

Syllabus
ST: Advanced Database System Design
CS 6/73005-001-12560
Fall 2016

Instructor Information

Dr. Gregory S. DeLozier
gdelozie@kent.edu

Office Hours: 6-7PM 9:45-10:45PM MW in class or CS213 as requested

Outcomes and Expectations

Students in this course will learn database concepts and methodologies building on basic SQL databases, covering general SQL concepts, indices and query optimization, programming interfaces, object-relationship mapping libraries, and ACID concept implementations. The course will then move to NoSQL databases such as document stores, hierarchical databases, and other non-tabular database paradigms. Within those areas we will implement database servers, including concepts such as sharding and redundant data stores. The course will study a number of open source and commercial implementations of these ideas. Finally, an introduction to map-reduce will be explored and we will implement basic MR queries in large data sets.

Required and Optional Textbooks and Materials

There is no required textbook. There will be reading assigned from web, academic, and industry sources.

Additional online reading will be assigned.

An account at www.pythonanywhere.com is required. This costs \$5/month.

An account at www.codio.com is required for part of the course. This costs about \$20/month.

A personal computer running Python and Chrome or Firefox is required.

Course Prerequisites

This course requires basic programming skills. Familiarity with Python and web programming is useful. Students who do not have this experience will need to learn these as we go. This may be challenging.

This course also requires basic familiarity with SQL concepts. These can be caught up as we go, but they are not extensively taught in class.

Enrollment/Official Registration

The official registration deadline for this course is 09/04/16. University policy requires all students to be officially registered in each class they are attending. Students who are not officially registered for a course by published deadlines should not be attending classes and will not receive credit or a grade for the course. Each student must confirm enrollment by checking his/her class schedule (using Student Tools in FlashLine) prior to the deadline indicated. Registration errors must be corrected prior to the deadline.

General Class Calendar

Lectures: Monday, 7:00-9:45

8/29 - class introduction, Basic SQL
9/5 - Holiday
9/12 - SQL queries, optimization, web app
9/19 - SQL ORMs and large databases
9/26 - Simple NoSQL implementations
10/3 - Creating a database server
10/10 - Implementing redundancy
10/17 - Distribution and sharding
10/24 - Midterm (*)
10/31 - Commercial NoSQL - mongoDB
11/7 - CouchDB
11/14 - Large databases
11/21 - Basic Map-Reduce
11/28 - Cloud MR projects
12/7 - Special projects

(*) online activity, work from home

Final: December 12, 2016 (Mon) 8:15 PM - 10:30 PM

Withdrawal Deadline

The course withdrawal deadline is 11/6/16.

Grading Policy

Homework. Homework is not accepted late.	20%
Midterm. Online, open handwritten notes.	20%
Database project work done and tested. (Due 12/5/2016)	20%
Final exam. In class, open handwritten notes.	40%

Letter Grades: 90% = A, 80% = B, 70% = C, etc.

Class Attendance Policy

Students are encouraged to attend class. If class is missed, students are still responsible for course content, notes, etc. The class slides are not guaranteed to cover all important content from the class session.

There may be extra credit opportunities during class sessions. These will not be announced in advance.

Cheating and Plagiarism

University policy 3-01.8 deals with the problem of academic dishonesty, cheating, and plagiarism. None of these will be tolerated in this class. The sanctions provided in this policy will be used to deal with any violations. If you have any questions, please read the policy at

<http://www.kent.edu/policyreg/administrative-policy-regarding-student-cheating-and-plagiarism>

or ask me at any time.

Students with Disabilities

University policy 3-01.3 requires that students with disabilities be provided reasonable accommodations to ensure their equal access to course content. If you have a documented disability and require accommodations, please contact the instructor at the beginning of the semester to make arrangements for necessary classroom adjustments. Please note, you must first verify your eligibility for these through Student Accessibility Services (contact 330-672- 3391 or visit www.kent.edu/sas for more information on registration procedures).

Additional Class Policies

Class Conduct

- The usual rules about adult behavior apply.
- Keep the laptop and phone distraction to a minimum when we're doing things together.
- We will have one or two breaks. If you need to leave between breaks, be discreet.

Extreme Circumstances

- If something unusual is happening at the university, we might not have class if the university is closed.
- If something unusual happens to me, and I'm not here by 7:30, we won't have class.
- If either one of these happens, adjusted homework and lecture notes will be posted on the web within 24 hours. You will still be responsible for getting assignments done.