University of Arkansas – Fort Smith
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General Syllabus

CS 3333 Big Data

Credit Hours: 3 Lecture Hours: 3 Laboratory Hours: 0

Prerequisite: CS 1303 Introduction to Data Science or CS 2003 Data Structures

Effective Catalog: 2020-2021

I. Course Information

A. Catalog Description

Examines the design, implementation and utilization of large-scale data clusters and parallel DBMS architectures. Students learn how to manipulate, organize and manage data by utilizing emerging technologies to achieve highly scalable systems.

II. Student Learning Outcomes

A. Subject Matter

Upon successful completion of this course, the student will be able to:

1. Explain and evaluate concepts of parallel database architectures.
2. Explain architecture and operation of NoSQL systems.
3. Assess and explain the differences between relational and distributed database systems.
4. Evaluate and assess consistency models that exist within database systems.
5. Design and implement application frameworks that run in a parallel database environment.

B. University Learning Outcomes

This course enhances student abilities in the following area:

Analytical Skills
Critical Thinking Skills
Students will identify a problem, break it down into its component parts and develop an algorithmic solution.

III. Major Course Topics

A. Parallel Database System Architecture
B. MapReduce Algorithms
C. In-Memory Database Systems
D. Replication
E. Distributed Query Processing
F. Database Scalability
G. Graph Databases
H. Machine Learning for Big Data
I. Current research in distributed databases