

CSCE 5013-001 Advanced Special Topics – High Performance Computing. This course is "Introduction to High Performance Computing," lectured by Dr. Thomas Sterling, the Father of Beowulf Cluster Computing. Dr. Sterling is now a Professor at LSU, and the course is lecture over streaming HD video. The lectures are also recorded for viewing later. The course is taught TuTh from 10:30-12:00, with a 30 minute discussion session after each lecture. The location of the course is in the Access Grid room, Mullins 225.

The course web page from last spring is here: <http://comp.uark.edu/~Ingo/>

This is a fun and exciting course that exposes you to all the significant aspects of HPC. You will do programming using both distributed and shared memory languages, learn about the tradeoffs of HPC architectures, and have the opportunity to work on state-of-the-art HPC resources. All assignments and grading are supervised by Dr. Apon. The course is appropriate for graduate and advanced undergraduate students in computer science, and also for computational science students in non-CS disciplines who have had a foundational course in C or Fortran. The course project is tailored to the preparation of each student. The course can be taken for Honor's credit for undergraduate CSCE Honor's students.

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### **CSCE 5013-003 Advanced Special Topics – Healthcare Logistics**

DESCRIPTION: This course focuses on developing and integrating the technologies that are needed to accelerate our ability to model the real world using 3D virtual worlds, in part to give us insight into the coming Internet of Things when every device has identity and is a networked smart device. Topics include ubiquitous computing, smart world, Internet of Things, 3D virtual worlds, MMOGs, Second Life, Open Simulator, modeling, agents, smart phones, soft controllers, sensor networks, RFID, database, logistics, ontologies, planning, workflow, plugins, plug-and-play, semantic interoperability, mirror worlds, virtual world architecture, standards, wikis. The course will be project-oriented (e.g., reading papers, design, programming, reports, presentations). Lectures will cover core topics; student teams will meet in class. Applications domains vary but include healthcare, retail, smart home, and education. See project website: <http://vw.ddns.uark.edu>.

PREREQUISITE: Foundations II/Data Structures

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CSCE 4013-001 Special Topics – Information Retrieval

Class Objectives

The object of this class is to introduce students to the fundamentals of modern information retrieval systems. This course will start by studying classic textual information retrieval systems, then move to distributed and multimedia systems. The first half of the course will be lecture and assignment oriented,

the second half seminar oriented. Students will be expected to read papers on a research topic of their choice, present a summary to the class, and do an independent project. Topics: Document Processing, Text Preprocessing, Boolean, Vector-Space and Probabilistic Retrieval Systems, Document Indexing Algorithms and Efficiency, World Wide Web Search Engines.

Required Background

Programming experience in a high-level language (C, C++, or Java), knowledge of data structures (e.g., binary search trees, linked lists, hash tables) and experience with the UNIX operating system. Graduate standing or CSCE 3143 or 3193.

Coursework

Students will learn how to build their own search engine by writing programs that efficiently preprocess, tokenize, and index documents to build an inverted file. They will also write a Web-accessible search site to answer queries on these documents. There is heavy programming in the class that will be done individually and in pairs. The last part of the class will discuss current trends in search engine development.