



A Scalable Online Enterprise Systems Curriculum

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In this presentation we will:

Provide background on the need for online Enterprise Systems (ES) education

Describe the process of developing a multi-campus ES online program

Provide school and student profiles of those involved

Describe the steps needed for course roll-out

Comment on course delivery

Summarize course outcomes

Define next steps for scaling this and other courses to other schools



- Located in Greensboro, NC, enrollment approx. 10,500.
- One of the 100+ Historically Black Colleges and Universities
- Established in 1891 as a Land Grant College
- Still produces more African American engineers than any school in the world
- I am in the Computer Systems Technology Dept. in the School of Technology

Enterprise Systems Program, School of Technology at NC A&T:



- **Mission:** To support education, research, and business development in the System z space
- **NCAT System z Environment:**
 - Since 2010
 - Z9, 18 GPs, no IFLs, 128GB storage, 4 TB DASD (online)
 - 44 TB DS8300 (offline)
 - 2 LPARs (using 1)
 - z/VM is the base OS, all other OSes are guests of z/VM
 - Plan in the works with our business partners to acquire a BC12
 - Using GPs as IFLs (special no-MIPS deal with IBM)
 - VM 5.4
 - SUSE 11, Debian, RHEL
 - DB2, LAMP, SPSS for System z, Cognos, zDooop and more

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Big Data Initiative

- **Challenge & opportunity**
 - Saw the potential for zVM application for Hadoop; most people focused on x86
 - Hot topic for research; important to students
 - Provide easy & controlled access to mainframe data
 - Enable the developer community to take advantage of the enterprise primary data in a model they understand
 - Familiar environment: Linux, Java, SQL & the hot technology: Hadoop
- **Getting buy-in for z**
 - Most academics don't know z at all
 - Dean, Chair, Chancellor, Provost: Needed to be sold; not IT people
 - Make the introduction to z digestible to students and faculty

Background on the need for online Enterprise Systems (ES) education



The increasing retirement of ES professionals has created concern for replacing their expertise

The IBM Academic Initiative for System z has aggressively addressed this issue, but...

The number of schools/students being exposed to ES concepts is not sufficient to fill the need

Several schools- Marist, NC A & T, Robert Morris and others- are teaching these courses but several issues must be addressed for multi-campus scalability

Students need to be able to take courses that lead toward their graduation

Most schools do not have faculty with ES expertise.

Most students need the cost of the course included in their tuition.

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8/16/2015

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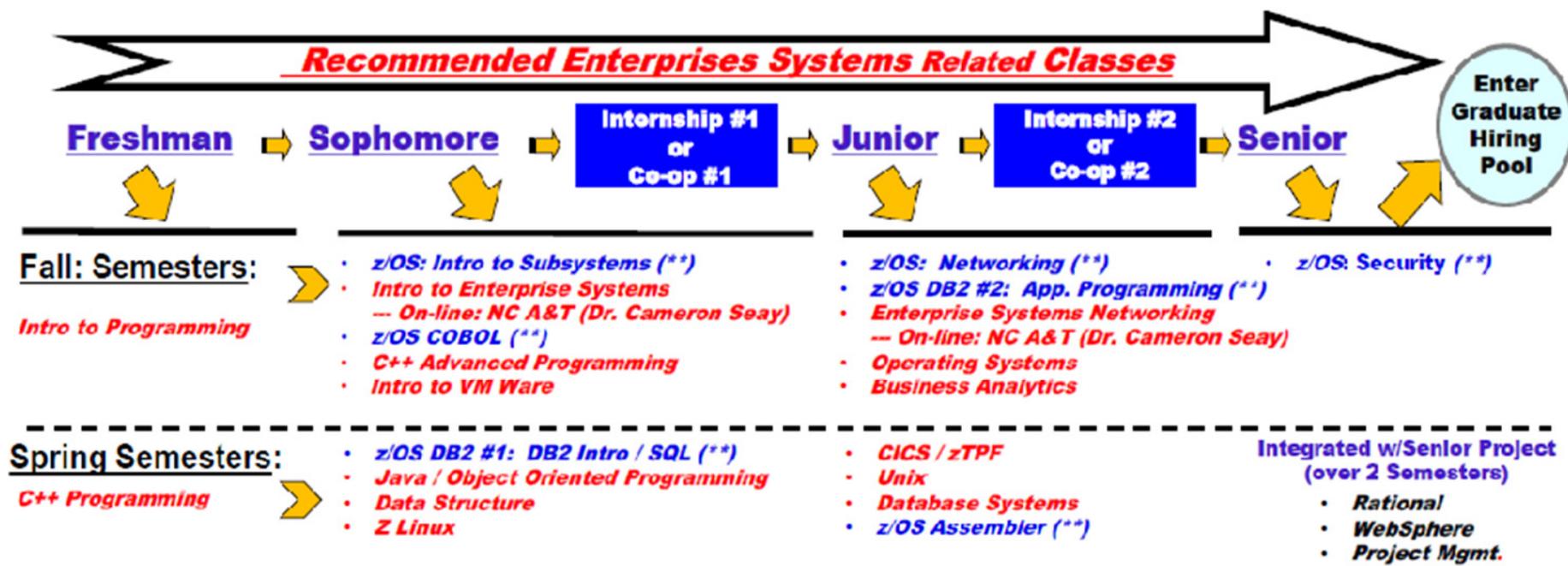
Enterprise Systems Program
Student Matriculation Model

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“z/OS-Centric Curriculum Strategy”

Integrate mainframe curriculum coursework with strong coding courseware into the Comp Sci Programs!

Recommended Enterprises Systems Related Classes



All students are pre-screened to a very stringent criteria . . . **Prometric: “Berger Programming Aptitude Test”**

* GPA = 3.0+, technical skills, enterprise classes completed, strong desire to pursue a mainframe career path, willingness to relocate/travel and interpersonal skills --- i.e., communication skills, team work/networking, independent worker, multitasking ability, problem solver/critical thinker, presentations skills, self starter, ability to learn, etc . . .

CS = “On-the-Ground” Classes . . . Taught by University Faculty Members
 (**) = “On-line” Certification Level Classes Offered Through Marist College

- Internship Period: June - August (Typically 10 - 12 weeks)
 - 1st Assignment . . . Junior (60+ hours)
 - 2nd Assignment . . . Senior (90+ hours)

Developing a multi-campus ES online program

In order to provide a within-curriculum course:

Must get approval of Provost, Deans, Chairs, and Faculty

For me to teach the course I had to go through the application process

Must convince students to sign up for an elective course

Participation of a local faculty member is essential

Steps needed for course roll-out

Select the course- Introduction to Enterprise Systems

Select the delivery technology – Blackboard Collaborate

Record lectures and labs

Create the quizzes and exams

Test connectivity

School and student profiles of those involved

Intro to Enterprise Systems was selected as pilot course

Alcorn State was selected as the pilot school

John Thompson developed relationships with senior administrators and the computer science faculty

First students were 7 computer science students and 2 business students

Computer Science Chair Lixin Yu was a student in the class, with the goal of eventually teaching the class.

Comments on course delivery and course outcomes

Students who took the course were all interested in ES careers

Class met twice each week online

Attendance was usually 100%

Alcorn students outperformed A & T students on the same material

There were 5 A's 2 B's and 2 C's

Student engagement was excellent

Next steps for scaling this and other courses to other schools

The intro course will be deployed at Tennessee State this fall.

The Dept of Computer Science will own the intro course, but other units will drive different courses- School of Business will own the DB2 course, other technology units will own other courses

This method is highly scalable; spring of 2015 I hosted 100 students in 5 courses

We feel this is an excellent solution not only for the ES skills gap, but the IT skills gap

Next steps for scaling this and other courses to other schools

In addition, we have created an introduction to enterprise systems concepts for freshmen and business school students.

This course focuses on the concepts of ES rather than hands-on labs.

This course will be piloted at both Alcorn State and Tennessee State this fall

It will allow less technical students to be prepared for the Intro to mainframe course.

Other good candidates for online courses:

COBOL

CICS

Assembler

VM

DB2

RDz

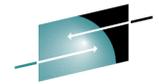
The Path Forward

We currently have a major project with Linux on System z using open source software

Two of our professors are teaching their classes on z using Debian, SuSE and Fedora

We see our online approach as a means to now only develop ES skills, but general IT skills (database, networking, Web, programming) as well.

We are also using our online curriculum in rural Eastern NC



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