



IBM System z Cloud Supports the Entire Enterprise at Marist College

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Mission Statement

"Marist is dedicated to helping students develop the intellect, character, and skills required for enlightened, ethical, and productive lives in the global community of the 21st century."





Marist Profile - Official State Charter Granted in 1946

77

Academic Programs

44 Bachelor's Programs

8 Master's Onground

4 Master's Fully Online

(1st Online Accredited MBA in NYS)

21 Certificate Programs

6,303

Student Population

4,536 Traditional UG

569 Adult Ed

872 Graduate FT/PT

326 Non-Matriculated



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Marist Profile – Study Sites



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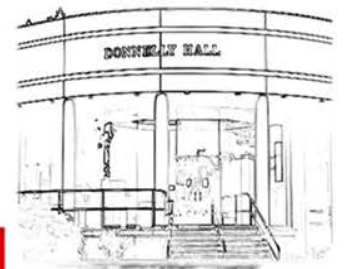


Higher Education Industry

Shared governance

Academic and Administrative

Coopetition



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Disruption

Academic Analytics

MOOCs – EDx, Coursera

Student Loans

Always on

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Building on Systems and Continuing Infrastructure

Avoid considerable capital and operating costs

➤ **Use of existing infrastructure**

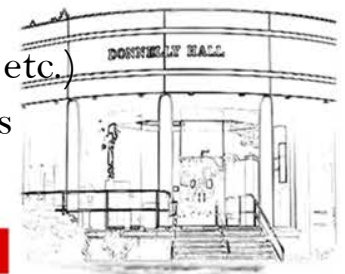
- Avoided at least \$350K in single purpose server hardware to run recommended Banner (ERP) configurations

➤ **Existing expertise on platform was utilized, avoiding training costs**

- Long history of innovative use of mainframe services to support academic experience
- For 20 years ran IA Plus on CICS on z/OS
- Extensive knowledge of System z, z/VM, Linux on z
- Marist produced first Linux on System z distribution

➤ **Use of virtualization to provide many services with few resources has always been priority**

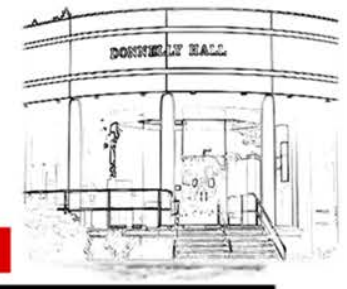
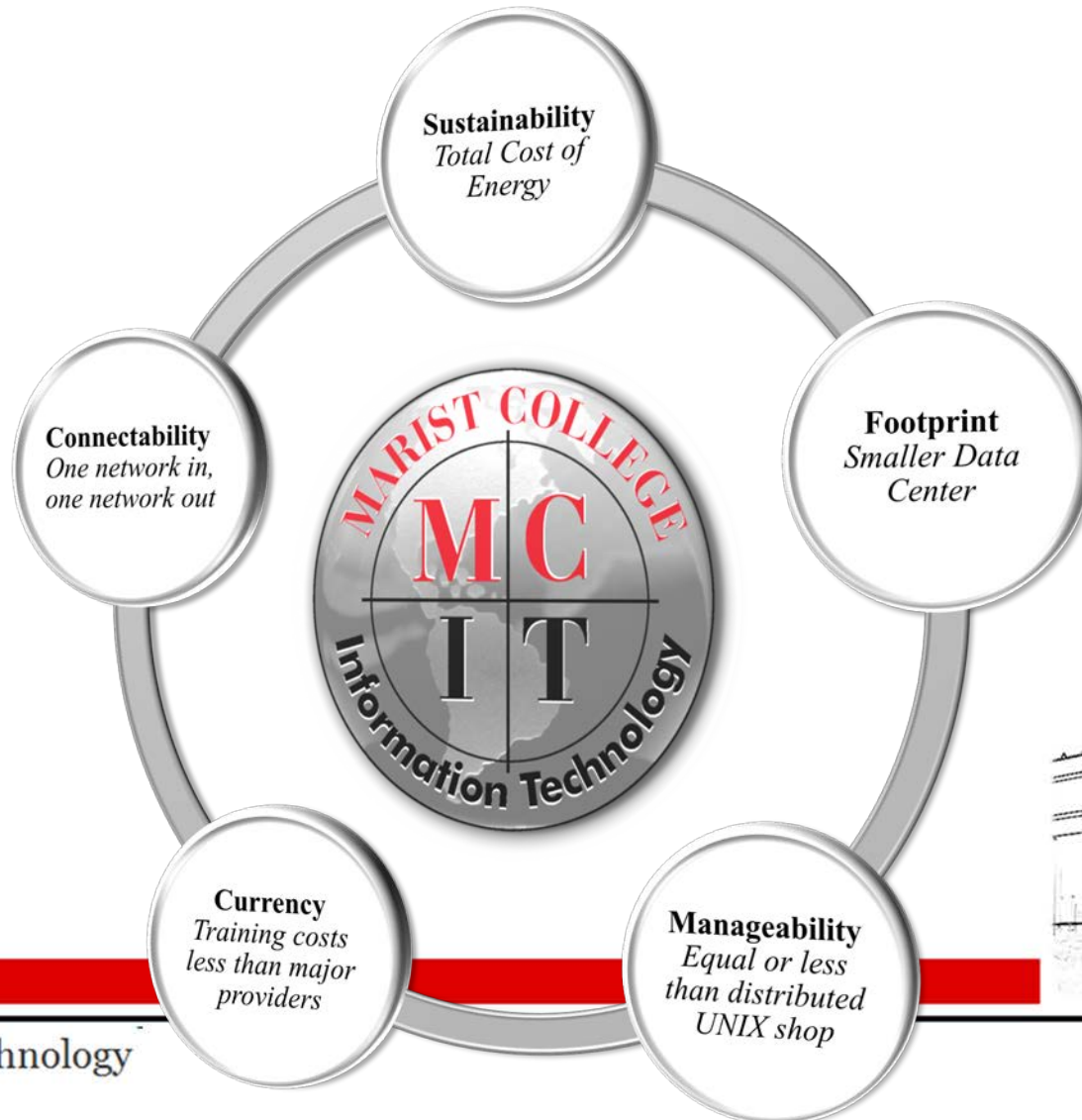
- Limited physical space in Data Center
- Limited hardware & environmentals (power, cabling, cooling, racks, etc.)
- Limited number of staff needed to control large number of services



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Centralizing Operations on the z

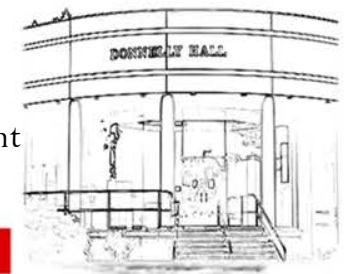




Success on System z

Currently virtualized on z/VM

- Webmail Interface to IMAP Using Horde
- Banner Application Servers
- General Web Server for all Faculty, Staff, and Students
- A Wiki
- IceCast – audio streaming server (encoding on Intel Server)
- Test Servers for all server admin staff
- Various projects for The Linux Foundation supporting Open Source development on System z (formerly Open Source Development Labs – OSDL)
- Slackware for System z development
- SysLog
- Oracle Database Servers (at least 8)
 - LAMP Web Servers
 - ✓ Over 20 Different Servers in Production
 - ✓ Over 600 Servers for Students
 - ✓ Supports Student Government and Clubs
- **Sakai hosting for 14 K-12 school districts**
- **Educational Hosting for the Archdiocese of NY**
- **4 Higher Education Clients Hosted**
 - General Linux Server for Student Computer Society
 - Test Servers for Sakai Environment and Development
 - Firewall for other Linux Servers
 - Subversion Server for all Marist Development
 - NTP Server for Campus
 - Central Authentication Server (CAS)
 - Email Gateway Hub
 - Main College Web Servers including Production and Test
 - College Library Web Servers
 - File Dropbox
 - Web content management systems (OmniUpdate, WordPress)
 - Xymon (Hobbit) monitor for servers and network devices
 - Cognos Business Intelligence Infrastructure
 - SPSS
 - Jobs.Marist.Edu (Job Applicant Tracking)



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Enterprise on the z

Enterprise Computing Research Lab



CAMPUS TECHNOLOGY

HPC | News

Marist College Beefs Up HPC with IBM z114 Hybrid Mainframe

- By Dian Schaffhauser
- 01/17/12

[Marist College](#) in Poughkeepsie, NY is expanding its high-performance computing capabilities with a new hybrid computing system from [IBM](#) for AIX and Linux applications.

The latest computer installation comes courtesy of a \$680,000 grant from the [National Science Foundation's Major Research Instrumentation Program](#) to Marist's [School of Computer Science and Mathematics](#). Marist College, which has 5,350 students, has been doing high-performance computing work with IBM since 1988, when the two organizations set up a joint study arrangement. Under the partnership, the school's community works with IBM research and development staff on emerging technology initiatives. That includes IBM involvement in the Marist College Institute for Data Center Professionals, which delivers training on enterprise computing.



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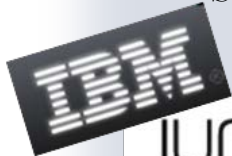
Enterprise Level System for Research / Research Training



Enterprise Computing Community



- Primary areas identified for requested enterprise system
 - Research on the system architecture and software itself
 - Research applications that will benefit from greater storage capacity and/or faster processor speed
 - Applied collaborative research between faculty and industry
 - Research training for faculty and students at Marist and other universities
- Research areas selected after consultation with
 - Marist faculty from the School of Computer Science and Mathematics and research partners at other universities
 - Co-PIs from partner universities in the Enterprise Computing Community (ECC)
 - Several industry partners in the ECC



Projects and Partners

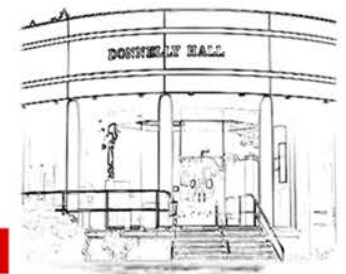
The Hudson River Valley Institute

Academic Center Devoted to Education, Research, and Publication of Information on the Hudson River Valley, a National Heritage Area

➤ **Web Site Hosting**

➤ **Developing**

- Digital Archives
- Regional Portal Site
- New Undergraduate Curricula
- Interdisciplinary Internships
- Education Programs for K-12 Teachers and Students



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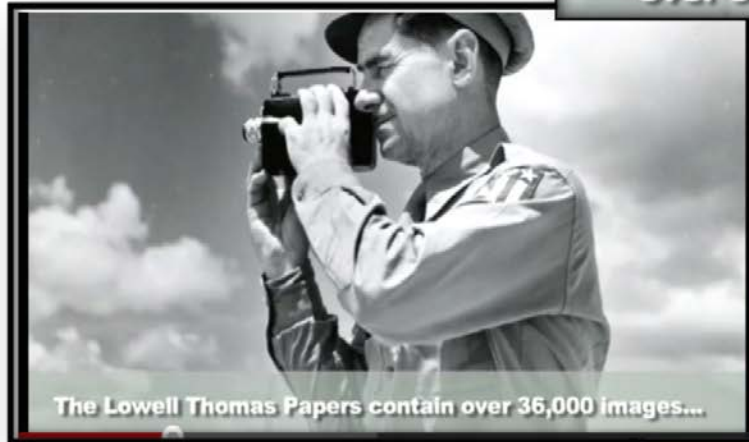
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Projects and Partners

Lowell Thomas Archives Image Collection

over 500 hours of film...



The Lowell Thomas Papers contain over 36,000 images...

over 1,000 hours of audio...



and over 1,000,000 documents.

Digitize and “Web Publish” Marist Library’s Lowell Thomas Collection

- Photographs, audio recordings, motion pictures, artifacts, and over one million pages of manuscript materials
- Materials dated from the period 1789 to 1984
- Stored in IBM’s Content Manager on z/OS



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Projects and Partners

FDR Presidential Library and Museum

- **Digitize and “Web Publish” FDR Library’s Holdings**
 - Key documents sought after by researchers
 - Extensive photographic holdings
- **National Showcase For IBM’s Digital Library Technologies**
 - First presidential library with original holdings online
- **Digitization Of Primary Source Material Continues**
 - Roosevelt Churchill correspondence
 - Eleanor Roosevelt’s “My Day” newspaper columns
 - Education Programs for K-12 Teachers and Students



Teachers and Students: Please visit the FDR Library's Education Department pages of our website to find resources designed for K-12 audiences.

Further Research



Archives: Both Franklin and Eleanor Roosevelt's papers are housed in the Archives at the FDR Presidential Library & Museum along with photographs and audiovisual recordings. For more information about these and other historical materials, visit [About the Archives](#).

[Search Our Collections](#)

[More Online Resources](#)

[About the Library](#)

Partners

a person who shares with another in some action or endeavor; sharer; associate.

- Dictionary.com



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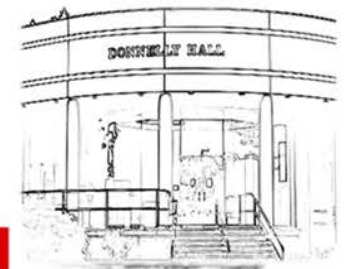
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The Joint Study

A Unique Research Partnership with IBM

➤ Collaborative Activities

- ✓ eLearning – K-12, Higher Ed - 2003 SUR Grant
- ✓ Rich Media – Several collections – FDR, Emmy, Hudson River, Lowell Thomas
- ✓ Open Source CLE Enablement - 2005 SUR Grant -Sakai
- ✓ Linux Virtual Servers for Students
- ✓ Grid Computing Apps
- ✓ Cell-z Hybrid Environments and Virtual World Apps
- ✓ Cloud Computing/Open Education Environment/SaaS – Greystone
- ✓ Support of many NSF and NYSTAR activities with Marist



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Success on System z

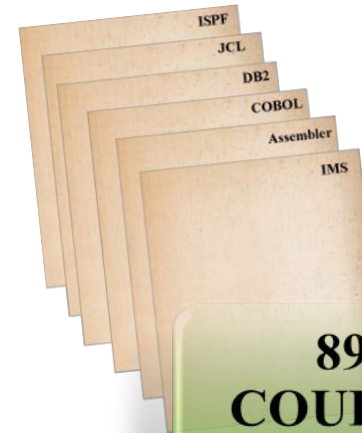
z/OS Knowledge Center on System z



**249
SCHOOLS**



MARIST KCTR



**894
COURSES**



**13,992
STUDENTS**



**466
FACULTY**

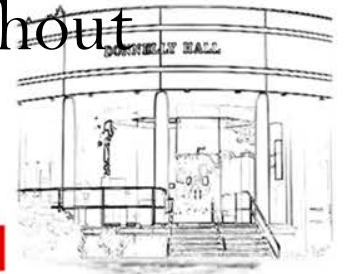


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Virtual Computing Lab for Advanced Analytics

- Business Need for Cloud Delivery
 - Streamline business analytics software for course delivery to students / faculty
 - Scale of virtualized servers and desktop applications
 - Return on Assets
 - Big Business Data
- We could **NOT** offer this course at scale without the auto provisioning cloud architecture

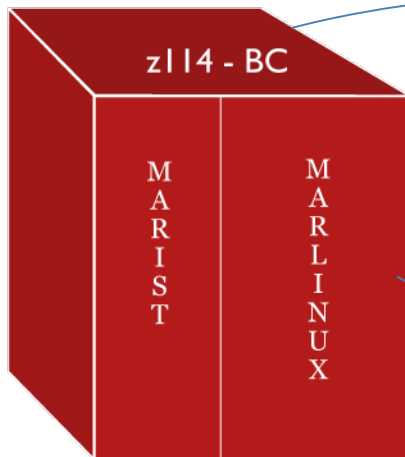


Virtual Computing Lab for Advanced Analytics

Platform

System z

- z/VM
- z/Linux
- SUSE Linux Enterprise Server 11



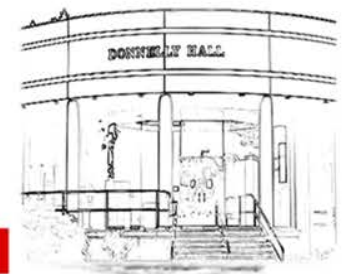
System p

- AIX 6.1
- Red Hat Linux



Blade Center

- Intel Blades
- VMware



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Academic Community Cloud

Email

Hosted Organizations

Advanced Research

Student Servers

www.Marketing WEB

Collaborative WEB

Learning WEB &
Academic Analytics

Digital Archives

ERP

Virtual Computing Lab

Academic Programs
& MOOCS

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Ecosystem

➤ Business Partners



➤ ISVs

➤ User Groups

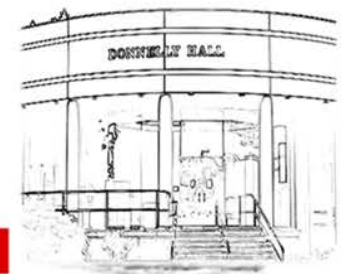


➤ Conferences

➤ Standards Bodies



➤ Open Source



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About the IDCP

- Funded by the National Science Foundation in 2007
- Also supported by the New York State Foundation for Science, Technology and Innovation
- Administered by the School of Computer Science and Mathematics at Marist College
- Delivers 100% online education and training for Data Center and IT Professionals across the globe
- Credit and non-credit offerings
- Reduced tuition rates
- Industry focused, taught by professionals with extensive industry experience



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Data Center Technologies

Systems and Software- 9 credits

Info Tech &
Systems Concepts

Introduction to
Programming

Arch. Of Hardware &
Software

Facilities Management- 6 credits

Info Tech & Systems
Concepts

Introduction to Facilities

Networking-9 credits

Info Tech & Systems
Concepts

Data Communication

Internetworking

Operations & Process Management-12 credits

Info Tech & Systems
Concepts

Managing IT
Organizations

System Design &
Analysis

Project Management

Security-9 credits

Info Tech & Systems
Concepts

System Administration &
Management

Internet Security

Product Development & Financial Planning-9 credits

Info Tech & Systems
Concepts

Accounting for the
Data Center

Project
Management

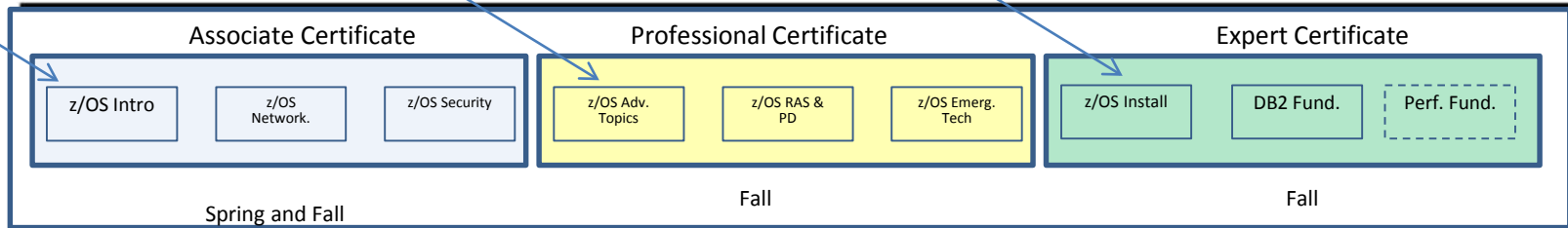
Advanced Facilities Management
12 weeks/non-credit

The Greening of the Data Center
10 weeks/non-credit

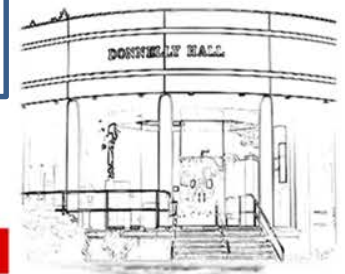
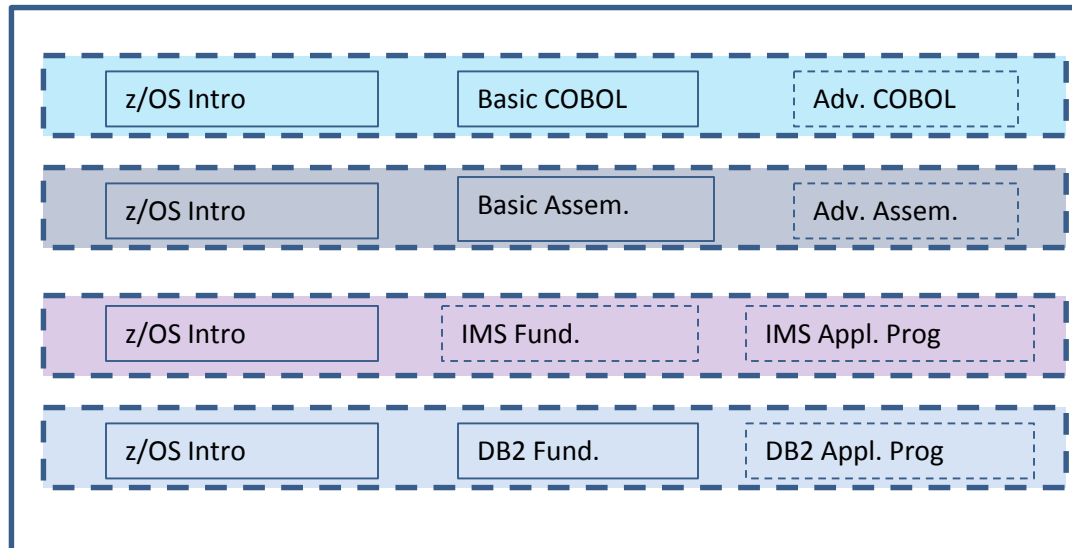
Successful Completion of all six certificates leads to 7th Certificate as a
Certified Data Center Professional

z/OS Certificate Program Overview

System Programming Track



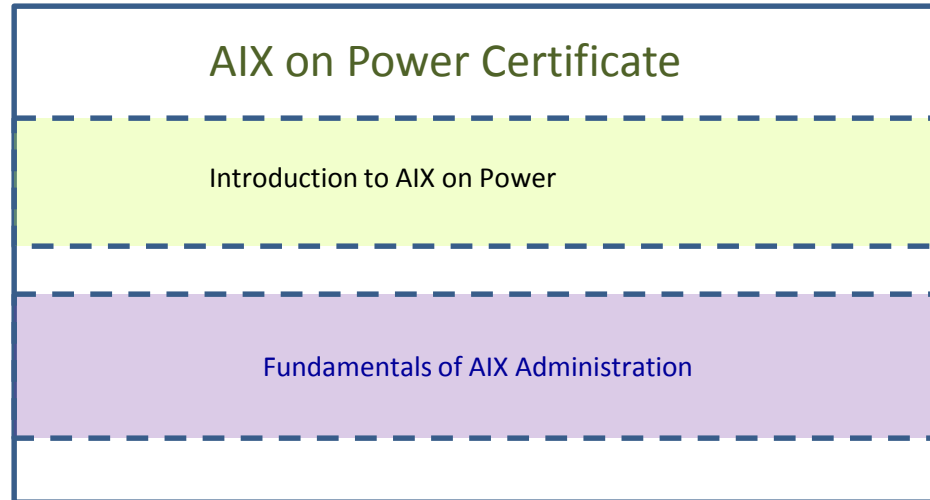
Application Programming Track



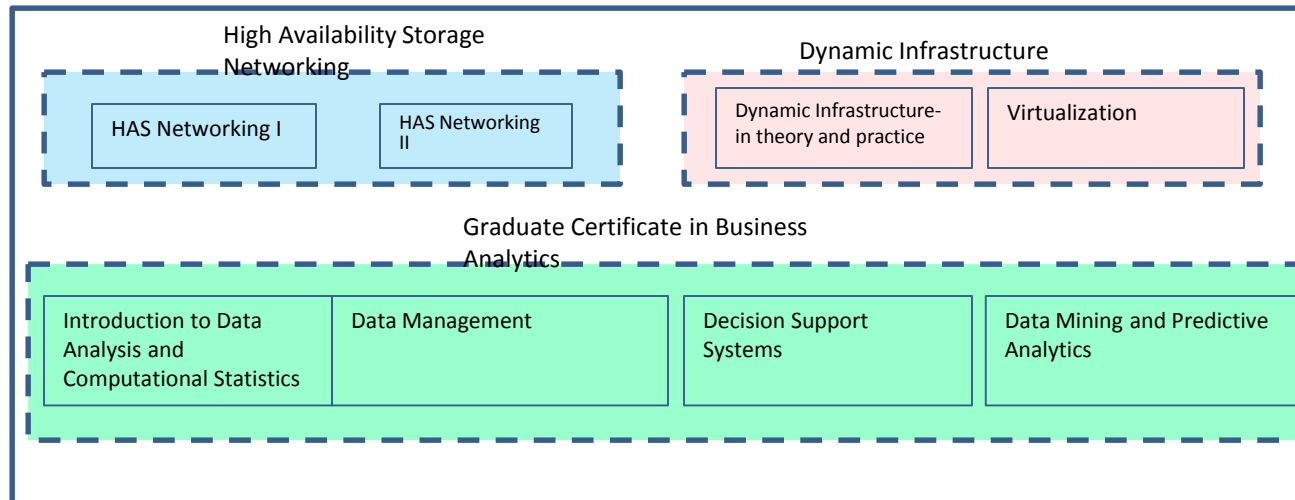
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Enterprise UNIX Systems Education



Emerging Technologies



Massive Open Online Courses

Enterprise Computing MOOC

- New phenomenon in Higher Education is the MOOC
- Enterprise Computing Education is rare
- Marist Launched the first zMOOC
 - z/OS focused
 - 50 to 100 students were expected
 - 250 students would be great
 - Over 1,000 students signed up!
 - Over 300 completed course – above industry average



IDCP

THE INSTITUTE FOR DATA CENTER PROFESSIONALS

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