CS 63005/73005 Advanced Database System Design

Fall 2018

Instructor: Qiang Guan <qguan@kent.edu>
Class hours: T/Th 2:15PM - 3:30PM.
Class location: BOW-00110.
Teaching Assistant: TBA.
Instructor’s office hours: TBA.

Text Book:

No textbook required for this course. However, a collection of recent research articles from related conferences and transactions will be provided. Students are required to read the paper and participate the discussion in class.

Recommended references:

- Online references will be listed in the course schedule.

Prerequisites:

CS33007 or equal. If not, you have to get the permission from the instructor. Any student in graduate standing with background/experience in database, network, or computer systems is welcome.

Grading

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance and Participation</td>
<td>5%</td>
</tr>
<tr>
<td>Assignments</td>
<td>15%</td>
</tr>
<tr>
<td>Paper Critiques and Presentation</td>
<td>20%</td>
</tr>
<tr>
<td>Exam (Mid-term)</td>
<td>20%</td>
</tr>
<tr>
<td>Term Project (Report and Presentation)</td>
<td>40%</td>
</tr>
</tbody>
</table>

Course Overview
The course will cover a variety of very interesting database topics, and many of them are still attracting a lot of research attention. This course is a continuation of the introductory database course. The major goal of this class is to design the database and storage solutions for next generation High-Performance Computing (HPC) and cloud hybrid environment.

This class is designed for senior undergraduate students and graduate students who are involved in research, development, and planning activities involving the use of cloud infrastructure and High-Performance Computing (HPC) storage and Cloud storage applications.

The topics of the class include:
- Data warehouse and data mining.
- Relational DB Implementation (Query Evaluation/Optimization/Indexing)
- HPC storage system design and implementation
  - Parallel file system
  - Object storage.
- Cloud storage (e.g., S3) design and implementation.
- Database container.
- HPC-Cloud convergence in database and storage.
- Big Data and data-driven database applications running on cloud and HPC hybrid infrastructures.

Students are encouraged to apply the student credits on amazon AWS.

The students are expected to design database and storage system in both HPC and cloud environment.

Late Policies:

Assignments and projects are due before midnight on the due date. Critiques are due before the midnight of the date when the papers are discussed in class. And all the submissions should be digital (doc, pdf, jpg...). Late assignments will be penalized 25% per day, up to 2 days. No credit will be given after 2 days. Please try to finish your work on time.

Registration

We will follow the official deadlines of Kent State University calendar. 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.

Academic Integrity:

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/policydetails.cfm?customel_datapageid_1976529=2037779](http://www.kent.edu/policyreg/policydetails.cfm?customel_datapageid_1976529=2037779) and/or ask.

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](http://www.kent.edu/sas) for more information on registration procedures).