



CSCI 5346 Database Analytics

Course Syllabus

1. Course Information

Code / Title: CSCI 5346 Database Analytics (3 credits)
Modality: Online Asynchronous Mode (7-week schedule)
Overview: The course introduces concepts, techniques and applications related to database analytics (DA). Conceptual and technical topics include relational database design, SQL, data normalization, database administration, business intelligence, and big data technologies. Use of DBMS software is required.
Instructor: Dr. Wingyan Chung (office: COB Rm. 315)
Email: wchung@uttyler.edu (the best contact method)
Dept. Info.: Dept. of Computer Science, Soules College of Business, Rm. 315
Office hours: Mon. – Fri. 3-4 pm (CST) or by appointment

2. Course Aims

This course aims to introduce concepts, techniques and applications related to database analytics (DA). Students will acquire technical and managerial skills in planning, analysis, logical design, physical design, implementation, and application of DA. Conceptual and technical topics include relational database design, SQL, data normalization, database administration, business intelligence, and big data technologies. Use of DBMS software is required. Emphasis is placed on the conceptual design and practical application database analytics solutions. (The weekly workload may span 15 to 20 hours approximately and depends on individual students' background.)

Prerequisite: There is no prerequisite for this course. However, prior knowledge in computer programming, spreadsheet software, probability and statistics is helpful.

3. Student Learning Outcomes

Upon successful completion of this course, students should be able to:

- I. Understand and explain concepts, techniques, and practices related to database analytics
- II. Apply database analytics in modern business management and operations
- III. Create and manage database analytics applications
- IV. Understand the societal impacts and ethical dimensions of database analytics

4. Course Materials

The course materials include the following.

Required Textbooks and Readings

- H = Jeffrey A. Hoffer, V. Ramesh, Heikki Topi "Modern Database Management, 13th edition," Pearson (2022) (required).
 - <https://www.pearson.com/en-us/subject-catalog/p/modern-database-management/P200000001243>

- Additional readings, handouts, and videos will be posted on the course Web site.

5. Class Arrangement

This course will use an asynchronous online modality to support teaching and learning. The instructor will post course materials on the learning management system (LMS) and will send out weekly reminders (via university email) to students to inform the current progress and upcoming course activities. The materials include course handouts (e.g., slides, notes, exercises), pre-recorded lecture videos, discussion forums, and papers, among others. Students are expected to read / watch the materials and to make progress in their learning accordingly. Students are required to submit (via LMS) assessment items that have specific due dates as listed in the *Class Schedule* section (see below). The assessment items are intended to ensure that students are making satisfactorily progress toward the learning goals. The directions for submitting the assessment items will be provided on the LMS. While all required learning materials are provided in an asynchronous mode, students are welcome to schedule 15-minute appointments to meet with the instructor (online via Zoom or in-person on campus), who will be available during office hours posted on the LMS. Other times may be considered upon request. Students who want to set up an appointment with the instructor should email the instructor with several proposed meeting times.

6. Assessment

For each of the assessment categories listed below, students are required to submit the assessment items by their due dates and times listed on the learning management system (LMS).

A. Quizzes

Quizzes will be assigned as individual, untimed, open-book tests to help students review course materials and to prepare for exams. Each quiz contains objective-type questions (e.g., multiple choice, vocabularies, multiple selections, calculation) designed to support retention of knowledge. Students may pause and resume a quiz (once started) and must complete the quiz submission by the due time. Each quiz is open for submission one week (or earlier) prior to the due date, and is closed for submission 3 days after the scheduled due date.

B. Assignments

Individual assignments will be given to reinforce the topics learned. The assignments may include computer programming, short questions, case studies, and software applications. Each assignment will be graded based on its accuracy, clarity, timely and proper submission, and overall quality. Students may submit the assignment any time before the due time. The latest submission is used for grading. Each assignment is open for submission one week (or earlier) prior to the due date, and is closed for submission 3 days after the scheduled due date.

C. Examination

There is an individual, one-sitting, close-book, close-note, limited-time final exam in this course. The exam will be open during a fixed period of time during which students must start at a specific time (as shown in the *Course Schedule* section). Students are not allowed to communicate during the period that the exam is open. Students must complete their submission by the end of the scheduled time period and must complete the exam within one sitting (no pause-and-resume is available). Online proctoring tools will be used during the exam. Objective-type questions (e.g., multiple choice, vocabularies, multiple selections, calculation) may appear in the exam.

7. Grading Policy and Schedule

The following table shows the grade weighting (in percentages and points) of the assessment categories (Table 1), grade interpretation and historical distribution of a previous class (Table 2). The final letter grades will be determined based on the scores accumulated over the course. Curving, individual performance, and reference data from previous sections of this course will be used in assigning the grades. Any appeal on grade must be submitted to the instructor within one week after the evaluation item is returned to students.

Table 1. Weights and Points Carried by Each Assessment Category

Assessment	When it is due	Weight	Points
Quiz (× 4)	Sundays of Weeks 1, 3, 4, 6	10%	72
Assignment (× 4)	Sundays of Weeks 2, 4, 5, 6	40%	288
Final Exam	Saturday of Week 7	50%	360
Total:		100%	720

Table 2. Grade Interpretation and Historical Distribution of a Previous Class

Standard	Description	Grade *	Quality Point	Distribution **
Excellent	Exceptionally good performance demonstrating a superior understanding of the subject matter, a foundation of extensive knowledge, a skillful use of concepts and/or materials, and ability to analyze and evaluate problems.	A+	4.0	1.3%
		A	4.0	11.4%
		A-	3.7	15.2%
Good	Good performance demonstrating capacity to use the appropriate concepts, a good understanding of the subject matter, and an ability to handle the problems and materials encountered in the course.	B+	3.3	32.9%
		B	3.0	12.7%
		B-	2.7	11.4%
Satisfactory	Adequate performance demonstrating an adequate understanding of the subject matter, an ability to handle relatively simple problems, and adequate preparation for moving on to more advanced work in the field.	C+	2.3	2.5%
		C	2.0	5.1%
		C-	1.7	5.1%
Sufficient	Minimally acceptable performance demonstrating at least partial familiarity with the subject matter and some capacity to deal with relatively simple problems, but also demonstrating deficiencies serious enough to make it inadvisable to proceed further in the field without additional work.	D+	1.3	0.0%
		D	1.0	1.3%
		D-	0.7	0.0%
Fail	Unacceptable performance demonstrating unfamiliarity with the subject matter, and lack of capacity to deal with relatively simple problems, and also demonstrating deficiencies serious enough to make it advisable to retake the course.	F	0.0	1.3%

* If S/U grading is used, grades of C- and lower will be converted to grades of U; higher grades become S. Other possible (less used) grades include: I=Incomplete, IP=In Progress, W=Withdrawal, AU=Audit, NC=No Credit.

** The distribution is based on past performance data of students enrolled in the same course taught by this course's instructor. The actual distribution may vary in another class offered in a different semester. Consequently, exact cut-off points between successive grades are not provided to students.

8. Course Policies and Behavioral Expectations

Academic integrity: Academic dishonesty is prohibited and is considered a violation of the university rules. It includes, but is not limited to, cheating, plagiarism, and collusion. While students are encouraged to form study groups and to discuss course materials, students are required to submit only their own original work done exclusively for each assignment. Students are not allowed to share with others their answers on individual assignment and review questions.

Student responsibility: Students are expected to follow the course schedule, and the instructions provided through the learning management system, and check their university email account on a regular basis for all course materials and assignments. A stable, high-speed Internet connection is required to access course materials. By enrolling in this class, a student is bound by the requirements stated in this syllabus and given by the instructor. Students must operate with integrity in their dealings with faculty and other students; engage the learning materials with appropriate attention and dedication; complete assignments on time; maintain their engagement when challenged by difficult learning activities; contribute to the learning of others; and perform to the standards set by the instructor.

Submission of deliverables: Each deliverable must be submitted to LMS by the due date (before 11:59:00 pm US Central Time) to receive a grade. Late submissions will incur a score deduction of 40% between the first and the third

calendar-day late. The deliverable would receive a zero grade if not received by Day 3 after the due date. For example, if the due date is on Sunday, then a submission received between next Monday (Day 1) and Wednesday (Day 3) will get a 40% deduction; a submission received on or after Wednesday will be assigned a zero grade.

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Academic Calendar: <https://www.utt Tyler.edu/academics/academic-calendar/>

9. Class Schedule

Week	Part	Topics / Meetings	Materials	Items Due (Day)
1	1A	Introduction; The Database Environment and Development	Syllabus; H-Ch. 1	Quiz 1 (Sunday)
	1B	Modeling data in organization: Entity-Relationship Model	H-Ch. 2	
2	2A	The Enhanced Entity-Relationship Model	H-Ch. 3	Assignment 1 (Sunday)
	2B	Logical database design and the relational model	H-Ch. 4	
3	3A	Introduction to SQL (1)	H-Ch. 5	Quiz 2 (Sunday)
	3B	Introduction to SQL (2)	H-Ch. 5	
4	4A	Advanced SQL (1)	H-Ch. 6	Assignment 2 (Sunday)
	4B	Advanced SQL (2)	H-Ch. 6	
5	5A	Databases in Applications	H-Ch. 7	Quiz 3, Assignment 3 (Sunday)
	5B	Database Analytics Applications: Churn Prediction	Handouts	
6	6A	Data Warehousing and Data Integration	H-Ch. 9	Quiz 4, Assignment 4 (Sunday)
	6B	Big Data Technologies; Business Intelligence and Analytics	H-Ch. 10-11	
7	7A	Data and Database Administration	H-Ch. 12	Final Exam (Saturday)
	7B	Final Exam (2-hr; Saturday, 1 pm – 3 pm (tentative))	-	