University of International Business and Economics
International Summer School

BDT 401 Database Analysis

Term: January 4 – January 29, 2021
Instructor: Shuxi Wang
Home Institution: University of International Business and Economics
Email: wangshuxi@uibe.edu.cn
Class Hours: Monday through Friday, 120 minutes each day (2,400 minutes in total)
Office Hours: TBD
Discussion Session: 2 hours each week
Total Contact Hours: 64 contact hours (45 minutes each, 48 hours in total)

Course Description:

This is an introductory course to relational database design, implementation, usage, and administration for computer science majors. Non-computer science majors may be admitted with departmental approval. Topics covered include relational database model, entity relationship modeling, normalization, SQL, database design, concurrency control, data warehouse, database connectivity and Internet, administration and security.

Required Textbook:

Fundamentals of Database Systems, 7th E (Elmasri)
Database Systems: Design, Implementation, and Management 11th Ed. (Coronel & Morris)

Course Goals:

This course addresses the following program outcomes:
A. An ability to apply knowledge of computing and mathematics appropriate to the discipline
B. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
C. An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
E. An ability to use current techniques, skills, and tools necessary for computing practice.
F. An ability to apply design and development principles in the construction of software systems of varying complexity.

The student will be able to:
1. Demonstrate a fundamental understanding of relational databases.
2. Demonstrate the capability of designing relational databases via ERD and normalization.
3. Demonstrate the ability to create and query databases with SQL.

4. Demonstrate a knowledge of transaction management, concurrency control, and crash recovery

5. Be aware of current and emerging trends in database management and processing

Grading Policy:

Your grade is calculated based on the following weights:

Assignment Type	Percentage
Home Assignments	30%
Lab Assignments	20%
Exams	40% (10%, 10%, 20%)
Attendance/Participation	10%

Grading Scale:

Assignments and examinations will be graded according to the following grade scale:

A	90-100	**C+**	72-74
A-	85-89	**C**	68-71
B+	82-84	**C-**	64-67
B	78-81	**D**	60-63
B-	75-77	**F**	below 60

Assignments:

Home Assignments:
Home assignments will be given roughly every 2 weeks this semester. The due date of each programming assignment will depend on the complexity of the assignment (typically 2 weeks). Shorter assignments will often focus on a small number of specific skills, while larger assignments will typically be used to aggregate a number of skills to construct a more fully-formed project.

Programming assignments are considered individual work unless otherwise specified. Please see the policy on academic integrity below.

Lab Assignments:
Lab assignments will be given roughly every 2 weeks to coincide with and support materials from lectures. While programming assignments will tend to be larger, more complete projects that bring together a number of skills from class, lab assignments consist of a number of smaller prompts that reinforce the most current subject matter being learned in class.

Exams:

Like programming assignments, each lab assignment will be given a final due date (after which it will no longer be accepted).

Exams are closed book, closed notes. Use of electronic or communication devices (cell phones, PDAs, laptops, etc.) is strictly prohibited unless otherwise indicated by the professor. Exams are pen-and-paper and will encompass materials covered both in lecture and during labs.
In general makeup exams will not be given, except in the event of a documented illness or documented university excused absence.

Attendance Policy:

Because of the way that new concepts build upon previous tools and skills attendance in a computer science or math class is particularly important to ensure mastery of material. Attendance will be recorded at the beginning of most lecture periods, and will count as a portion of your final grade. Students who arrive after attendance is taken up may sign in at the end of class for half of their attendance points.

Late work:

When you are absent or tardy it is your responsibility to make sure that you learn the materials covered in class, and you are still responsible for any assignments that are announced that day, or are due that day. It is the student's responsibility to find out what was missed during class.
All assignments must be turned in before their respective deadline. In the event of a documented, university approved absence (illness, class outings, military service, etc.) the professor may allow submission of late homework or exams. Those having to miss class due to official school functions (such as athletic events or school trips) may make up missed items, provided that they check with the teacher ahead of time and schedule the make-up work ahead of time.
Those who miss a class period or exam due to illness should contact me as soon as possible by email, and bring a doctor's excuse if they wish to make up their work. Timing of made up work will be arranged outside of class with the professor.
Use of Electronic Devices:
In order to provide the best possible learning environment for all students you are asked to forgo the use of electronic devices (laptops, tablets, cell phones, recording devices, etc.) during class. Special permission to use a specific electronic device may be granted on an individual bases, but it is the student's responsibility get special permission from the instructor before use.

Academic Integrity:

Academic integrity is the hallmark of University studies, and is key to a successful professional career. Students are permitted to work together on written homework in

study groups, however all work turned in must be the student's own work. This includes all computer code, calculations, figures, proofs, or other work. Copying the work of another student or any other source directly is not allowed, and is considered plagiarism.

Students are allowed to discuss programming related concepts at a high-level. Discussions related to programming methods and solutions to assignments are also allowed in general terms. However, you must design and write your own code.

As a rule of thumb: if it can be discussed in plain English (including discipline-related technical jargon) it is probably OK. If you are viewing another student's work directly, or editing their work, or allowing someone else to do the same you are probably in violation.

Violations of Academic Integrity:
If one or more students are found to be in violation of the academic honesty policy the professor reserves the right to seek disciplinary action as allowable by university policy. Such actions may include (but are not limited to) giving the student a zero on the assignment and reporting them to the office of student affairs.

In order to ensure your safety please direct all questions related to academic integrity to your professor before a (potential) infraction is committed.

In the event of a breach of academic integrity between one or more parties the instructor reserves the right to assign guilt to all involved parties. In other words, sharing or allowing access to one's work on individual assignments is also considered a breach of academic integrity and is punishable by the same terms.

Please protect yourself and your work: don't share files, allow others to gain access to your work, publish your work online during the semester in any way that is publicly viewable, leave your workstation unlocked, or leave print-outs of work in accessible areas.

Course Schedule:

WEEK 1
1.   Database systems
2.   Data models
3.   Relational database model
4.   Entity relationship modeling
5.   Normalization of data tables

WEEK 2
6.   SQL
7.   Advanced SQL
8.   Database design
9.   Transaction management
10.   Concurrency control

WEEK 3
11.   Locking methods and deadlocks

12.   Time stamping methods
13.   Optimistic methods
14.   Data analysis and business intelligence
15.   Data warehouse

WEEK 4
16.   Database connectivity and Internet
17.   Database administration and security
18.   Object-oriented database