



THE UNIVERSITY OF  
**TENNESSEE**  
KNOXVILLE

**BIG ORANGE. BIG IDEAS.**

## **INSC 584 Database Management System Fall 2018**

School of Information Sciences

College of Communication and Information

**Course Section:** 44757 and 44758

**Meeting Time and Place:** W&F 12:20 – 1:35; Zoom ID = 752418484

**Course Credit Hours:** 3 hours

**Instructor:** Peiling Wang;

**Office/Hours:** COM 443; Friday 2 – 6:00 p.m.; also by appointment; (865) 974-3700; email:  
peilingw@utk.edu

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

Defining data needs, data structures, 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 project that has real world application 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 of students' diverse backgrounds and career goals, as well as the need for lifelong learning. Database is a challenging subject, 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. My expectation is 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.

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 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 the hands-on activities during the 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. Discussions, Announcements, Assignments, Schedules, Grades, and any related matters will be facilitated by Canvas. 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 (888) 378-9338 or (865) 974-7913; OIT HelpDesk via phone (865) 974-9900 or online at <http://help.utk.edu/>.

**How to Be Successful in This Course:**

Students should

- Be prepared for all classes such as reading before the class
- Be active in participating 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 in a timely manner

**Texts/Resources/Materials:**

Jeffrey A. Hoffer, V. Ramesh, Heikki Topi. Modern Database Management, a successful textbook currently in its 11th edition (2013). Prentice Hall, 624 pp.

**Required Equipment:**

MicroSoft ACCESS in addition to Word and PowerPoint.

**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 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. Collaborate client for smart phone or tablet may not support functions such as AppShare. Classes are recorded and can be replayed to make up the missed class. 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 last day of class: 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.

**2. Course Journals (15%) – 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) a 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 of the semester, you will write about these significant learning experiences and reflect on your growth. Be succinct!

**3. Exercises (20%)**

The exercises aim to review concepts and reinforce understanding. The exercise questions are to be answered online in Blackboard where you can receive instant feedback. These are implemented using the “test” function of Blackboard so that you will receive the system feedback instantly. If you missed a question, you can analyze if you have not mastered the concept or if the question is vague. You should redo these exercises two times by the due dates; the highest score of each exercise will be counted. When you redo an exercise, you will have to answer all the

questions again because the system cannot be set up for showing only the questions with incorrect answers. Late assignments will lose *one point* a day.

#### **4. Labs (25%)**

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.

#### **5. Project (30%)**

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 collaboration of database projects difficult. I will accept individual projects.

You may select one of the suggested types below, based on your learning objectives and your background. You may also propose a different database project derived from a need in the real world. Please discuss your project with the instructor.

*Type I. Database implementation.* Based on a given ERD-design and requirements, implement a physical database. You may use Access, SQL Server Express, MySQL, or any DBMS, whichever fits your learning objective. I will provide you with an ER design. [The focus of this type is query development to retrieve data – frontend.]

*Type II. 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 type is data structure and integrity -- backend.]

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

#### **Note on Evaluation and Grading**

The University of Tennessee grading system for graduate level courses are as follows. However, grades, as a quantitative assessment of course performance, do not always reflect a student's real competences.

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
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**Due Dates**

<b>Date</b>	<b>Details</b>
Thu Sep 6, 2018	<a href="#">Ex. 1. Multiple choices or multiple answers</a> due by 11:59pm
Thu Sep 20, 2018	<a href="#">Ex. 2</a> due by 11:59pm
Wed Oct 3, 2018	<a href="#">Ex. 3</a> due by 11:59pm
Thu Oct 11, 2018	<a href="#">Project (first submission)</a> due by 11:59pm
Thu Oct 18, 2018	<a href="#">Ex. 4</a> due by 11:59pm
Thu Nov 1, 2018	<a href="#">Lab 1</a> due by 11:59pm
Thu Nov 8, 2018	<a href="#">Lab 2</a> due by 11:59pm
Fri Nov 9, 2018	<a href="#">Have you or your group met with instructor?</a> due by 11:59pm
Tue Nov 20, 2018	<a href="#">Lab 3</a> due by 11:59pm
Fri Dec 7, 2018	<a href="#">Project (final submission)</a> due by 11:59pm
Fri Dec 10, 2018	<a href="#">Journals</a> due by 11:59pm

**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.

## **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.

### **Key Campus Resources for Students:**

- [Center for Career Development](#) (Career counseling and resources; HIRE-A-VOL job search system)
- [Course Catalogs](#) (Listing of academic programs, courses, and policies)
- [Hilltopics](#) (Campus and academic policies, procedures and standards of conduct)
- [OIT HelpDesk](#) (865) 974-9900
- [Schedule of Classes/Timetable](#)
- [Student Health Center](#) (visit the site for a list of services)
- [Student Success Center](#) (Academic support resources)
- [Undergraduate Academic Advising](#) (Advising resources, course requirements, and major guides)
- [University Libraries](#) (Access to library resources, databases, course reserves, and services)

**Schedule:**

<b>Week</b>	<b>Topics and Readings</b>
1	Introduction; Database Design Life Cycle Chapter 1
2	Conceptual Design: Entities and Relationships & ERD Chapter 2 and Video in Canvas
3	Advanced ERD; Flipped Class Session on Take Home Challenges Chapter 3 or Video
4	Logical Mapping: ERD to Relational Model Chapter 4 (skip Normalization)
5	Normalization & Review (Q&A) Chapter 4 Introduction to Normalization ...
6	Flipped class on Logical Modeling Take Home Challenges; Fall break
7	Project discussion [Required: each project must meet with the instructor no later than November 9.]
8	Physical Database Design & Prototyping Chapter 5 & DBMS video
9	Introduction to SQL and DDL Chapter 6
10	Basic SQL: Relational algebra and querying tables Chapter 6 & online resources
11	Advanced SQL Joins and Aggregate Functions Chapter 7 & online resources
12	Advanced SQL Take Home Challenges
13	Advanced topics: Data mining; Thanksgiving holiday
14	Advanced topics: NoSQL databases Lynda video

*The instructor reserves the need to revise, alter or amend this syllabus as necessary. Students will be notified in writing / email of any such changes in Canvas*