University of Maryland University College
The Graduate School

Redesigning Data System Technology Curricula in the Big Data World

IBM BDAEdCon 2014 – Las Vegas

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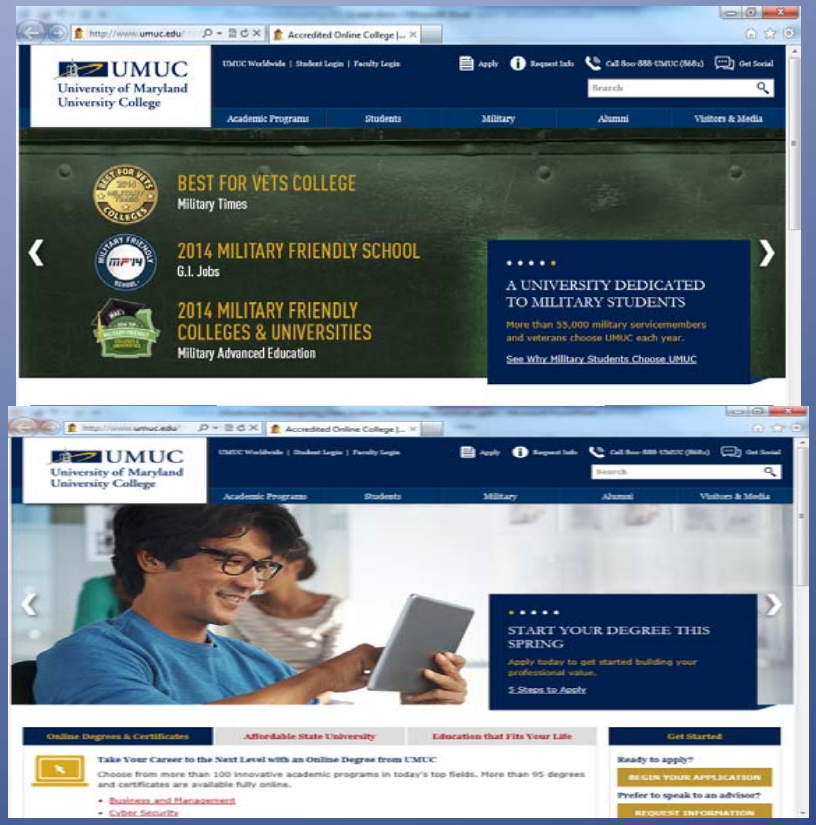
Data Systems Technology, UMUC

Presentation Outline

- Challenges
- Phase I: Transition
- Phase II: Complete Model

Students Profile

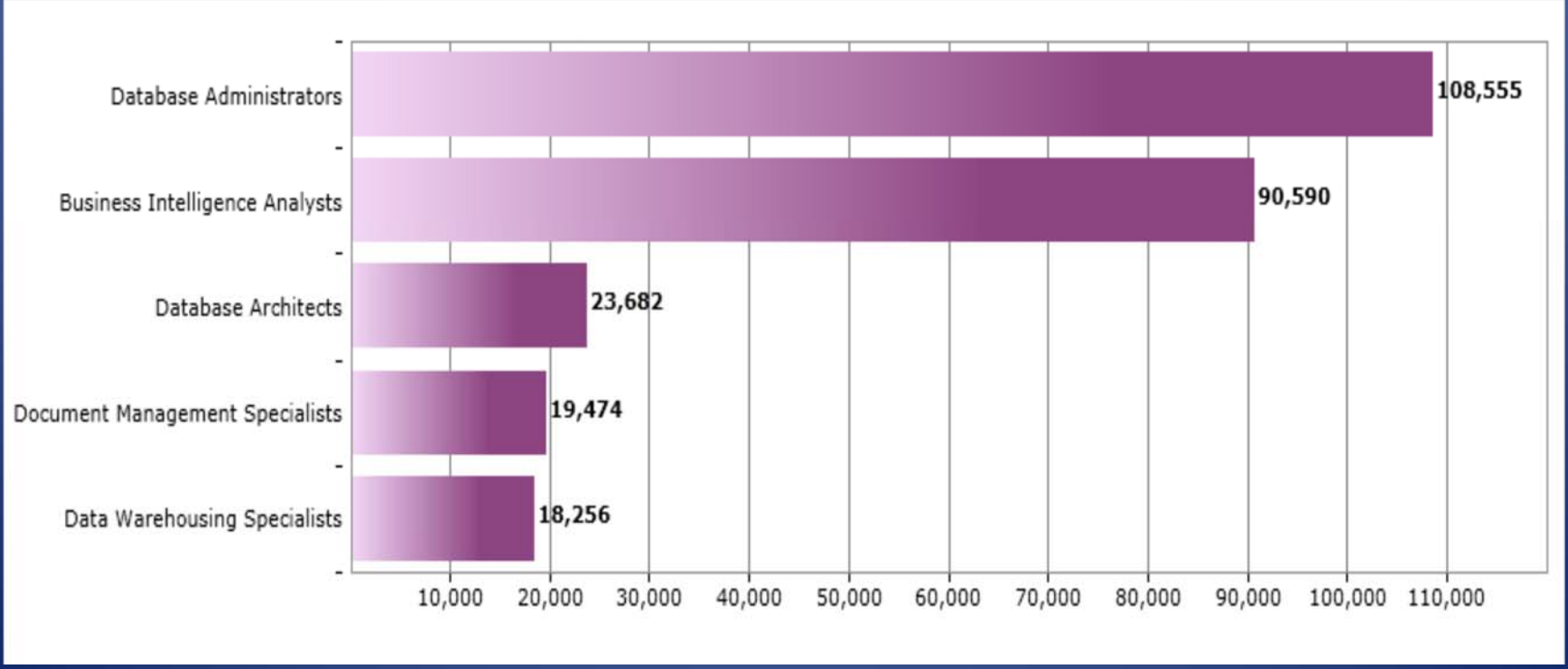
- working adults, military
- mid-career professionals
- workforce-related degree programs
- mostly online courses
- open-admissions university



Marketing Research

Bureau of Labor Statistics (O*Net) Findings: Top detailed occupations - 01/01/2012 - 12/31/2012

identified the top ten skills: SQL, Oracle, Database Administration, Data Warehousing, Data Analysis, Business Intelligence, Business Process, Data Management, SQL Server, ETL



Big Data: Paradigm shift

- Shortage in business analytics skills – new MSc program in Business Analytics
- Shortage in big data modeler as well as data scientist – redeveloping existing MSc in Database System Technology program

MSc in Database System Technology program

- Started in fall 2007 as a part of Information Technology curricula
- Focuses on the design, development, and management of data technology
- The curriculum covers distributed data bases, data warehousing and data mining.
- The goal of the specialization is to provide students with a practical understanding of the principles of database security, database administration
- The program should embrace emerging technology in the IT field

Challenges

- Too many new technology in IT/databases
- What new skills?
- What are the conceptual foundations?
- Theory vs Practical skills???
- Can we teach everything?
- How we measure students' success?
- How we measure quality?

Thesis

A high-quality academic program for Data Professionals has to address real workforce and industry needs in the realm of the emerging Big Data technology. Curricula can be kept current only having direct collaboration with industry

Preparing Data Professional

- **expert input from the advisory board**
- **external reviewers**
- **stakeholders**
- **survey of the IT area**
- **innovation**

The curriculum was designed on what emerged as the workforce needs of the industry and evolved to Master of Science in Data System Technology.

Preparing Data Professional

Emphasis - moving technology from the laboratory to the realm of business development.

Data architect, Database manager, Data modeler, Database developer, Data warehouse manager, Business intelligence analyst, Data mining specialist, Database administrator, Data security specialist, Chief information officer, Chief Data officer….

Phase I – existing courses content update

- Applying emerging tools and methods in the growing amount of structured and unstructured data
- Data Warehouse Technology : new techniques for unstructured data (document data warehouse, taxonomy and ontology)
- Advanced database: NoSQL

Faculty - active experts in industry and/or higher education, providing rich real world expertise in the subject matter.

Lockheed Martin

SAIC

MITRE

Booz Allen Hamilton

NASA

NIH

Department of Education

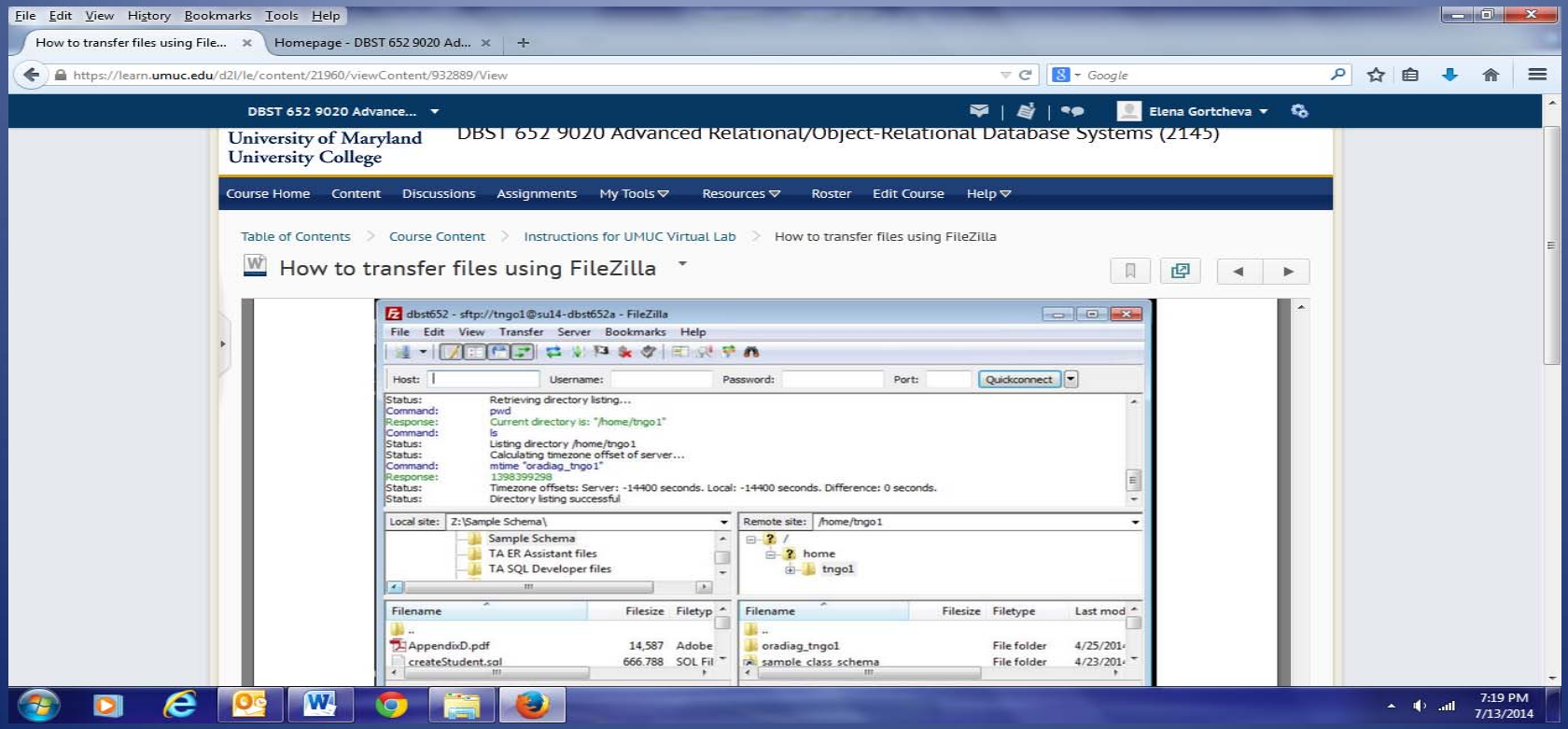
Innovative Content - series of Webinars on Big Data

- Students have direct exchange with world-renowned experts in the Big Data field.
- Webinars were recorded hold and as reserved e-learning module by the UMUC library; used in a number of Information Technology classes and all DBST courses.
- Recordings contain significant amount of original content to supplement the course readings.
- Students satisfaction - positively impacted student learning outcomes.

Applied curriculum reflecting the industry needs

- Course Projects - on real industry needs
- Data Mining research project: students identify real data set and extract useful patterns and/or predict certain events
- Capstone Project (TCP). TCP encompass the knowledge acquired during the whole program. Students apply the knowledge, skills, and tools needed to be successful as Data Professional

Virtual Lab


How to transfer files using File...
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DBST 652 9020 Advance...
Elena Gortcheva
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DBST 652 9020 Advanced Relational/Object-Relational Database Systems (2145)
Course Home
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Course Content
Instructions for UMUC Virtual Lab
How to transfer files using FileZilla
How to transfer files using FileZilla
dbst652 - sftp://tngo1@su14-dbst652a - FileZilla
Sample Schema
TA ER Assistant files
TA SQL Developer files
AppendixD.pdf
createStudent.sql
oradiag_tngo1
sample_class_schema
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Phase II – developing a competence based model

- Employers and students are part of the “ecosystem” of our programs, making sure programs are up to date and students are prepared to be successful in the profession.
- For employers, employees who have abilities that are relevant today and tomorrow.
- Portfolio of learning opportunities/paths so that students can get the education they need for the career they want.
- Focus on application (ability to do) means graduates who are prepared to meet challenges very quickly.

Questions???