CSC8710: Seminar in Database Management Systems
MW 2:30-3:45PM, 313 State Hall, Winter 2017

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Course Description:
The goal of the course is to present an overview of big data modeling and big data management with an emphasis on learning hands-on big data modeling skills, NoSQL database management systems, and big data workflow management systems. Students will design and implement a big data system to deepen their understanding of the basic big data concepts and big data modeling skills. After taking this course, you will have an understanding of the state-of-the-art of big data modeling and big data management systems, and will have the capability of developing big data applications using NoSQL and big data workflow management systems.

Credit Hours:
3

Prerequisite:
• CSC 7710

Co-requisites:
• None

Text(s) Book:
None

Computer Programs:
None.

Shiyong Lu
CSC 8710
Course contents:

1. An introduction to big data management and big data modeling
2. Cassandra: A NoSQL database systems for big data management
3. KDM: a big data modeling tool for Cassandra
4. DATAVIEW: a big data workflow management system
5. Dropbox and Amazon EC2: big data meets cloud computing
6. Resource provisioning strategies and big data workflow scheduling in the cloud
7. Case study: develop applications using big data workflow management systems

Laboratory (lab location)

- There is no lab section for this course.

Course Learning Objectives:

The students will apply KDM modeling tool to data modeling, understanding the difference between big data modeling and traditional data modeling. The students will also perform CQL programming at various levels and develop stand-alone big data application using NoSQL database management system Cassandra.

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

<table>
<thead>
<tr>
<th>#</th>
<th>CSC 8710 Course Learning Objectives</th>
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<tbody>
<tr>
<td>1</td>
<td>Describe clearly the basic concepts of big data modeling and its difference from traditional data modeling requirements</td>
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<tr>
<td>2</td>
<td>Apply the KDM methodology and tool to database design;</td>
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<td>3</td>
<td>Perform CQL programming at the basic level, intermediate level and advanced levels;</td>
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<tr>
<td>4</td>
<td>Develop a stand-alone big data application using a NoSQL-based big data workflow system.</td>
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Assessment:

8. (60 %) Present two papers. Each presentation should have around 25 slides and take 20 minutes long, plus 5 minutes of Q and A.
9. (40 %) A course project. A demo is required which will take around 15 minutes.

Grading Scale:

\[
A >= 95 \\
A-: >= 93 \\
B+ >= 87 \\
B >= 60 \\
C >= 50
\]
\[ D \geq 40 \]
\[ F < 40 \]

**Grading Policies:**

You can have one late assignment submission up to one week without any penalty. Please write “LATE EXCUSE” indicate on the cover page of your submission when you use your late excuse and no explanation is needed. If a late excuse is not used, a penalty of 10% per day will be assessed up to one week. No credits will be given for works handed in one week after the due date. The late excuse cannot be used for the last assignment, the last project part, and the final exam due to time con

**Religious Holidays:**

Because of the extraordinary variety of religious affiliations of the University student body and staff, the Academic Calendar makes no provisions for religious holidays. However, it is University policy to respect the faith and religious obligations of the individual. Students with classes or examinations that conflict with their religious observances are expected to notify their instructors well in advance so that mutually agreeable alternatives may be worked out.

**Student Disabilities Services:**

- If you have a documented disability that requires accommodations, you will need to register with Student Disability Services for coordination of your academic accommodations. The Student Disability Services (SDS) office is located in the Adamany Undergraduate Library. The SDS telephone number is 313-577-1851 or 313-202-4216 (Videophone use only). Once your accommodation is in place, someone can meet with you privately to discuss your special needs. Student Disability Services' mission is to assist the university in creating an accessible community where students with disabilities have an equal opportunity to fully participate in their educational experience at Wayne State University.

- Students who are registered with Student Disability Services and who are eligible for alternate testing accommodations such as extended test time and/or a distraction-reduced environment should present the required test permit to the professor at least one week in advance of the exam. Federal law requires that a student registered with SDS is entitled to the reasonable accommodations specified in the student’s accommodation letter, which might include allowing the student to take the final exam on a day different than the rest of the class.

**Academic Dishonesty - Plagiarism and Cheating:**

Academic misbehavior means any activity that tends to compromise the academic integrity of the institution or subvert the education process. All forms of academic misbehavior are prohibited at Wayne State University, as outlined in the Student Code of Conduct (http://www.doso.wayne.edu/student-conduct-services.html). Students who commit or assist in committing dishonest acts are subject to downgrading (to a failing grade for the test, paper, or other course-related activity in question, or for the entire course) and/or additional sanctions as described in the Student Code of Conduct.
• **Cheating:** Intentionally using or attempting to use, or intentionally providing or attempting to provide, unauthorized materials, information or assistance in any academic exercise. Examples include: (a) copying from another student’s test paper; (b) allowing another student to copy from a test paper; (c) using unauthorized material such as a "cheat sheet" during an exam.

• **Fabrication:** Intentional and unauthorized falsification of any information or citation. Examples include: (a) citation of information not taken from the source indicated; (b) listing sources in a bibliography not used in a research paper.

• **Plagiarism:** To take and use another’s words or ideas as one’s own. Examples include: (a) failure to use appropriate referencing when using the words or ideas of other persons; (b) altering the language, paraphrasing, omitting, rearranging, or forming new combinations of words in an attempt to make the thoughts of another appear as your own.

• **Other** forms of academic misbehavior include, but are not limited to: (a) unauthorized use of resources, or any attempt to limit another student’s access to educational resources, or any attempt to alter equipment so as to lead to an incorrect answer for subsequent users; (b) enlisting the assistance of a substitute in the taking of examinations; (c) violating course rules as defined in the course syllabus or other written information provided to the student; (d) selling, buying or stealing all or part of an un-administered test or answers to the test; (e) changing or altering a grade on a test or other academic grade records.

**Course Drops and Withdrawals:** In the first two weeks of the (full) term, students can drop this class and receive 100% tuition and course fee cancellation. After the end of the second week there is no tuition or fee cancellation. Students who wish to withdraw from the class can initiate a withdrawal request on Pipeline. You will receive a transcript notation of WP (passing), WF (failing), or WN (no graded work) at the time of withdrawal. No withdrawals can be initiated after the end of the tenth week. Students enrolled in the 10th week and beyond will receive a grade. Because withdrawing from courses may have negative academic and financial consequences, students considering course withdrawal should make sure they fully understand all the consequences before taking this step. More information on this can be found at: [http://reg.wayne.edu/pdf-policies/students.pdf](http://reg.wayne.edu/pdf-policies/students.pdf)

**Student services:**

- The Academic Success Center (1600 Undergraduate Library) assists students with content in select courses and in strengthening study skills. Visit [www.success.wayne.edu](http://www.success.wayne.edu) for schedules and information on study skills workshops, tutoring and supplemental instruction (primarily in 1000 and 2000 level courses).
- The Writing Center is located on the 2nd floor of the Undergraduate Library and provides individual tutoring consultations free of charge. Visit [http://clasweb.clas.wayne.edu](http://clasweb.clas.wayne.edu) writing to obtain information on tutors, appointments, and the type of help they can provide.

**Class recordings:**
Students need prior written permission from the instructor before recording any portion of this class. If permission is granted, the audio and/or video recording is to be used only for the student’s personal instructional use. Such recordings are not intended for a wider public
audience, such as postings to the internet or sharing with others. Students registered with Student Disabilities Services (SDS) who wish to record class materials must present their specific accommodation to the instructor, who will subsequently comply with the request unless there is some specific reason why s/he cannot, such as discussion of confidential or protected information.