COMP 163 - Database Management Systems

Syllabus - Fall 2008

| instructor          | Michael Doherty, mdoherty@pacific.edu  
|                    | CSB 109, 946-3031                      |
| course website     | http://www1.pacific.edu/~mdoherty/comp163/index.htm |
| lecture            | ARTCEN 209 TR 1:00-2:50                 |
| textbook           | Fundamentals of Database Systems, 5th Ed., by Elmasri and Navathe  

Course Description: A database management system (DBMS) is a computer application program designed for the efficient and effective storage, access and update of large volumes of information. This course will look at such systems from two perspectives:

- A user-centered perspective focusing on how a DBMS is used to support a data intensive application. This perspective includes a look at the common data models, query languages and design techniques.
- A system implementation perspective focusing on the policies, algorithms and data structures used to design and implement a DBMS.

Course Objectives: By examining both perspectives of database management systems, students will have gained the ability to:

- Understand the functionality provided by typical database management systems, to an extent sufficient to select and utilize a DBMS to support real world applications.
- Analyze the data requirements of an application and develop a proper database schema to support the storage of data for an application.
- Develop commands to create database schemas, insert and manipulate data records and extract information from stored data.
- Understand transaction processing and the manner in which database systems support atomicity, concurrency, isolation and durability.
- Develop access control policies and the commands for implementing them.
- Understand the theory underlying indexing structures in order to evaluate their efficiency and use them effectively.
- Understand the theoretical foundations of query languages and the mechanisms used to efficiently process and evaluate queries.
- Integrate a database management system with a general purpose programming environment to create an effective database application.

Prerequisite: COMP 53 is required. COMP 47 is strongly suggested.
Grading:

Homework: 30%
Projects: 30%
Exams: 30%
Attendance and participation: 10%

Homework: There will be eight homework assignments, which may include paper exercises and small programming assignments. All homework submissions must be typeset and printed, no hand-written assignments will be accepted. Homework will be submitted through Blackboard. Please include your name, the assignment number and the submission date at the top of each submitted document or file.

Projects: There will be two programming projects. The first will be focused on the design and development of a database. The second will be focused on the development of an application that accesses a database. The two projects may be combined to create a complete database application. Team projects may be allowed at the discretion of the instructor. Each project will contribute 50% to your total projects score.

Exams: There will be three mid-term exams and one final exam. The final exam will be comprehensive. You may use your notes and textbook for the exam. The final exam will be equal in weight to two mid-term exams.

Attendance and participation: Participation in class is an important part of the learning experience. To encourage this, 10% of your final grade (one letter grade) will be based on your attendance and participation. You will lose one point for each unexcused absence. You will lose one-half point for failure to participate in a class discussion or activity. Participation is determined by the extent to which you are prepared and willing to participate.

Course Web Site and Blackboard: You should check the course web site regularly for information and updates. Assignment specifications and due dates will be posted on the web site and on Blackboard. Most lecture notes will also be posted on the web site and on Blackboard.

Late Assignments and Make-up Work: The only acceptable excuses for missing an assignment due date, lab, quiz or exam are serious illness, death in the immediate family or important professional activities. Illness or death in the family may require documentation. Excuses for professional activities must be approved by the instructor in advance.

Homework assignments and projects are due in class on the assigned due date. Late assignments and projects will be accepted during the class immediately following the due date, with a 20% late penalty.

There will be no makeup exams, except for excused absences, as defined above.

Individual Work and Collaboration: Computer professionals usually work in a cooperative environment, yet proper assessment requires that work be done by individuals. To alleviate confusion, the following policy will be followed:

Collaborative work is encouraged. This includes students working together on problem sets, planning solution strategies and helping each other to debug programs. Collaboration must stop short of the writing
of program code or English that represents your work. You may not directly copy the work of another student. It is your responsibility to ensure that the work you submit is an honest representation of your own understanding of the material.

Marginal cases will be resolved by oral examination of the students involved. If they understand the material in the assignment, it will be considered honest collaboration. If they do not, then it will be considered academic dishonesty.

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**Academic Dishonesty:** Cases of academic dishonesty will not be tolerated. On a first offense, the student will be given a written warning and a grade of zero for the work in question. On a second offense, notice will be sent to the student's academic advisor, the Dean of the School of Engineering and Computer Science and the Dean of the student's own school, and the matter will be turned over to the Office of Student Life for resolution.

The following are all considered academic dishonesty:

- Copying program code or homework assignments from another student or presenting someone else's work as one's own.
- Misrepresentation of a program's output or behavior, such as modifying a program's output with a text editor.
- Giving or receiving information during an exam or using unauthorized resources during an exam.

**Honor Code:** The University Honor Code is an essential element of academic integrity. It is a violation of the Honor Code to give or receive information from another student during an examination or to submit all or part of someone else's work as one's own. If a student violates the Honor Code, the faculty member may refer the matter to the Office of Student Life. If found guilty, the student may be penalized with failure of the assignment or the course. The student may also be reprimanded or suspended from the University.

**Students with Disabilities:** Any student with a physical disability or with a learning disability needing accommodations should register with the Office of Services for Students with Disabilities, in Bannister Hall. The office will assist with any needed accommodations. If you have questions or wish to discuss your disability, please feel free to see me directly.