EMC ACADEMIC ALLIANCE

Preparing the next generation of IT professionals for careers in virtualized and cloud environments.

Equip your students with the broad and deep knowledge required in today’s complex and rapidly evolving IT infrastructures.
IMPLICATIONS OF EXPLOSIVE GROWTH OF THE DIGITAL UNIVERSE

According to the recent study by IDC*, the world’s information is doubling every two years. In 2011, the world will create a staggering 1.8 zettabytes. By 2020, the world will generate 50 times the amount of information and 75 times the number of “information containers”, while IT staff to manage it will grow less than 1.5 times. This creates a huge skills gap for organizations and enormous opportunities for students entering the industry.

EMC ACADEMIC ALLIANCE

EMC Academic Alliance is a collaboration with colleges and universities worldwide. The program offers unique ‘open’ curriculum-based education on technology topics such as virtualization, cloud computing, big data analytics, and information storage and management.

The ‘open’ curriculum focuses on technology concepts and principles applicable to any vendor environment, enabling students to develop highly marketable knowledge and skills required in today’s evolving IT industry.

Four key course offerings:

- Information Storage and Management
- Cloud Infrastructure and Services
- Data Science and Big Data Analytics
- Backup Recovery Systems and Architecture

Offer your students a course that will prepare them to plan, deploy, and manage today’s complex IT infrastructures and unleash the power of Big Data.

*IDC 2011 Digital Universe Study: Extracting Value from Chaos
Key contributors to the growth of digital data include not only individuals creating information (downloads, photos, text messages, etc.) but more importantly, the information being created about them—also known as a “digital shadow”.

If organizations try to manage this massive growth of information by using traditional approaches as in the past, then the cost of resources, budget, complexity, and delays in responsiveness will compound at a similar rate.

The status quo is not a realistic approach nor is simply limiting the organization’s access and use of the information. This explosive growth in information demands a change in the way we build, operate, and consume IT.

Source: IDC 2011 Digital Universe Study: Extracting Value from Chaos

Before

- Multiple independent operations
- Lots of buffer inventory
- Quality and output are inconsistent
- Lots of manual intervention
- Inefficient and not cost competitive

After

- Highly integrated – All processes are linked to form one contiguous, seamless operation
- Minimal buffer inventory needed
- Consistent, self-connecting process
- Minimal manual intervention needed
MANAGING INFORMATION STORAGE: TRENDS, CHALLENGES, AND OPTIONS

How are IT and storage managers coping with the organizational challenges posed by the explosion of data, increasing criticality of digitized information, and rapid introduction of new storage technologies?

The Managing Information Storage paper contains the findings of a study based on input from over 1,000 storage professionals and IT managers worldwide. The complete white paper can be found at http://education.EMC.com/AcademicAlliance.

According to the study, one of the most significant challenges faced by IT/storage managers is the shortage of skilled storage professionals in the marketplace.

The study further reveals the hiring requirements across the industry. It indicates staff growth of more than 30 percent, requiring hiring, training, and deploying capable IT professionals with expertise in storage, virtualization, and cloud infrastructure.

<table>
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<tr>
<th>Challenges Identified by IT/Storage Managers and Professionals</th>
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<td>Managing storage growth</td>
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<td>Designing, deploying, and managing storage in a virtualized server environment</td>
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<td>Designing, deploying, and managing backup, recovery, and archive solutions</td>
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<td>Storage consolidation</td>
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<td>Making informed strategic/big-picture decisions</td>
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<td>Designing, deploying, and managing disaster recovery solutions</td>
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<td><strong>Lack of skilled storage professionals</strong></td>
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<tr>
<td>Designing, deploying, and managing storage in a cloud computing environment</td>
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<td>Convincing higher management to adopt cloud</td>
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<th>Hiring requirements for next 12 months</th>
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<tbody>
<tr>
<td>Storage Managers</td>
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<td>Storage Administrators</td>
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<td>Storage Architects</td>
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<td>BC Administrators</td>
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<tr>
<td>Cloud Architects</td>
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<td>Cloud Administrators</td>
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*Source: Managing Information Storage: Trends, Challenges, and Options 2011-2012*
Virtualization and cloud computing have changed the way companies look at their IT infrastructure and service models. As enterprises continue to transition to highly virtualized cloud environments, IT professionals across all domains are required to understand the concepts and principles of virtualization and cloud infrastructure technologies.

The transition to IT-as-a-Service occurs in phases. In each phase, IT becomes more agile, responsive, and efficient; ROI increases while IT costs go down.

**Phase 1** focuses on infrastructure, the foundation of IT. In this phase, infrastructure is virtualized and the entire compute stack—processors, storage, and networks—is pooled. This decouples logical functions from physical resources, eliminating the old one server-one application model.

**Phase 2** shifts the focus to better IT for the business applications. Here the payoff is improved quality of service and more efficient delivery of the applications that power the business.

**Phase 3** is about improved business and IT agility by providing IT-as-a-Service to end users and business units. At this phase, IT is running like a business—costs and services are well understood—and high business value can be provided at the lowest cost possible.

**DATA ANALYTICS**

In the same way that cloud computing is transforming IT, the emerging discipline of data science is transforming business.

A new role—Data Scientist—will play a key role in the Big Data Analytics world, requiring knowledge and skills involving new methodologies, technologies, and tools that go beyond traditional data analytics.
EMC ACADEMIC ALLIANCE COURSE OFFERINGS

EMC Academic Alliance offers the following courses to prepare students for successful careers in the new IT landscape.

For complete course details go to http://education.EMC.com/AcademicAlliance/Courses

INFORMATION STORAGE AND MANAGEMENT (ISM)

Covering a broad range of concepts and principles including storage systems, storage networking and virtualization, business continuity, and storage security and management. Providing 40 hours of content, ISM is the only course of its kind to fill the knowledge gap in understanding varied components of modern information storage infrastructure.

Module 1: Introduction to Information Storage
Module 2: Data center environment
Module 3: RAID
Module 4: Intelligent Storage system
Module 5: Fibre Channel Storage Area Network (FC SAN)
Module 6: IP SAN and Fibre Channel over Ethernet (FCoE)
Module 7: Network Attached Storage (NAS)
Module 8: Object based and Unified Storage
Module 9: Introduction to Business Continuity
Module 10: Backup and Archive
Module 11: Local Replication
Module 12: Remote Replication
Module 13: Cloud Computing
Module 14: Securing the Information Infrastructure
Module 15: Managing the Information Infrastructure

Faculty: Profile for Success

Faculty who have been teaching courses on following topics will have added advantage in teaching the course:

- Computer Architecture
- Network administration
- Operating systems, File systems and data structures
- Computer systems administration and integration
- File systems and data structures

Student profile for success

Students who have completed courses on following topics will have added advantage in successfully comprehending the learnings of the course:

- Computer systems and architectures
- Networking technologies
- Operating system
- Database Management Systems
Covering cloud deployment and service models, cloud infrastructure, and the key considerations in migrating to cloud computing. Providing 40 hours of content, the CIS course provides the required technology essentials across all domains—including server, storage, networking, applications, and databases—to help develop a strong understanding of virtualization and cloud computing technologies.

Module 1: Journey to the Cloud
Module 2: Classic Data Center (CDC)
Module 3: Virtualized Data Center (VDC) – Compute
Module 4: Virtualized Data Center (VDC) – Storage
Module 5: Virtualized Data Center (VDC) – Networking
Module 6: Virtualized Data Center (VDC) – Desktop and Application
Module 7: Business Continuity in VDC
Module 8: Cloud Computing Primer
Module 9: Cloud Infrastructure and Management
Module 10: Cloud Security
Module 11: Cloud Migration Considerations

Faculty: Profile for Success
Faculty who have been teaching courses on following topics will have added advantage in successfully teaching the course:
- Systems integration
- Computer systems administration
- Network administration
- Operating systems, file systems and data structures

Student profile for success
Students who have completed courses on following topics will have added advantage in comprehending the learnings of the course:
- Computer systems and architectures
- Networking technologies
- Operating system
- Information storage and management
Providing 40 hours of content, this ‘open’ course takes a hands-on practitioner’s approach to the foundational techniques and tools required for data science and big data analytics. The course focuses on concepts, principles, and techniques applicable to any technology environment and industry and establishes a baseline that can be enhanced by further formal training and additional real-world experience.

Module 1: Introduction to Big Data Analytics  
Module 2: Overview of Data Analytics Lifecycle  
Module 3: Using R for Initial Analysis of the Data  
Module 4: Advanced Analytics and Statistical Modeling for Big Data – Theory and Methods  
Module 5: Advanced Analytics and Statistical Modeling for Big Data – Technology and Tools  
Module 6: Concluding and Operationalizing an Analytics Project  
Module 7: Big Data Analytics Lifecycle Lab

Faculty: Profile for Success
Faculty who have been teaching courses on following topics will have added advantage in successfully teaching the course:
- Computer Science  
- Mathematics, Statistics and Statistical Modeling

Student profile for success
Students who have completed courses on following topics will have added advantage in comprehending the learnings of the course:
- Computer Science  
- Information Technology  
- Engineering  
- Statistics and Statistical Modeling  
- Mathematics  
- Database Administration and Data Warehousing  
- Computer Programming  
- Econometrics  
- Biostatistics  
- Physics
This ‘open’ course covers backup and recovery infrastructure and the concepts and technologies used in Backup and Recovery environments. Providing 40 hours of content, this course is for those who wish to specialize in this particular storage domain.

Module 1: Backup Theory
Module 2: Information Storage Concepts
Module 3: Backup Client
Module 4: Backup Storage Node
Module 5: Backup and Recovery Planning

Faculty: Profile for Success
Faculty who have been teaching courses on following topics will have added advantage in successfully teaching the course:
- Computer architecture and storage systems
- Networking, including SAN, NAS, TCP/IP
- Protecting data in disk storage, including RAID and replication methods and technologies
- Backup and recovery concepts
- Virtualization concepts

Student profile for success
Students who have completed courses on following topics will have added advantage in comprehending the learnings of the course:
- Computer systems and architectures
- Networking technologies
- Operating systems
- Information storage and management
- Backup and recovery concepts
GETTING STARTED WITH EMC ACADEMIC ALLIANCE PROGRAM

To be eligible to participate in the EMC Academic Alliance program, institutions must be accredited, degree-granting institutions of higher education.

EMC course materials can only be used as part of a structured syllabus leading to undergraduate (Associate or Bachelor) or post-graduate academic credit.

All institution applications will be reviewed by the EMC Academic Alliance program team for alignment with program goals. Complete membership terms and conditions can be found at http://education.EMC.com/academicalliance.

PROGRAM BENEFITS

EMC Academic Alliance members will receive:

- Free faculty readiness training
- Comprehensive instructor materials including:
  - Course Slides
  - Facilitator Guide
  - Student Exercises
  - Case Studies
- Discounts on selected EMC Proven Professional certification exams for students and faculty
- Online Faculty Community with teaching resources and a networking forum
- Student Resource Portal

PROGRAM REQUIREMENTS

EMC Academic Alliance faculty are required to report registration data (number of students per class) each term the course is taught. Faculty may also be requested to provide EMC with data and/or feedback on the course implementation and delivery.

Data/feedback requested may include, without limitation, promotion, instructor performance, feedback for improving EMC courses, and student evaluations. Participating institutions will maintain their standing in the program by teaching the approved courses. The minimum requirement is one course per 24-month period.
FACULTY BENEFITS

Faculty Training
EMC Academic Alliance provides free training to registered faculty for the courses they plan to teach. Each campus may order up to 2 copies of Video Instructor-led Training (Video-ILT) per course.

Video-ILT is packaged in a DVD-ROM format and delivered by subject matter experts. This training provides a near-classroom experience including white boarding, lab exercises, student questions, and course materials.

Instructor Materials
Gain access to teaching materials, resources, and discussions in the Faculty Community, an exclusive site for Academic Alliance professors.

Certification Discounts
Faculty receive 50% off select EMC Proven Professional certification exams plus a free retake.

STUDENT BENEFITS

Student Portal
A secure site with case studies, white papers, and simulators is available for EMC Academic Alliance students.

Certification Discounts
Students receive 50% off select EMC Proven Professional certification exams plus a free retake.

Student Ambassador
Students work 1-on-1 with EMC and Academic Alliance alumni to become champions for the information storage Industry.
CONNECT, SHARE, AND DISCUSS

Interactive communities provide opportunities to ask questions and participate in discussions on technical topics and course implementation.

Industry Practitioners
Learn from IT professionals working in the industry. Discuss industry trends, share best practices, find answers, and share ideas.
http://education.EMC.com/ProvenCommunity

Academic Alliance Professors
An exclusive site for faculty to access instructor materials and connect with a network of Academic Alliance members.
http://education.EMC.com/AcademicAlliance/Faculty

Like us on Facebook
Join thousands of students, faculty, and industry professionals to discuss technology topics on Facebook.
http://facebook.com/EMCAcademicAlliance

Follow us on Twitter
For program news and current events, follow EMC Academic Alliance on Twitter.
http://twitter.com/EMCAcademics

CONTACT US

EMC Academic Alliance:
http://education.EMC.com/AcademicAlliance

EMC Proven Professional certification:
http://education.EMC.com/Certification