

Computer Science Department

***CSC6710: Database Management Systems I***

**Faculty contact information:**

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**Course Description:**

The goal of the course is to present a basic introduction to database management systems, with an emphasis on database design methodologies (ER diagrams and normalization theory) and database query languages (relational algebra and SQL). Students will design and implement a simple database system to deepen their understanding of the basic database concepts and theories. After taking this course, you will have the capability of developing various database applications such as enterprise information systems, e-commerce systems, business management systems.

**Credit Hours:**

*3*

**Prerequisite:**

 CSC 4710 and intermediate-level Java Programming skills

**Co-requisites:**

 None

**Text(s) Book:**

Database Systems - An Application-Oriented Approach, by Michael Kifer, Arthur Bernstein and Philip M. Lewis, second edition, ISBN: 9780321268457. Addison-Wesley, 2005.

**Computer Programs:**

*None.*

**Course contents:**

* Ch1: Overview of Databases and Transactions
* Ch2: The Big Picture
* Ch3: The Relational Data Model
* Ch4: Database Design I: the Entity-Relationship Model
* Ch5: Relational Algebra and SQL
* Ch6: Database Design with the Relational Normalization Theory
* Ch7: Triggers and Active Databases
* Ch9: Physical data organization and indexing
* Ch10: The Basics of Query processing
* Ch11: An overview of query optimization
* Ch22: An introduction to NOSQL database systems

**Laboratory (***lab location***)**

 There is no lab section for this course.

**Course Learning Outcomes:**

*The students will apply the ER diagram approach to data modeling, the normalization theory for database design, and relational algebra and indexing for query optimization. The students will also perform SQL programming at various levels and develop stand-alone database application using relational database management systems.*

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

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| **#** | **CSC *6710* Course Learning Outcomes** |
| 1 | Describe clearly the basic concepts of relational database design and development; |
| 2 | Apply the ER diagram methodology to database design; |
| 3 | Perform SQL programming at the basic level, intermediate level and advanced levels; |
| 4 | Apply normalization theory to database design refinement; |
| 5 | Explain how physical organization of databases and indexing mechanisms work |
| 6 | Develop stand-alone database application using relational database management systems. |

**Assessment:**

 (30 %) 3 Assignments

 (50 %) One project, parts 1, 2 and 3. All three parts will be graded together for one grade of the final project.

 (20 %) Final exam (4/25/2018, 12:30-2:30PM same classroom)

**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.
* **Othe**r 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:** Information on this can be found at:

<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/> 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.