CS *457/557 Data Base Processing*  
*Year and Term* - Syllabus and Information

**Instructor/class Directories:** cd /u1/h7/tschotter/cs457/

**Course website and information:** cs.indstate.edu/~tschotter/classes/cs457/

Note - information at the top of this document changes (the Study Guide and Notes). Information after the Notes (so, the syllabus) doesn’t normally change once the semester starts.

# Study Guide

* Nothing yet!

# Notes (most recent first)

* Nothing yet!

# General Information

## Contact Your Instructor

**Name:** *Troy Schotter*

**Email:** troy.schotter@indstate.edu

**Phone:** *-*

**Office:** Root Hall, *TBA*

## Lecture, Exam, Office Hours

**Lecture:** 11:00 am – 12:15 am

**Exam:** *Dec 13 (Th) 10:00 am*. Also check the [Office of the Registrar’s exam schedule](https://www.indstate.edu/registrar/faculty-staff-resources/final-exam-schedule)

**Instructor Office Hours:** *TBA*

**GA Tutoring**: See <http://cs.indstate.edu/info/labs.html>

## Prerequisites

Prerequisite - C or better in CS 202 and CS 303.

A 500 level course cannot be taken as part of the MS program if you have completed the same 400 level course at ISU. For example, if you completed CS 451 as an undergrad, you **cannot** take CS 551 as an MS student and count it towards the degree.

## Recommended and/or Required Text

none

## Course Announcements

Announcements regarding the course will be made both during class and via email to your @sycamores.indstate.edu email address. You should regularly check this email account or have it forwarded to an account that you check regularly.

## Classroom conduct

You may not use cell phones, iPods/music players, etc. during class. You should be civil and respectful to both the instructor and your classmates, and you should arrive to class a few minutes before the scheduled lecture so you are ready for lecture to begin on time. You may use your computer during class if you are using it to follow along with the examples that are being discussed. You may not check email, facebook, work on other courses, etc. during class.

# Course Description

The official description of this course from the catalog is

Data independence, relational model, relational algebra and calculus, query languages and SQL, conceptual modeling, database design, data dependencies and normalization, access methods, tables, queries, forms, macros and reports, database administration, introduction to transaction processing, concurrent transactions, and recovery. Case studies of commercial database systems such as Oracle and Microsoft SQL Server.

# Course Outline

**Normal Content**

* Database Models
* Relational Algebra
* SQL - A reasonably comprehensive introduction to SQL.  SQLite is a very good, easy to use, vehicle for this part of the course.
* Database design: logical design, physical design, security design.
* Database design: ER diagrams, normal forms, functional dependencies, transitive closure, etc.
* Transactions: query processing, ACID, logging, indexing, hashing, B+ trees, joins.
* SQL - More advanced features (PL/SQL functions, triggers, etc.)
* NOSQL: discuss a subset of the following (whatever’s hot)
  + XML
  + Mongodb
  + Redis
  + levelDB
  + DataFrames - Python/pandas
  + Cassandra
  + many more possibilities

**Important Assignments and/or Exam Questions**

* Relational algebra exercises (pencil and paper) with a variety of joins.
* Single table SQLite assignment for experience using SQLite features and basic queries.
* Multi-table SQLite assignment in the context of normal forms.  An example: students at a university with tables for personal data (addresses), financial data (tuition payments), and performance data (credits, grades).
* Assignment to practice C or Python (or whatever) interface to SQLite.
* Postgres/Oracle assignment using multiple databases, tables, triggers, transactions, etc.  Examples could include the student/university database with the addition of classes, grades, adding, dropping, room assignments, courses, scheduling, faculty schedules, etc..  A more standard example is a company with employees, customers, suppliers, departments, etc.
* (Mongodb, etc.) Pick smaller database problems and implement them using SQL, mongodb and redis (for example).  Compare performance.

# Expected Amount of Work

If you take this class seriously and get what you should out of it, some weeks you will likely be spending around ***6* hours/week** or more on the class. The students who get A’s in their CS courses and have an easy time finding jobs do spend this much time on this course. Not everyone would need to spend this much time and not all weeks will be the same, but you should plan on putting in whatever time it takes.

**Note - your classes should be more important than your part-time job.**

# Grading and Assignments

The students of this course have the following responsibilities: read assigned readings before lecture, attend lecture, complete homework assignments, take in-class quizzes, take exams, and complete a project.

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Your grade will be seperated into the following;

Homeworks & Quizzes: 30%

Long Term Projects: 30%

Midterm Exam: 20%

Final Exam: 2

## CS Course Policies

Note that this course follows all standard CS course policies. In particular check the CS course policies related to - cheating/plagiarism, attendance, missing exams. See <http://cs.indstate.edu/info/policies.html> for details.

## Late Homeworks

Assignments that are not progress reports will be accepted as late as a week after the due date, taking 10% off the top for each day late*.*

## Start Homeworks Early

We suggest attempting a homework assignment the day it is given, or the day after, so that if you have a problem you can ask early. If you continue to have problems in trying to complete the assignment, you will have time to ask again. Many of the homework assignments require thought and problem solving, which takes “time on the calendar” not just “time on the clock”. By that we mean that spending two hours on 3 consecutive days may be more productive than trying to spend 6 hours at once on the assignment.

## Grade Cutoffs

We try to design homework assignments and exams so that a standard cutoff for grades will be close to what you deserve. After the first exam a grade will be created in Blackboard called “Letter Grade” that is what your letter grade would be if the semester ended today. Initially, I will likely assign the following grades: 93-100 A, 90-93 A-, 87-90 B+, 83-87 B, 80-83 B-, 77-80 C+, 73-77 C, 70-73 C-, 67-70 D+, 63-67 D, 60-63 D-, 0-60 F

Our goal is that the different grades have the following rough meaning.

**A+/A**   
You can do *all* the assignments *on your own*.

**B+/A-**You understand nearly everything, and should be all set to use this knowledge in other courses or in a job.

**B-/B**

Most things you understand very well and a few you might not (more towards the former for a B and more towards the latter for a C).

**C/C+**  
Learned enough and have the minimum skills to move on in the subject.

**D+/C-**   
You did put some effort in, and understand many things at a high level, but you haven’t mastered the details well enough to be able to use this knowledge in the future.

**D-**

Students will normally *not* get an F if - you attend 80% of the lectures, complete some of the assignments up through the end of the course, and get nearly half of the problems on the final exam correct.

**F**   
Normally, students that get an F simply stopped doing the required work at some point.

# Blackboard

The course has a blackboard site. Click [here](http://blackboard.indstate.edu) to go to blackboard. You should see this course listed under your courses for the current term. The blackboard site is only used for giving you your grades (go to the course in blackboard, then click “My Tools”, and then “My Grades”). All course content, schedule, etc. is kept in this google doc (which you are currently viewing).

*For online courses - if any parts of blackboard are used for the course, mention it here if appropriate.*

# Academic Integrity

Follow the standard CS course policies in terms of what is and is not allowed on assignments: <http://cs.indstate.edu/info/policies.html>

Please ask the instructor if you have doubts about what is considered cheating in this course.

# Special Needs / Student Disabilities

*Standard language included in the syllabi for ISU courses.*

Indiana State University recognizes that students with disabilities may have special needs that must be met to give them equal access to college programs and facilities. If you need course adaptations or accommodations because of a disability, please contact us as soon as possible in a confidential setting either after class or in my office. All conversations regarding your disability will be kept in strict confidence. Indiana State University's Student Support Services (SSS) office coordinates services for students with disabilities: documentation of a disability needs to be on file in that office before any accommodations can be provided. Student Support Services is located on the lower level of Normal Hall in the [Center for Student Success](http://www.indstate.edu/services/student-success/cfss) and can be contacted at 812-237-2700, or you can visit the ISU website under A-Z, [Disability Student Services](https://www.indstate.edu/services/student-success/cfss/student-support-services/disability-student-services) and submit a Contact Form. Appointments to discuss accommodations with SSS staff members are encouraged.

Once a faculty member is notified by Student Support Services that a student is qualified to receive academic accommodations, a faculty member is obligated to provide or allow a reasonable classroom accommodation under ADA.

# **Disclosures Regarding Sexual Misconduct**

*Standard language included in the syllabi for ISU courses.*

Indiana State University fosters a campus free of sexual misconduct including sexual harassment, sexual violence, intimate partner violence, and stalking and/or any form of sex or gender discrimination. If you disclose a potential violation of the sexual misconduct policy I will need to notify the Title IX Coordinator. Students who have experienced sexual misconduct are encouraged to contact confidential resources listed below. To make a report or the Title IX Coordinator, visit the Equal Opportunity and Title IX website:<http://www.indstate.edu/equalopportunity-titleix/titleix>.

The ISU Student Counseling Center – HMSU 7th Floor | 812-237-3939 | [www.indstate.edu/cns](http://www.indstate.edu/cns)

The ISU Victim Advocate – Trista Gibbons, trista.gibbons@indstate.edu

HMSU 7th Floor | 812-237-3939 (office) | 812-230-3803 (cell)

Campus Ministries - United Campus Ministries | 812-232-0186

<http://www2.indstate.edu/sao/campusinistries.htm>

[www.unitedcampusministries.org](http://www.unitedcampusministries.org/) | ucmminister2@gmail.com

321 N 7th St., Terre Haute, IN 47807

For more information on your rights and available resources<http://www.indstate.edu/equalopportunity-titleix/titleix>