Lectures: 9:25am–10:40am T/R, JEPSON 017

Instructor: Shawn Bowers, bowers@gonzaga.edu

Office Hours: 11am–12pm Tue, Wed, Thur; 1pm–2pm Wed; or by appointment.

Course Webpage: www.cs.gonzaga.edu/bowers/courses/cpsc321

Course Description: The goal of this course is to provide an introduction to topics in data management as well as hands-on experience working with relational database systems. Topics covered include the relational model, query languages (relational algebra and SQL), database design (conceptual modeling, integrity constraints, and normalization), indexing, query processing and optimization, and transaction management. This course has a design and engineering emphasis that includes weekly assignments and a project in which students design and develop an end-to-end database application.

Prerequisites: CPSC 122 or CPSC 322.

Access to Course Materials: There is no textbook for this course. Some homework assignments will have readings, which will be provided by the instructor. GitHub will be used for homework submission and homework feedback. Lecture notes, homework, and a weekly schedule will be made available on the course webpage (see above). Blackboard (learn.gonzaga.edu) will be used to post grades. Piazza (piazza.com/gonzaga/fall2021/cpsc321) will be used for questions and discussions.

Grading:

10% – Participation (including Attendance)
50% – Homework Assignments
15% – Semester Project
5% – Quizzes
5% – Midterm Exam
15% – Final Exam

There will be approximately 10 homework assignments, one written midterm exam, a semester project involving multiple intermediate steps, and a final written exam.

IMPORTANT: To pass this class you must average 60% or higher on homework assignments and average 60% or higher on exams. For example, if you average over 60% on homework assignments, but less than 60% on exams, you will not receive a passing class grade.


Course Policies:

Student Expectations: As a student, you are responsible for understanding and learning the course material. If you do not understand topics discussed in class, or instructions on tests or assignments, it is your responsibility to ask for help from the instructor. You can get help from the instructor during office hours, via email, or using the Piazza system set up for the course. Please start your assignments early to leave yourself enough time to ask questions and to complete the assignment once your questions are answered.

Assignment Grading: All work for the course (homework, project work, etc.) must be turned in on or before the due date for full credit.

Assignment Late Policy: Late assignments will be accepted up to two weeks after the original due date. Each late assignment will incur a penalty of 25% of the total number of points possible. It is the responsibility of the student to notify the instructor when a late assignment is submitted for grading.
**Exams and Quizzes:** All exams and quizzes are to be done individually. Clear cases of collaboration will result in a grade of 0 on the exam or quiz and/or an F in the course and possible suspension from the University. Students with testing accommodations must contact the instructor to arrange alternative testing times as needed.

**Attendance:** It is important that you attend class and keep up with course content and assignments. If you become ill and/or cannot attend classes due to another reason, contact the instructor as soon as possible to make arrangements. Note that attendance will be one factor of determining your class participation grade.

**Academic Honesty:** You are expected to follow the University’s policy on academic honesty. Please see the policy on the University’s webpage for more information, including procedures for violations. If you are unclear about the policy or how it applies to this class please ask the instructor.

**Office Hours:** You are strongly encouraged to take advantage of office hours or make an appointment to meet with the instructor if you have questions about the course material. I am more than happy to help you, and office hours are a great way to ask questions and get one-on-one help with the material.

**Incomplete Grade:** University Policy states that incomplete grades can be “Given when a student with a legitimate reason as determined by the instructor, does not complete all the work of the course within the semester that he/she is registered for the course.” A grade of incomplete is given to students who find themselves in situations beyond their control and that make academic success near to impossible. The Center for Cura Personalis and Academic Advising & Assistance are available to help in such situations. **Note that a grade of incomplete will not be granted for students due to a heavy course workload or because they have fallen behind in their coursework due to inadequate time management.**

**ABET Specific Outcomes of Instruction:** Students completing the course will:

1. Design and implement a relational database schema
2. Compare trade-offs between different relational representations of the same database schema
3. Formulate SQL select-from-where queries as well as queries involving joins, aggregation, grouping, and subqueries
4. Translate basic SQL queries into relational algebra expressions
5. Create ER diagrams based on application requirements
6. Identify redundancy in relational schema designs and apply simple normalization approaches (e.g., decomposition into BCNF and 3NF)
7. Define and create appropriate database indexes
8. Identify serializable schedules and recovery actions for transactions
9. Develop an end-to-end database application using a modern relational database system and dynamic SQL
10. Approximate the cost of evaluating simple SQL queries

**University Academic Policies & Procedures:** A full list of the academic policies and procedures can be found at: www.gonzaga.edu/academics/academic-calendar-resources/registrarsoffice/policies-procedures/academic-policies-procedures. Note that new policies are added and existing policies are modified frequently.