

Syllabus

IS 451: Database Design for Information Systems

Last updated: Jan 12 2024

Course Description

Requirement analysis, conceptual design, logical design and implementation of relational databases. Emphasis will be on E-R modeling and E-R mapping, along with basic normalization and SQL for database implementation. PREREQUISITE(S): None

Instructor

Kris Scott (Email: kscott17@depaul.edu) All messages responded to within 48 hours

Office Hours

Tuesday 4:45pm - 5:30pm (in person or Zoom)

Thursday 4:45pm - 5:30pm (Zoom only)

Meeting Day and Time

In-Person

Meeting time: Tuesdays 5:45 PM - 9:00 PM

Room: LEWIS 01508

(some classes move to computer lab CDM 801)

Online Async

Meeting time: None (Async)

Learning Outcomes

Upon completion of IS451, the students will be able to:

- Analyze business requirements for a new database
- Develop a logical model using Entity-Relationship Diagrams
- Develop a physical model for implementation in SQL
- Execute SQL queries against a database

Software

Oracle SQL Developer <https://www.oracle.com/database/sqldeveloper/>

Will be used for implementing and working with databases. Must be downloaded and installed.

Draw.io <https://draw.io/>

Will be used for creating diagrams.

Textbooks & Additional Reading

Weekly reading and homework assignments will reference these books

[B&E] Database Design Using Entity-Relationship Diagrams, 3rd Edition

By Sikha Saha Bagui, Richard Walsh Earp ISBN: 9781000642704

<https://www.oreilly.com/library/view/database-design-using/9781000642704/>

[STE] Beginning Database Design Solutions

By Rod Stephens ISBN: 9780470385494

<https://ebookcentral.proquest.com/lib/depaul/reader.action?docID=427853>

[W&C] Beginning SQL

By Paul Wilton and John Colby ISBN: 9780764577321

<https://ebookcentral.proquest.com/lib/depaul/detail.action?docID=226434>

Grading

All classes at CDM use A/B/C/D/F grading basis

| | |
|----------------|-----|
| Online Quizzes | 25% |
| Assignments | 25% |
| Midterm exam | 25% |
| Final exam | 25% |

For in person students, exams are taken during the class session for that week

For online students, exams require in-person proctoring. Information about proctored exams can be found here: <https://www.cdm.depaul.edu/onlinelearning/Pages/Exams.aspx>

Exams are pen and paper with no computerized aids. One page, both sides, of hand-written notes on a standard size sheet of notebook paper can be used on each exam which must be turned in with the exam.

Class Schedule

| Date | Due | Topics | Reading |
|--|--------|--|--|
| Wk 1 Jan 09 | | Course administration Introduction to databases & SQL Requirement gathering | STE Ch 1 - Goals of Effective Database Design STE Ch 4 - Understanding User Needs STE Ch 11 - Case Study: User Needs & Requirements |
| Wk 2 Jan 16 | Quiz 1 | Entities, Attributes, Relationships SQL DDL - CREATE, ALTER | B&E Ch 4 - The Basic ER Diagram B&E Ch 5 - Beyond the First Entity Diagram B&E Ch 6 - Extending Relationships W&C Ch 1 - Introduction to SQL |
| Jan 19 - Class drop deadline Check the official calendar for changes: https://academics.depaul.edu/calendar/Pages/default.aspx | | | |
| Wk 3 Jan 23 | HW 1 | Primary & foreign keys Strong & weak entities Subclasses SQL - Relationships & INSERT | B&E Ch 7 - The Weak Entity B&E Ch 9 - Ternary and Higher Order ER Diagrams B&E Ch 10 - The Enhanced Entity-Relationship Model W&C Ch 2 - Entering Information |
| Wk 4 Jan 30 | HW 2 | Midterm review | STE Ch 3 - Relational Database Fundamentals STE Ch 12 - Case Study: Building a Data Model |
| Wk 5 Feb 06 | | Midterm Exam | STE Ch 9 - Common Design Patterns STE Ch 10 - Common Design Pitfalls |
| Wk 6 LAB 2nd Feb 13 | Quiz 2 | Entity-Relationship mapping SQL DDL - Constraints SQL DQL - SELECT | B&E Ch 11 - Relational Mapping W&C Ch 3 - Extracting Information |
| Wk 7 LAB 2nd Feb 20 | HW 3 | Normalization SQL DQL - JOIN | STE Ch 7 - Normalizing Data STE Ch 14 - Case Study: Normalization and Refinement W&C Ch 4 - Advanced Database Design W&C Ch 7 - Selecting Data from Different Tables |
| Feb 23 - Class withdraw deadline Check the official calendar for changes: https://academics.depaul.edu/calendar/Pages/default.aspx | | | |
| Wk 8 LAB Full Feb 27 | HW 4 | SQL DQL - Math, String Manipulation, Aggregation, GROUP BY, HAVING | W&C Ch 5 - Manipulating Data W&C Ch 6 - Grouping and Aggregating Data |
| Wk 9 LAB 2nd Mar 05 | HW 5 | SQL DCL - DB Administration | W&C Ch 12 - SQL Security W&C Ch 13 - Database Tuning |
| Wk 10 Mar 12 | Quiz 3 | Final review | W&C Ch 9 - Advanced Queries |
| Wk 11 Mar 19 | | Final Exam | |

Policies

No Late Assignments Accepted

Late work is not accepted after class has started. The first thing we will do in class is review the answers to the homework just submitted, allowing submission after this is obviously problematic. Please use the full seven days available and ensure work is successfully submitted to D2L before class starts.

No Make-up Exams Available

Exams cannot be made up after the in-class exam session is over (for in person students) or the proctored exam window has closed (for online async students).

Use of Generative AI

Generative AI tools are trained on existing texts, algorithms, and models to generate content based on prompts from users. ChatGPT, Midjourney, Google Bard, and DALL-E are examples of generative AI tools. Please refrain from using generative AI in this course for any assignments. We will be developing skills that are important to practice on your own and using generative AI may inhibit development, practice, or understanding of those skills. With the current state of this technology, it is critical that you develop the skills to be able to tell when/if the AI is getting these concepts wrong. Relying on AI for assignments will also not adequately prepare you for the exams, which are pen and paper exams without the benefit of any computerized tools.

Attempting to pass off AI-generated work as your own will violate [DePaul's Academic Integrity Policy](#).

Changes to Syllabus

This syllabus is subject to change as necessary during the quarter. If a change occurs, it will be thoroughly addressed during class, posted under Announcements in D2L and sent via email.

COVID-19 Health and Safety Precautions

The health and safety of everyone at DePaul depend on the cooperation of all who come to campus. By taking care of yourself, you protect the entire community. DePaul's COVID-19 response plans are based on the latest guidance from the Centers for Disease Control and Prevention, the Chicago Department of Public Health and the university's medical advisor from AMITA Health.

Mandatory protocols must be followed by DePaul students, faculty and staff at all times on both campuses <https://resources.depaul.edu/coronavirus/guidance/health-safety-practices/Pages/default.aspx>

Respect for Diversity and Inclusion at DePaul University

At DePaul, our mission calls us to explore "what must be done" in order to respect the inherent dignity and identity of each human person. We value diversity because it is part of our history, our traditions and our future. We see diversity as an asset and a strength that adds to the richness of classroom learning. In my course, I strive to include diverse authors, perspectives and teaching pedagogies. I also encourage open dialogue and spaces for students to express their unique identities and perspectives. I am open to having difficult conversations and I will strive to create an inclusive classroom that values all perspectives. If at any time, the classroom experience does not live up to this expectation, please feel free to contact me via email or during office hours.

Online Course Evaluations

Evaluations are a way for students to provide valuable feedback regarding their instructor and the course. Detailed feedback will enable the instructor to continuously tailor teaching methods and course content to meet the learning goals of the course and the academic needs of the students. They are a requirement of the course and are key to continue to provide you with the highest quality of teaching. The evaluations are anonymous; the instructor and administration do not track who entered what responses. A program is used to check if the student completed the evaluations, but the evaluation is completely separate from the student's identity. Since 100% participation is our goal, students are sent periodic reminders over three weeks. Students do not receive reminders once they complete the evaluation. Please see <https://resources.depaul.edu/teaching-commons/teaching/Pages/online-teaching-evaluations.aspx> for additional information.

Academic Integrity and Plagiarism

This course will be subject to the university's academic integrity policy. All students are expected to abide by the University's Academic Integrity Policy which prohibits cheating and other misconduct in student coursework. Publicly sharing or posting online any prior or current materials from this course (including exam questions or answers), is considered to be providing unauthorized assistance prohibited by the policy. Both students who share/post and students who access or use such materials are considered to be cheating under the Policy and will be subject to sanctions for violations of Academic Integrity.

More information can be found at

<https://resources.depaul.edu/teaching-commons/teaching/academic-integrity/Pages/default.aspx>

Posting work on online sites, such as Hero

All students are expected to abide by the University's Academic Integrity Policy which prohibits cheating and other misconduct in student coursework. Publicly sharing or posting online any prior or current materials from this course (including exam questions or answers), is considered to be providing unauthorized assistance prohibited by the policy. Both students who share/post and students who access or use such materials are considered to be cheating under the Policy and will be subject to sanctions for violations of Academic Integrity.

Academic Policies

All students are required to manage their class schedules each term in accordance with the deadlines for enrolling and withdrawing as indicated in the University Academic Calendar. Information on enrollment, withdrawal, grading and incompletes can be found at:

<http://www.cdm.depaul.edu/Current%20Students/Pages/PoliciesandProcedures.aspx>

Incomplete Grades

An incomplete grade is a special, temporary grade that may be assigned by an instructor when unforeseeable circumstances prevent a student from completing course requirements by the end of the term and when otherwise the student had a record of satisfactory progress in the course. All incomplete requests must be approved by the instructor of the course and a CDM Associate Dean. Only exceptions cases will receive such approval. Information about the Incomplete Grades policy can be found at

<http://www.cdm.depaul.edu/Current%20Students/Pages/Grading-Policies.aspx>

Preferred Name & Gender Pronouns

Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the quarter so that I may make appropriate changes to my records. Please also note that students may choose to identify within the University community with a preferred first name that differs from their legal name and may also update their gender. The preferred first name will appear in University related systems and documents except where the use of the legal name is necessitated or required by University business or legal need. For more information and instructions on how to do so, please see the Student Preferred Name and Gender Policy at <http://policies.depaul.edu/policy/policy.aspx?pid=332>

Students with Disabilities

Students seeking disability-related accommodations are required to register with DePaul's Center for Students with Disabilities (CSD) enabling them to access accommodations and support services to assist with their success. There are two office locations:

- Loop Campus (312) 362-8002
- Lincoln Park Campus (773) 325-1677
- Email: csd@depaul.edu

Students who register with the Center for Students with Disabilities are also invited to contact Dr. Gregory Moorhead, Director of the Center, privately to discuss how he may assist in facilitating the accommodations to be used in a course. This is best done early in the term. The conversation will remain confidential to the extent possible.

Please see <https://offices.depaul.edu/student-affairs/about/departments/Pages/csd.aspx> for Services and Contact Information.