W22-CSC 430/530 Database Management Systems (DBMS) [11:00-12:15 PM]

Venue: UNVH 111
Prerequisite: CSC 220 –Data Structures
Instructor: Dr. Pradeep Chowriappa (pradeep@latech.edu)
Office: Nethken Hall 235
Office Hours: **MWF** - 9:00-10:30 am & 1:00 to 2:30 pm; **T**-10:00 am to 11:00; **H** – *by appointment*

A. Course Purpose

The course aims at introducing the student to the theory, design, and implementation of Relational Data Base Management Systems (DBMS). The objective of the course is to expose students to database concepts of effective storage, security, and allied applications of legacy storage. The course emphasizes on the practical steps towards the creation of effective database management systems and the implementation of a simple database. The in-class experience for students is tailored specifically to supervised practical lab sessions and exercises.

Recommended Textbook: R. Elmasri, S. B. Navathe "Fundamentals of Database Systems", Seventh Edition, 2011. ISBN: 9780136086208

COVID - Instructional Methods to be utilized: The course will follow the hybrid model of instruction – with mandatory labs in UNIV 111 on designated Fridays through the quarter. There would be lectured presentations, , in class discussion (across platforms), paper reviews, and project presentations.

B. Tentative Course Outline and Calendar

Week	Date	Activity/ Topic	Sub topics
1	**1 & 3 Dec**	Introduction	Introduction to Databases and Database Users
2	**6, 8, & 10 Dec**	Conceptual Design and Architecture	Database System Concepts and Architecture
			Relational Modeling using ER Model
3	**13, 15, & 17 Dec**	Enhanced ER Modeling	EER Modeling Constructs; *Assignment 1*
4	**20 Dec**		*Lab 1: Relational Data Models and Constraints*
	21 Dec – 3 Jan	**CHRISTMAS BREAK**	
5	**5 & 7 Jan**	Constraints, SQL and Relational Algebra	Relational Algebra: Constraints and Operators
			Schema Definition, Constraints, Views, and Queries
			Lab 2: SQL Programming Techniques
			Assignment 2
6	**10, 12, & 14 Jan**	**Midterm Examination / Project Proposals**	
7	**19 & 21 Jan**	Normal Forms and Functional Dependencies	Functional Dependencies, and Normalization
			Practical Database Design Methodology and Use of UML
			Disk storage, File Structure, and Hashing
			Hands on Lab 3: Advance operators and Joins
8	**24, 26 & 28 Jan**	Database Indexing Techniques & Triggers	Indexing Techniques Single Level
			Indexing Techniques Multi Level, Constraints and Triggers
9	**31 Jan, 2 & 4 Feb**	Query Processing	Iterators and Database Access Algorithms
			Unary and Binary Operators and Strategies
			Hands on Lab 4 and Exercise: Triggers and Views
10	**7, 9, & 11 Feb**	Query Optimization	Duplicate Elimination and Sorting – One pass Algorithms
			Duplicate Elimination and Sorting –Two pass Algorithms
11	**14, 16, & 18 Feb**	Concurrency Control	Foundations of Concurrency Control
			Final Project presentation submissions
	22 Feb	**Final Examinations**	

C. Final Grade Assessment System

Undergraduate Students	
ACTIVITY	GRADE (%)
Exercises	20
Lab Quizzes	10
Midterm	20
Final Examination	30
Final Project	20
TOTAL	**100**

Graduate Students	
ACTIVITY	GRADE (%)
Exercises	20
Lab Quizzes	10
Midterm	15
Final Examination	20
Final Paper Review	**15**
Final Project	20
TOTAL	**100**

Grades:

A	100 - 90
B	89 - 80
C	79 - 70
D	69 - 60

D. General Course Policies

Reason for going Hybrid:

(a) Participation: The goal of going hybrid is not to discourage online participation, but on the contrary to facilitate those students who encounter technical difficulties during the quarter. Note there are limited seats in assigned classroom. Those students who have accommodations filed at the Office of Testing and Disabilities Services will be encouraged not to attend physically. (refer section on Attendance and Accommodations for details).

(b) Equity in the learning environment: We all are different and we each have our strengths and weaknesses. As part of this course and its evaluation, it's important for me as the instructor to understand every students' need. This is difficult to gauge in an online environment. Therefore, I would like the students to avail the classroom time to meet me and discuss challenges you encounter.

Use of Moodle & Emails: Course announcements, documents, and submissions shall be done over Moodle and via the @latech.edu e-mail account. It is the student's responsibility to ensure that they have access to Moodle and the students are encouraged to check for regular updates at least once every 24 hours. Failure to act as a result of not reading announcements and emails is NOT an acceptable justification.

No Plagiarism: Individual efforts are strictly enforced and rewarded in this course during examinations and presentations. Individuals wishing to collaborate must do so prior to examination sessions, and such must be done intelligently.

Missed Activity Policy: All scheduled examinations must not be missed without a university-approved excuse, pre-approved by the instructors. A ZERO grade will be assigned for any unapproved missed session. The instructor will decide with the student on the procedure to make up for all officially approved missed sessions.

Late Assignment Submission: Assignments and reports received after 24 hours of the stipulated deadline will be graded with a 50% penalty. All submissions beyond 24 hours of the deadline automatically attract a zero grade.

Academic Honor Code: The Louisiana Tech University Honor Code is available at: **http://www.latech.edu/documents/honor-code.pdf.** Students accordingly pledge - That being a student of higher standards, I pledge to embody the principles of academic integrity.

Emergency Notification System (ENS): All Louisiana Tech students are strongly encouraged to enroll and update their contact information in the ENS. It takes just a few seconds to ensure you're able to receive important text and voice alerts in the event of a campus emergency. For more information on the ENS, please visit **http://www.latech.edu/administration/ens.shtml.**

E. Attendance and Accommodations

- Class attendance regulations (University Policy 2206 – Class Attendance). *Permanent attendance records will be kept for each class.*
- Students who are feeling ill with COVID-19 symptoms, have been exposed to or testing positive for COVID-19, should not come to class and should contact **Tech Care at 318-257-4866**.
- Students who miss face-to-face class for COVID-19 related reasons will have access to course materials and grad opportunities while away from face-to-face class.
- Students needing testing or classroom accommodations based on a disability are encouraged to discuss those needs with me as soon as possible. Students who do not present an accommodations memo from the Office of Testing & Disability Services are referred to that office or to https://www.latech.edu/current-students/student-advancement-affairs/disability-services/ for assistance.

F. COVID-19 related information

- Students can access COVID-19-related information, guidelines, FAQs, and policies at Louisiana Tech's website: latech.edu/coronavirus
- Louisiana Tech's Return to Campus Plan is located at latech.edu/return-to-campus. **Masks are required to be worn indoors on campus**. Every member of the Tech Family will need to take personal responsibility for their behavior, which includes wearing masks, maintaining physical distancing, washing hands regularly, using proper sneeze and cough practices, helping maintain clean academic and office areas, and monitoring for symptoms of COVID-19
- The direct link to the reporting protocol for students is located at latech.edu/coronavirus/return-to-campus-plan/for-students/. Students can reach out to **Stacy Gilbert, Dean of Student Services & Academic Support, at stacyc@latech.edu** for help with accommodations and additional information.
- Failure to comply with the Safety Protocols listed in the Back to Campus Fall 2020 booklet, latech.edu/documents/2020/07/covid-return-book.pdf/, specifically on pages 5-7 about masks and social distancing, could result in students being in violation of the Classroom Behavior Policy listed on page 125 of the Student Handbook latech.edu/documents/2018/09/student-handbook.pdf/.
- Information and contact numbers and sites for Louisiana Tech Counseling Services are located at: https://www.latech.edu/current-students/student-advancement-affairs/counseling-services/

G. Examinations, Quizzes, and Class Activities

- All exams and quizzes will be conducted online. Supporting tools such as GradeScope and/or Respondus.
- You will be provided a study guide before every exam.
- All presentations will be recorded using the zoom cloud. Each of you have your zoom accounts.