CSC 411 Database Management Systems Design
Spring 2019
Time: 06:30 PM-09:45 PM T, Location: FEC 207, Credit: 3 hrs

Contacting Your Instructor(s)
Instructor: Dr. Bo Li
Office: Science Building, Room 105D
Office hours:
   Mondays: 9:00-12:00 AM, 2:30-4:30 PM
   Tuesdays: 9:00-12:00 AM, 2:30-4:30 PM
   or by appointment
Email: bo.li@usm.edu
Phone: 228-214-3306
Homepage: https://sites.google.com/site/libohomepage/homepage

Catalog Description
Design and implementation of DBMS. Survey of research literature.

Course Description and Objectives
Prerequisite:

Course Description
3 hrs. This course introduces the fundamental concepts of database management, including aspects of data models, database languages, and database design.

Textbooks

Topics:
- DBMS Introduction (ch. 1-2)
- SQL programming and relational algebra (ch. 3-4, ch. 5.1, ch. 6.1)
- Database Design: Entity Relationship (E-R) model and relational database design (ch. 7-8, [ch. 9])
- Database Administration: Transactions (ch. 14)
- Applications (software): MySQL (optional textbook), [ch. 27], [ch. 28]
• Database Future: ch. 19, [ch. 20], [ch. 21], NoSQL, Cassandra, HBase, Hive
*Chapters in parenthesis “[ ]”: self-study contents.

Course Outcomes
Upon completion of the course, students will
• become proficient at modeling databases at conceptual and logical levels of design
• be able to develop database schemas with principled design that enforce data integrity
• become knowledgeable in the creation, altering, and manipulation of tables, indexes, and views using relational algebra and SQL
• become proficient at writing queries in SQL to retrieve data from database
• be able to develop and maintain MySQL databases, and write application programs
• be aware of latest trend of database development, especially distributed SQL-like DMBS (Hive) and NoSQL DMBS (Hive, HBase, Cassandra)

Course Workload Statement
Students are expected to invest considerable time outside of class in learning the material for this course. The expectation of the University of Southern Mississippi is that each week students should spend approximately 2-3 hours outside of class for every hour in class working on reading, assignments, studying, and other work for the course. We realize that most students work and have family or other obligations. Time management is thus critical for student success. All students should assess their personal circumstances and talk with their advisors about the appropriate number of credit hours to take each term. Resources for academic support can be found at https://www.usm.edu/success.

Grading Policies and Calculation
A list of possible grades at the University can be found in the Bulletin (http://catalog.usm.edu). Note that students will receive an “interim grade” at the six-week point to give them an indication of their performance at that point in the semester.

Students may drop a course with no penalty in the first week of the semester. If students wish to leave a course with a grade of “W” (for “withdrawal”), they may request to do so before April 4, 2019 (USM Spring 2019 calendar can be found here: https://www.usm.edu/registrar/spring-2019-full-academic-calendar).

Important note: Students who receive a grade of “W” do not receive any money back and that grade is permanently included on their transcripts.

Students should be aware that “Incompletes” can only be assigned in cases of “extraordinary circumstances” beyond the student’s control.
<table>
<thead>
<tr>
<th>Items</th>
<th>Percentage</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance</td>
<td>5% (extra credits)</td>
<td>Every class</td>
</tr>
<tr>
<td>Assignments</td>
<td>30%</td>
<td>Six in total, each due in 7 days</td>
</tr>
<tr>
<td>Midterm</td>
<td>15%</td>
<td>March 19, 2019, 6:30 PM-8:00 PM</td>
</tr>
<tr>
<td>Course project (in groups)</td>
<td>30%</td>
<td>May 5, 2019, 11:59 PM</td>
</tr>
<tr>
<td>Final</td>
<td>25%</td>
<td>April 30, 2019, 6:30 PM-9:15 PM</td>
</tr>
</tbody>
</table>

Grade Percentage

A grade  
B grade 80%-89%
C grade 70%-79%
D grade 60-69%
F grade < 60%

Important Class Policies

Class Attendance

Attendance will be taken every class period. Students who are excessively absent (30% of all the lectures, not including exams) and/or tardy will be assigned a grade of NA (Not Attending) according to the University’s Class Attendance Policy. Coming to class unduly late and leaving class unduly early is treated the same as being absent.

Plagiarism

Plagiarism or cheating of any type will not be tolerated. This includes, but is not limited to, copying programs, projects, assignments, abstracts, documentation, wandering eyes/copying on tests, turning in previously submitted term papers or projects (in whole or part), using other person's USM computer accounts to do projects, programs, etc., getting other people to do your assignments, etc. Copying from the internet of any type is not allowed.

Plagiarism or cheating Penalty Policy. If significant and apparent overlapping between any two submissions (projects, homework and exams) has been identified without doubt and valid excuses from the involved students, each of the two submissions will have a 50% penalty applied on their originally obtained scores. If the case repeats for the involved student, a zero score will be assigned to each submission for that student.

"Do Not Copy Others' Code, Exam or Homework"

Missing Exams

If you should miss an exam, you must let me know why you will be missing the exam before the exam is administered to the class (at least a couple of days before). You may send me an e-mail, or come by my office to explain why you will be missing the exam. If the excuse is reasonable, (I am the sole judge of reasonability) I will allow you to retake the exam. Please be aware that I am not responsible for lost e-mail. It is your responsibility to make sure that I know you are missing the exam.

3
Once I agree upon your excuse, please furnish me with a confirmation of your reason(s) for missing the exam. This confirmation must be in my hands by a maximum of 5 days after the exam is administered.

**Tardiness for Tests**

It is your responsibility to make it to class on time for all scheduled examinations. If you are late for an examination, you will be allowed only the remainder of the scheduled period to complete the examination.

**Cell Phones/Beepers/Pagers/etc.**

Please make sure you switch off all cell phones/beepers/pagers while you are in class. I may ask you to leave the class under such circumstances.

**Turning in Work**

Pop up quizzes **cannot** be made up. Assignments not turned on time will not receive full credit. All assignments as well as the course project will be submitted via Canvas, due on 11:59 PM of the submission day.

**Test Regrading Policy**

I will be glad to review any test for possible grading errors. Any requests for regrading of tests must be made within one calendar week upon the return of the test to the class, regardless of when you received your test back. If you submit your test for regrading, **I reserve the right to regrade your entire test.**

**More Than 2 Finals on the Same Day**

If you have two or more final examinations scheduled for the same day and you wish to reschedule my examination, please inform me.

**E-mail Addresses**

I may contact you during the whole semester and will use the email address provided on SOAR.

**Academic Integrity Statement**

All students at the University of Southern Mississippi are expected to demonstrate the highest levels of academic integrity in all that they do. Forms of academic dishonesty include (but are not limited to):

- Cheating (including copying from others’ work)
- Plagiarism (representing another person’s words or ideas as your own; failure to properly cite the source of your information, argument, or concepts)
- Falsification of documents
- Disclosure of test or other assignment content to another student
- Submission of the same paper or other assignment to more than one class without the explicit approval of all faculty members involved
- Unauthorized academic collaboration with others
- Conspiracy to engage in academic misconduct
Engaging in any of these behaviors or supporting others who do so will result in academic penalties and/or other sanctions. If a faculty member determines that a student has violated our Academic Integrity Policy, sanctions ranging from resubmission of work to course failure may occur, including the possibility of receiving a grade of “XF” for the course, which will be on the student’s transcript with the notation “Failure due to academic misconduct.” For more details, please see the University’s Academic Integrity Policy: https://www.usm.edu/institutional-policies/policy-acaf-pro-012

Note that repeated acts of academic misconduct will lead to expulsion from the University.

**Academic Support Resources**

Please see our Student Success Website: [http://www.usm.edu/success](http://www.usm.edu/success) for information on where you can find tutoring and other academic assistance, as well as the location of key resources on campus.

If a student has a disability that qualifies under the Americans with Disabilities Act (ADA) and requires accommodations, he/she should contact the Office for Disability Accommodations (ODA) for information on appropriate policies and procedures. Disabilities covered by ADA may include learning, psychiatric, physical disabilities, or chronic health disorders. Students can contact ODA if they are not certain whether a medical condition/disability qualifies.

**Address:**
The University of Southern Mississippi
Office for Disability Accommodations
118 College Drive # 8586
Hattiesburg, MS 39406-0001
Gulf Coast: 228-214-3232
Voice Telephone: 601.266.5024 or 228.214.3232 Fax: 601.266.6035
Individuals with hearing impairments can contact ODA using the Mississippi Relay Service at 1.800.582.2233 (TTY) or email ODA at [oda@usm.edu](mailto:oda@usm.edu).

**The Academic Success Center at Gulf Park**
The Academic Success Center is located on the first floor of the Gulf Coast Library on the Gulf Park campus in Long Beach. Through peer tutors and professional support staff, the Academic Success Center offers a broad range of services including:

- Academic Coaching
- Learning materials and electronic resources
- Individual and small group tutoring
- Whole class support
- Workshops and seminars
- Technology and multi-media support
- Media labs for individual and group projects
- Online and in person tutoring sessions in a variety of subjects
For more information, visit us as [www.usm.edu/asc](http://www.usm.edu/asc). To make an appointment, please visit [www.usm.mywconline.com](http://www.usm.mywconline.com). If you have questions about our services, call us at 228.214.3346 or email us at academic.success@usm.edu

**Mental Well-Being Statement**
USM recognizes that students sometimes experience challenges that make learning difficult. If you find that life stressors such as anxiety, depression, relationship problems, difficulty concentrating, alcohol/drug problems, or other stressful experiences are interfering with your academic or personal success, consider contacting Student Counseling Services on campus at 601-266-4829. More information is also available at [https://www.usm.edu/student-counseling-services](https://www.usm.edu/student-counseling-services). All students are eligible for free, confidential individual or group counseling services. **In the event of emergency, please call 911 or contact the counselor on call at 601-606-HELP (4357).**

**Tentative Schedule**

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings and assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 29</td>
<td>CSC 411 Course Syllabus</td>
<td><strong>Reading:</strong> Syllabus</td>
</tr>
<tr>
<td></td>
<td>Ch. 1 DBMS Introduction</td>
<td><strong>Reading:</strong> Ch. 1 (so on so forth)</td>
</tr>
<tr>
<td>February 5</td>
<td>Ch. 2 Relational Model</td>
<td><strong>Assignment 1:</strong> Due at Feb 12, 11:59 PM (5% for each assignment)</td>
</tr>
<tr>
<td></td>
<td>Ch.3 Introduction to SQL MySQL tutorials</td>
<td><strong>Reading:</strong> Optional 1 Part I</td>
</tr>
<tr>
<td>February 12</td>
<td>Ch.3 Introduction to SQL MySQL tutorials</td>
<td><strong>Assignment 2:</strong> Due at Feb 19, 11:59 PM</td>
</tr>
<tr>
<td>February 19</td>
<td>Ch.4 Intermediate SQL MySQL tutorials</td>
<td><strong>Assignment 3:</strong> Due at Feb 26, 11:59 PM</td>
</tr>
<tr>
<td>February 26</td>
<td>Ch. 5.1 Accessing SQL From a Programming Language</td>
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<tr>
<td></td>
<td>Ch. 6.1 The Relational Algebra</td>
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</tr>
<tr>
<td>March 5</td>
<td>MARDI GRAS HOLIDAY</td>
<td>(day and night classes do not meet)</td>
</tr>
<tr>
<td>March 12</td>
<td>SPRING BREAK HOLIDAY</td>
<td>(day and night classes do not meet)</td>
</tr>
<tr>
<td>Date</td>
<td>Topic</td>
<td>Details</td>
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<tr>
<td>March 19</td>
<td><strong>Midterm Exam</strong></td>
<td><strong>Exam Time:</strong> 06:00 - 08:00 PM (Contents covered in the first half semester)</td>
</tr>
<tr>
<td></td>
<td>Ch. 7 Database Design and the E-R Model</td>
<td><strong>Class time:</strong> 8:15 - 9:45 PM</td>
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<tr>
<td>March 26</td>
<td>Ch. 7 Database Design and the E-R Model</td>
<td><strong>Assignment 4:</strong> Due at April 2, 11:59 PM</td>
</tr>
<tr>
<td>April 2</td>
<td>Ch. 8 Relational Database Design</td>
<td><strong>Assignment 5:</strong> Due at April 9, 11:59 PM</td>
</tr>
<tr>
<td>April 9</td>
<td>Ch. 14 Transactions</td>
<td><strong>Assignment 6:</strong> Due at April 16, 11:59 PM</td>
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<td></td>
<td>Ch. 19 Distributed Databases*</td>
<td><strong>Homework</strong> will be assigned. No need of submission.</td>
</tr>
<tr>
<td>April 16</td>
<td>Big Data Introduction Hive &amp; NoSQL</td>
<td><strong>Reading:</strong> Ch. 19, Optional 2 (related chapters, so on so forth)</td>
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<td></td>
<td></td>
<td><strong>Homework</strong> will be assigned. No need of submission.</td>
</tr>
<tr>
<td>April 23</td>
<td>HBase &amp; Cassandra</td>
<td><strong>Homework</strong> will be assigned. No need of submission.</td>
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<tr>
<td></td>
<td>Review</td>
<td></td>
</tr>
<tr>
<td>April 30</td>
<td><strong>Final Exam</strong></td>
<td><strong>Exam Time:</strong> 06:30 - 09:45 PM (Contents covered in the whole semester)</td>
</tr>
</tbody>
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(*: advanced topics. May be covered if time is available.)