



THE UNIVERSITY OF  
**TENNESSEE**  
KNOXVILLE  
**BIG ORANGE. BIG IDEAS.**

## **INSC 584 Database Management System Fall 2020**

School of Information Sciences  
College of Communication and Information

**Course Section:** 44605 and 44606

**Meeting Time and Place:** Tu&Th 05:05 p.m.– 12:20 p.m.; Zoom ID = in Canvas

**Course Credit Hours:** 3 hours of Graduate Level

**Instructor:** Peiling Wang;

**Office/Hours:** by appointment; email: peilingw@utk.edu

### **Course Description/Information:**

Defining data needs, data structures, the role of operating systems in data management, file organization, database management systems, logical data models, internal data models, database administration, and evaluation. Design and implementation of applications using database management systems

### **Value Proposition:**

Learning by doing a project that has real-world applications is critical for mastering database design and implementation.

### **Student Learning Outcomes/Objectives:**

- understand information needs in organizations and the database environment
- understand the database development process and technology
- master database terminology for effective communication
- be able to design data models using Entity-Relationship (ER) diagrams (conceptual design)
- be able to translate/map ER diagrams to relational models (logical design)
- be able to implement a prototype database application using a relational DBMS software package (physical database)
- be able to use Structured Query Language (SQL) to retrieve data (data access)
- understand issues pertinent to operational databases

**Programmatic Outcomes/Department Goals:**

Assess and implement information technologies, systems, sources, and services that serve users effectively and efficiently.

**Learning Environment:**

The shift to 21<sup>st</sup>-century learning requires teachers to adopt a learner-centered approach to teaching. Built on the constructivist theory, I design the course that takes into consideration students' diverse backgrounds and career goals, as well as the need for lifelong learning. This course tackles a challenging subject, database, which is loaded with difficult concepts and requires strong computer technological skills. It will not be a realistic expectation to master the subject in a 3-credit course. I expect that upon successful completion of the course, you will feel confident to pursue the subject further because of the solid foundation we build during the course regardless of your starting point. For the students with some database experiences, you are encouraged to move towards a higher level of competences.

As the instructor, I encourage you to set up your own learning objectives based on your career goals. I support and guide you to achieve your personalized learning outcomes. Critical success factors include critical thinking and perseverance. You will find the practical use of the knowledge and skills learned in this course even if you are not seeking a database management career! Congratulations to you for taking this course to learn a challenging subject.

Innovating Teaching with Flipped Classroom. I will adopt this approach in this course to place my students in the center of learning. The flipped classroom method has been successful when students are well prepared and actively participate in hands-on activities during class time. This approach is appropriate for the concepts and tasks such as drawing an ERD, testing SQL statements, analyzing different models for a well-defined design case. This approach should make online courses more effective by reducing one-way lecturing.

**Course Communications:**

Canvas is the course communication space. Canvas will facilitate discussions, Announcements, Assignments, Schedules, Grades, and any related matters. If you send email from Canvas, be sure to include your Vols email because canvas email cannot be replied directly

Synchronous Zoom classes will have technical support. You may call SIS support at (865) 974-7913; OIT HelpDesk via phone (865) 974-9900 or online at <http://help.utk.edu/>.

**Be Successful in This Course:**

Students should

- Be prepared for all classes such as reading before the class
- Be active in participating in discussions online and in Canvas
- Meet due dates on assignments

Instructor should

- Be attentive to and supportive of individual student's needs
- Create and facilitate meaningful learning activities
- Provide feedback to assignments promptly

**Texts/Resources/Materials:**

Jeffrey A. Hoffer, V. Ramesh, Heikki Topi. *Essential Database Management*, ©2014. Pearson, 378 pages. [ISBN 0-13-340568-0; 978-0-13-340568-2]

**Required Equipment:**

Microsoft ACCESS in addition to Word and PowerPoint (or a graphic tool). Web access to resources.

**Course Resources:**

Available in [utk.instructure.com](http://utk.instructure.com)

**Course Requirements, Assignments, and Evaluations:****1. Class Attendance Participation (10%)**

Prepared attendance is important for this course, given the nature of the subject. Students are expected to have read the material before the class and contribute to the discussion and other activities.

If you must *miss* a class for whatever reason, you are still responsible for the material covered. The UTK School of Information Sciences (SIS) does not recommend that students attend online classes while driving or riding in motorized vehicles. Zoom for smartphones or tablets may not support certain functions. Classes are recorded, and you can replay to make up the missed classes. See the Texting While Driving Law (TCA 55-8-199).

Conferences with the instructor: you are strongly encouraged to meet with the instructor in person or online. Many students found such meetings helpful, especially during their projects and labs.

You are required to hold at least *one* meeting with the instructor no later than the set due date: for campus students, meet face to face; for DE students, use interactive methods such as Skype or Zoom. Please contact me early in the semester to schedule the meeting. You should meet about your project before the first due date to get my feedback.

**2. Course Journals (10%) – Start now**

Becoming a reflective learner is very important for career success in IT! Write structured journal entries for important incidents during your learning: 1) your “Aha!” moments; 2) know-how you figured out that can be used later or shared with others; 3) a debugging episode—what was your strategy to tackle the problem; 4) a lesson learned from a mistake—if you would do the task again, what might you do? Throughout the semester, you will write about these significant learning experiences and reflect on your growth. Be succinct!

**3. Exercises (25%)**

The exercises aim to review concepts and reinforce understanding. The exercise questions are implemented using the “Practice Quiz” module so that you will receive the system feedback instantly. If you missed a question, you could analyze if you have not mastered the concept or if the question is vague. If you wish, you can redo the entire exercise (but be reminded that the system could not be set up to do only the missed questions). I recommend you to write a journal to reflect the question(s) you answer does not match the book provided answer instead of doing

the exercise again. The exercises are not graded. *You are credited for completing each by the due date*; late assignments will lose *one point* a day.

- Exercise 1 – chapter 1
- Exercise 2 – chapter 2
- Exercise 3 – chapter 4
- Exercise 4 – chapter 6
- Exercise 5 – chapter 7

**4. Labs (20%)**

Learning-by-doing! Labs are important hands-on practices to develop IT skills. These labs are designed for practicing basic DBMS skills: implementing data structure and using SQL. However, much of the advanced database skills can only be built by exploring the software to develop adequate mental models and through trouble-shooting. MS Access has a good visual interface and provides error messages. It is suitable for learning using a trial and error approach. It also can support real-world projects of individual researchers or small organizations.

- Lab 1 – Create Data Structure (ACCESS)
- Lab 2 – Basic Queries (One Table)
- Lab 3 – Advanced Queries (Multiple Tables)

**5. Project (35%)**

Students must complete a hands-on project either as an *individual* project or as *teamwork*. In real-world settings, a database is mostly designed, developed, and maintained by a team. A good team will make learning-about and learning-by-doing much easier and fun with the support of teammates. However, the online learning mode makes the collaboration of database projects difficult. I will accept individual projects.

*Database design and prototyping.* Select a scenario or a real-world environment to do needs analysis, conceptual design, and a prototype. I will help you along the process. [The focus of this project is back-end: data structure and integrity, and queries to retrieve data; a simple interface as a menu can be easily set up in ACCESS]

Each project is evaluated based on the criteria for the type. Each project team will receive the same points unless issues arise.

**Evaluation and Grading**

The University of Tennessee grading system for graduate-level courses is as follows.

A: superior performance	A-: intermediate grade performance
B+: very good performance	B: good performance
B-: intermediate grade performance	C+: less than satisfactory
C: well below the standard expected of graduate students	D or F cannot be used to satisfy degree requirements

**Course Feedback:**

In order to maximize learning outcomes, students are encouraged to provide criticisms, input, and suggestions to my teaching. You may do so by meeting with me, emailing me, or just dropping an anonymous note.

**Schedule and Due dates**

Accessible in the Canvas course site.

**University Policies:****Academic Integrity:**

“An essential feature of the University of Tennessee, Knoxville, is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the university, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity.”

**University Civility Statement:**

Civility is genuine respect and regard for others: politeness, consideration, tact, good manners, graciousness, cordiality, affability, amiability, and courteousness. Civility enhances academic freedom and integrity, and is a prerequisite to the free exchange of ideas and knowledge in the learning community. Our community consists of students, faculty, staff, alumni, and campus visitors. Community members affect each other’s well-being and have a shared interest in creating and sustaining an environment where all community members and their points of view are valued and respected. Affirming the value of each member of the university community, the campus asks that all its members adhere to the principles of civility and community adopted by the campus: <http://civility.utk.edu/>.

**Disability Services:**

“Any student who feels s/he may need an accommodation based on the impact of a disability should contact Student Disability Services in Dunford Hall, at 865-974-6087, or by video relay at, 865-622-6566, to coordinate reasonable academic accommodations.”

**Your Role in Improving Teaching and Learning Through Course Assessment:**

At UT, it is our collective responsibility to improve the state of teaching and learning. During the semester, you may be requested to assess aspects of this course either during class or at the completion of the class. You are encouraged to respond to these various forms of assessment as a means of continuing to improve the quality of the UT learning experience.