backup, recovery, and archival requirements and solutions for business-critical data.
- Identify storage security threats and set appropriate mechanisms in place.
- Set, monitor, and report key information storage management parameters, including storage tiering policies.

Course Prerequisites

Before attending this course, students should have:

To understand the content and successfully complete this course, a participant must have basic understanding of computer architecture, operating systems, networking, and databases. Participants with experience in specific segments of storage infrastructure would also be able to assimilate the course material.

At West LA College students typically meet the above course prerequisites by completing the following courses:

- CS934 – Operating Systems
- CS965 – Introduction to Computer Networks
- CS972 – Introduction to Cisco Networking Fundamentals

This is the first of four courses required to earn the college's Virtualization and Cloud Computing Essential certification:

- CS975 – Introduction to Virtualization and Cloud Computing Essentials
- CS975 – Information Storage and Management for Computer Networks
- CS976 –VMware vSphere Install, Configure, and Management
- CS977 – VMware Virtual Desktop Infrastructure

It is very important to take these courses in the proper sequence. Depending on your background the following sequence might be appropriate:

- 1st Semester: Take CS934 and CS965 (or CS972)
- 2nd Semester: Take CS973, CS975, and CS982
- 3rd Semester: Take CS976
- 4th Semester: Take CS977 (cannot take CS976 and CS977 concurrently)

So, make no mistake this is a challenging IT certificate. You should not consider taking this course without the appropriate background. Of course, there are numerous ways to build that appropriate background, but there are no short-cuts or quick paths to doing it the right way.

Your failure to take the right courses or gain the experience will be immediately apparent in this course.

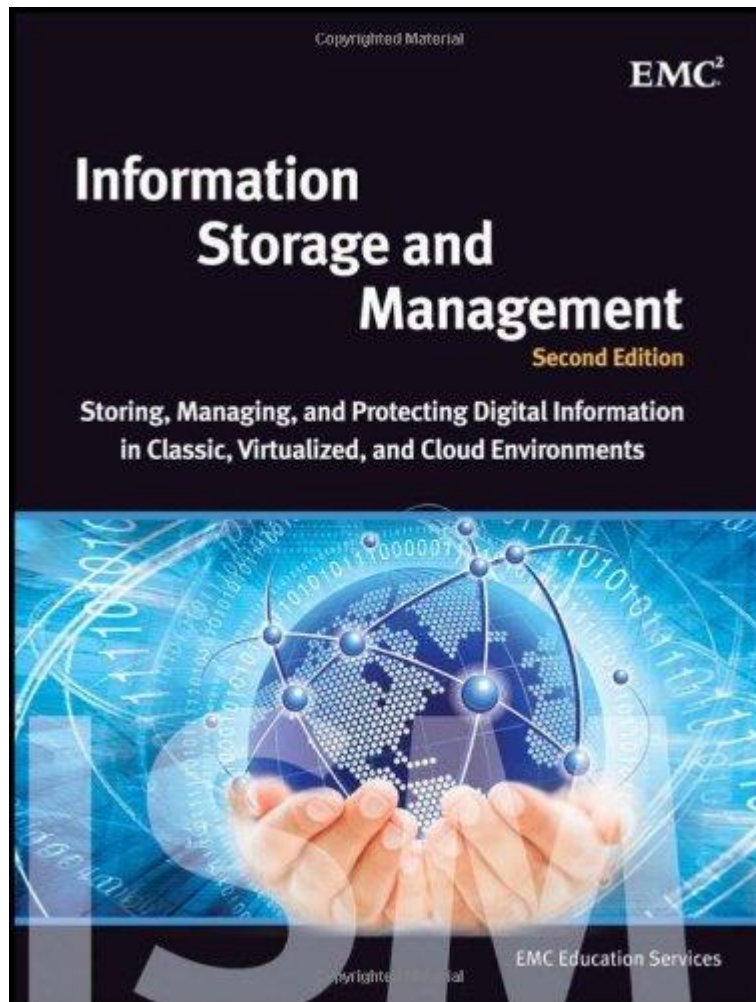
Course Requirements and Expectations

- 1) Class Attendance Policy:
 - a. All students must attend the first day of class (orientation)
 - b. All students must be present for the official course exams
 - c. All students must attend special lecture(s)/demos (Announcements are via ETUDES)
- 2) It is your responsibility to drop the class, if you no longer wish to participate; failure to drop the class in a timely manner will result in a “W” or “F” on your record. The instructor may drop you, as well for inactivity.
- 3) You have approximately seven days to purchase the required eBook for this class. In addition, there are two suggestions related to optional course material.
- 4) General course information is available under the “Modules” link.
- 5) There are mandatory hands-on labs students are expected complete. Students will perform these labs remotely online using the CSIT Division NetLAB+ system. The instructor will assign Usernames and Passwords during the first week of class.
- 6) There are several mandatory official course exams. Typically, each exam covers one module. Due dates for homework assignments, exams and lab exercises are posted in ETUDES and in the course syllabus. Each exam is timed for 60 minutes or less depending on the number of questions. Exams will typically consist of multiple choice and true/false questions. THERE IS NO MAKE-UP or EXAM RE-TAKE. You will be dropped from the course, if you miss two or more exams.
- 7) You will prepare for exams by attending lectures, reading the course eBook, completing lab exercises, and utilizing optional course resources.
- 8) Once the course begins all questions, issues, or problems should be brought to my attention by you using the ETUDES "Private Messages" feature on the left-hand menu. In other words after the course start date do not sent emails related to this course to my WLAC email address.
- 9) All other college/class rules will be enforced.

Required Textbook: (Highly recommended for course and exam prep)

EMC Information Storage and Management [hardcover]

Wiley (EMC Education Services), 2nd Edition, 2012 ISBN-13: 978-1-118-09483-9



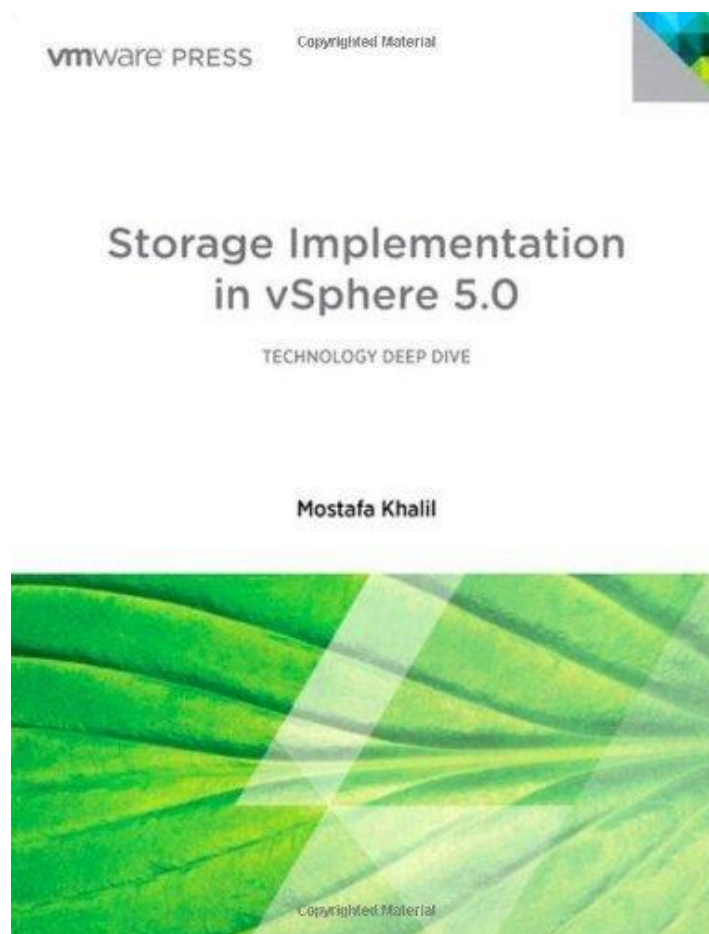
Suggested (Optional) Textbooks – Study Guides

- 1) For students who intend to take CS976, this suggested textbook is a valuable companion. This particular book discusses storage from a vSphere perspective. Whereas the course textbook take a more generic approach.
- 2) In addition, this is a must for any serious student pursuing a career related to this technology and preparing for the VCP-DCV certification. The VCP-DCV certification exam has numerous topics related to storage.
- 3) You do not need to purchase this book at this time. You could wait until you taking CS976. But, the more you know about storage before taking CS976, the better. One benefit from waiting might be the release of a later or newer edition. I am hoping that the publisher releases a 5.5 update.
- 4) The study guide is not available through the bookstore at this time.

Optional Textbook:

Storage Implementation in vSphere 5.0 (Technical Deep Dive)

Pearson/VMware Press, 1st Edition, 2012 ISBN-13: 978-0-321-79993-7



CS975 Fall 2015 Assignments/Exams Schedule

Please observe the start (S:) and due (D:) dates for assignments and exams:

WEEK	DATES	LECTURE TOPICS	ASSIGNMENTS	LABS (NetLAB+)	EXAMS (ETUDES)
1 ST	8/31/2015	C1 – Introduction to Information Storage			
2 ND	9/07/2015	C2 – Data Center Environment			
3 RD	9/14/2015	C3 – Data Protection: RAID		Lab-1	
4 TH	9/21/2015	C4 – Intelligent Storage Systems	Assignment-1 (S:8/31 – D:9/27)	Lab-2	Exam-1 (9/24/15)
5 TH	9/28/2015	C5 – Fibre Channel Storage Area Networks		Lab-3	
6 TH	10/05/2015	C6 – IP SAN and FCoE		Lab-4a	
7 TH	10/12/2015	C7 – Network-Attached Storage	Assignment-2 (S:9/28 – D:10/18)	Lab-4b	Exam-2 (10/15/15)
8 TH	10/19/2015	C8 – Object-Based and Unified Storage		Lab-5	
9 TH	10/26/2015	C9 – Introduction to Business Continuity		Lab-6	
10 TH	11/02/2015	C10 – Backup and Archive	Assignment-3 (S:10/19 – D:11/8)	Lab-7a	Exam-3 (11/5/15)
11 TH	11/09/2015	C11 – Local Replication		Lab-7b	
12 TH	11/16/2015	C12 – Remote Replication		Lab-8	
13 th	11/23/2015	C13 – Cloud Computing	Assignment-4 (S:11/9 – D:11/29)		Exam-4 (11/26/15)
14 th	11/30/2015	C14 – Securing the Storage Infrastructure			
15 th	12/07/2015	C15 – Managing the Storage Infrastructure			
16 th	12/14/2015	Final Exam Week	Assignment-5 (S:11/23 – D:12/20)		Exam-5 (12/17/15)
	12/20/2015	Semester Ends			

Course Point Table

LABS	POINTS
NetLAB Hands-On Exercises:	
Lab-1: Introduction to Storage	50
Lab-2: Overview of RAID	50
Lab-3: Overview of LUNs	50
Lab-4a: Overview of Network-Attached Storage	50
Lab-4b: Analyze Protocols and Performance of Network-Attached Storage	50
Lab 5: Overview of iSCSI	50
Lab-6: Backup and Recovery	50
Lab-7a: Identifying Security Vulnerabilities	50
Lab-7b: Securing the Storage Infrastructure	50
Lab-8: Managing the Storage Infrastructure	50
NetLAB Hands-On Total Points:	500
ETUDES Homework Assignments:	
Homework Assignment-1	30
Homework Assignment-2	30
Homework Assignment-3	30
Homework Assignment-4	30
Homework Assignment-5	30
Homework Total Points:	150
TOTAL POINTS:	650

Note:

- All labs must be completed in sequence.
- Students will be required to complete each lab at least once.
- This means you will complete Lab-1 through Lab-8, and then repeat the sequence again.

Course Point Table

ETUDES EXAMS	POINTS
ETUDES Official Course Exams:	
Exam-1 (C1, C2, C3):	100
Exam-2 (C4, C5, C6):	100
Exam-3 (C7, C8, C9):	100
Exam-4 (C10, C11, C12):	100
Exam-5 (C13, C14, C15):	100
Total Official Exam Points:	500

Course Grading Scale

There are a total of 1150 points possible for this course as indicated by the tables above. The total is based on five homework assignments (150 points), 10 NetLAB exercises (500 points) and five official course exams (500 points).

COURSE GRADE	POINT RANGE	% RANGE
"A"	970 – 873	100% - 90%
"B"	872 – 776	89% - 80%
"C"	775 – 679	79% - 70%
"D"	678 – 582	69% - 60%
"F"	581 – 0	59% - 0

Instructor's Incomplete Policy

The request for an Incomplete is a common one. I have a formal and consistent policy to determine whether an incomplete makes academic sense and is possible.

- 1) My position is that a student who has successfully completed more than 75% of the course work and has a justifiable explanation should be considered for an Incomplete.
- 2) A student who has not successfully completed 75% or more and does not have justifiable circumstances would either be dropped (if possible), failed, or given a grade based on the course submitted to date.

Methods of Evaluation

All exercises and exams are given a point assessment. The requirements to receive full credit for any exercise or exam are provided below:

eBook homework assignments - requirements to receive full credit:

- Must be submitted and completed on time
- Must be submitted in required format
- Correct answers must include key words, terms, or expressions
- Must not be copied or duplicated from another student
- Assignments are graded manually and posted in ETUDES

NetLAB Exercises - requirements to receive full credit:

- Successfully perform all lab steps
- Complete the lab “conclusion questions” associated with each lab, if any
- Exercises are manually reviewed/graded by the instructor

ETUDES Official Course Exams – requirements to receive full credit

- Answer all questions correctly
- Take and complete the exam when scheduled
- Scores can be reviewed in the ETUDES grade book
- Exams are automatically graded by the ETUDES system upon submission

Instructor Response Policy

Students must communicate with me directly using the ETUDES Message system after the course has started. Do not send multiple messages or send the same message to my various email addresses. This may actually delay a response. I will make every effort to respond within 48 hours or less on average.

Drop Policy

If you choose to drop a course, it is your responsibility to do so by the end of the second week of class if you wish to receive a tuition refund. For compressed eight week semesters, you must drop by the end of the first week to receive a tuition refund. You will not be automatically dropped from your class for lack of participation.

If you drop a class after the fourth week of the semester has passed, you will receive a "W" grade for that class. If you drop a class after the tenth week has passed, you will receive an "F" grade for that class. If you drop a class after the second week has passed in a compressed eight week semester, you will receive a "W" grade for that class. If you drop a class after the fifth week has passed in a compressed eight week semester, you will receive an "F" grade in that class.

Important Drop Dates for Fall 2015:

- Get a full refund: 9/11/15
- Last day to add a class:
 - Online: 8/30/15
 - In-person: 9/11/15
- File for "pass/no pass": 9/11/15
- Drop class without a "W": 9/11/15
- Drop class with a "W": 11/20/15

Special Needs and Disabled Students Policy

If you are a student with a disability and require accommodations, please send me a Private Message. The sooner I am aware of your eligibility for accommodations, the quicker I will be able to assist the Disabled Students Programs & Services (DSP&S) Office in providing them. The DSP&S Office provides special assistance in areas including: registration assistance specialized tutoring, academic and career guidance counseling, instructor liaison, special instruction and testing assistance. You can contact the Director of the DSP&S Office, Nancy Brambila, at brambin@wlac.edu describing the accommodations that are necessary.

Academic Integrity Statement

Academic integrity is a fundamental value of higher education and WLAC; therefore, acts of cheating, plagiarism, falsification or attempts to cheat, plagiarize or falsify will not be tolerated in this course. It is your responsibility to understand what plagiarism is and you can read about it here: <http://www.plagiarism.org>.

Any student caught cheating or plagiarizing will be subject to disciplinary action.

Online Student Resources

- Online Student Helpdesk: <http://www.wlac.edu/online/helpdesk.asp>
- Course Login: <http://www.wlac.edu/online/logininfo.asp>
- Technical Requirements: <https://etudes-ng.fhda.edu/portal/site/!gateway/page/4243c7b4-9b68-45fc-0016-148ad08653aa>
- ETUDES FAQ: <http://www.wlac.edu/online/etudesfaq.asp>
- WLAC Homepage: <http://www.wlac.edu>
- WLAC Online Homepage: <http://www.wlac.edu/online>
- WLAC Online Counseling: <http://www.wlac.edu/online/counselingonline.asp>
- WLAC Online Tutoring: <http://www.wlac.edu/online/tutoring.asp>
- WLAC Library: <http://www.wlac.edu/library/index.html>
- WLAC Bookstore: <http://store450.collegestoreonline.com>
- Netiquette: <http://www.albion.com/netiquette/corerules.html>
- Strategies for Online Learners: <http://www.uidaho.edu/eo/dist8.html>
- Be a Successful Online Student:
<http://www.ion.uillinois.edu/resources/tutorials/pedagogy/StudentProfile.asp>
- Tips for Online Success: <http://www.ion.uillinois.edu/resources/tutorials/pedagogy/tips.asp>