# CSc 460 (Database Design) Syllabus
# Spring 2025

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## General Catalog Information:

**Description:** Functions of a database system. Data modeling and logical database design. Query languages and query optimization. Efficient data storage and access. Database access through standalone and web applications.

**Lecture:** Tuesdays and Thursdays, 3:30 p.m. - 4:45 p.m., G-S 906

**Prerequisite(s):** Passing grades in both CSc 335 and CSc 345

From these prerequisites, you might infer that you'll be doing a lot of programming in this class. You will be doing some, but not *a lot*; some will be in Java, but some will be in `new' (to you, potentially) languages (e.g., SQL). Having successfully completed those courses will also help you understand data representation concepts presented in the course, and perform any scripting that may need to be done to format data.

**Credits:** 3

**Final Exam:** Wednesday, May 14, 2025, 3:30 p.m. - 5:30 p.m. The final is required, is comprehensive, and will be given on this date at this time. Make your end-of-semester travel plans accordingly.

## Class Personnel:

| | *Name* | *Office* | *Email (@arizona.edu)* | *Phone* | *Office Hours* |
|---|---|---|---|---|---|
| **Instructor** | Prof. Lester I. McCann | G-S 819 | mccann | 621-3498 | See schedule |
| **Grad TA** | Xinyu (Joyce) Guo | T.B.D. | xinyuguo | ----- | ... on Piazza |
| **Grad TA** | Jianwei (James) Shen | T.B.D. | sjwjames | ----- | ... and D2L! |

Each of the TAs has successfully completed this class (or its equivalent) and is paid by the Department of Computer Science to help me help you learn the material. In this class, the TAs host office hours, field questions via email and the message board, grade homeworks, and assist me with exam grading. I expect that you'll find the TAs to be a valuable resource.

We will each offer multiple hours per week of in-person office hours. The schedule will be announced as soon as we can create it. Please keep in mind that it is possible to meet us outside of office hours; contact us to make an appointment.

## Information Resources:

**D2L:** CSC 460 SP25 001 All class materials will be available from this D2L page, but most of it is hosted on the class web site (see next link).

**Homepage:** https://www2.cs.arizona.edu/classes/cs460/spring25/ When you follow a link from D2L, unless it's a video, odds are that the link will take you here.

**Textbook:** Database Systems (Connolly/Begg), U.S. 6th ed., Addison-Wesley, 2015. is the required text. **Do not buy an international edition or an earlier edition!** The best deal I know of is the D2L ebook price. The book's corresponding web site is worth exploring; click the title to access it. Of particular note are the on-line appendices, some of which you may wish to reference.

**Class Discussions:** We will be using Piazza for outside-of-class questions, discussions, and announcements. Click here to access the CSc 460 message board .

**CS Helpdesk:** Need help with your `lectura` account, computers in the G-S 930 lab, etc.? Visit the Computer Science Lab Helpdesk for FAQs and the ability to submit a help ticket.

## Course Goal, Objectives and Expected Learning Outcomes:

- **Course Goal:** Students will learn about the foundational concepts of database management systems and will be able to apply those concepts to design and implement data management solutions. Specific topics include conceptual and implementation data modeling, relational algebra and calculus, database design, SQL, and database normalization.

- **Course Objectives:** Students will:
  1. Learn historic and current database design principles and practices.
  2. Learn to implement database designs as physical DBMS models those forms.
  3. Learn how to interpret and construct basic SQL queries and database management commands.

- **Learning Outcomes:**
  1. Given a standard indexing structure, insert data into the structure, expanding it appropriately as needed.
  2. Given a set of database specifications, design an usable E-R Model that incorporates those needs.
  3. Compare and contrast historic implementation data models with the relational model.
  4. Convert between English statements of database queries and their corresponding SQL expressions.
  5. Given a database design and user requirements, identify important functional dependencies and, if possible, use them to refine and improve the initial design.

## Topic Outline and Schedule:

- **Topic Outline:** Be advised that this is just an outline. It does not list every topic to be covered in the class. Reliance upon it is not a good substitute for attending lectures.

| *Topics and Subtopics* | *Sections In Text* | *Sample Learning Objectives* |
|---|---|---|
| 1. DBs and DBMSes | | |
| a. Introduction to Data Management | 1.1 - 1.2 | • How do DBs and DBMSes differ? |
| b. Data Management System Components | 3.6 | • How do DBs and DBMSes differ? |
| c. What can DBMSes do? | 1.6 | • Why (and When) is using a DBMS a good idea? |
| 2. DBMS Architectures | | |
| a. ANSI-SPARC | 2.1 | • Understand the roles of the levels |
| b. Client - Server | 3.1 | • What are the advantages and disadvantages? |

| | | |
|---|---|---|
| c. Web & Service-Oriented | 3.2 | • How do these better support business processes? |
| 3. Files and Indexing | | |
| a. How Hard Drives Work | Lecture | • Know the sources of delay |
| b. RAID | 20.2.7 | • Understand the levels' capabilities |
| c. File Organizations | Lecture, App. F | • Unordered vs. Ordered vs. Hashed content |
| d. Single-Level Indices | " | • Distinguish Primary, Secondary, and Clustered indices |
| e. Multi-Level Indices | " | • Search and Grow B+-tree Indices |
| 4. Database Design and the E-R Model | | |
| a. Background | 4.2.5, 4.3, Lecture | • Schemas, Keys, etc. |
| b. DB Design | 10.6 | • Conceptual, Logical, Physical Phases |
| c. E-R Model | 12, App. C | • Entities, Relationships, Notation |
| d. E-E-R Model | 13, App. C | • Connections to OOD and OOP |
| 5. Implementation Data Models | | |
| a. Hierarchical and Network | Lecture, 2.3 | • Understand the historical perspective |
| b. Relational | 4.1 - 4.2 | • Connection to E-R concepts |
| 6. Relational Calculus | | |
| a. Tuple Relational Calculus | 5.2.1 | • Read and construct queries |
| b. Domain Relational Calculus | 5.2.2 | • Read and construct queries |
| 7. Relational Algebra | | |
| a. Relational Operators | 5.1 | • Read and construct queries |
| 8. SQL | | |
| a. For Queries | 6 | • Compare with TRC, DRC, and RA |
| b. For Database Definition | 7.1 - 7.4 | • Be able to create tables, etc. |
| c. For Database Manipulation | 6.3.10 | • Be able to insert and delete tuples |
| d. For Database Control | 7.6 | • Understand basic security mechanisms |
| 9. SQL in Applications | | |
| a. Embedded SQL / JDBC | App. I | • Interact with DBMSes via function calls |
| 10. Transactions and Assertions | | |
| a. Transactions (Xacts) | 7.5, 22.1 | • Understand why such packaging of operations is important |
| b. Assertions | 8.3, Lecture | • Know how triggers support integrity constraints |
| 11. Graphical Query Languages | | |
| a. QBE | Lecture | • Write simple QBE queries |
| b. Microsoft Access | Appendix M | • Appreciate visualization of queries & design |
| 12. Functional Dependencies | | |

| | | |
|---|---|---|
| a. Background | 14.4 | • Know why FDs are important in DB design |
| b. Closures of Sets of Attributes and FDs | Lecture | • Be able to compute closures of sets of each |
| c. Minimal Covers of Sets of FDs | Lecture | • Be able to compute minimal covers of sets of FDs |
| 13. Data Normalization | | |
| a. Background | 14.1 - 14.3 | • Why is normalization so important? |
| b. Normal Forms | 14.6 - 14.9, 15 | • Be able to define NFs through BCNF |
| c. Normalization | " | • Decompose schemas to achieve specific NFs |
| 14. DBMS Security | | |
| a. Discretionary and Mandatory Access Controls | 20, Lecture | • Distinguish and provide examples |
| b. Sample DBMS Attacks | " | • Familiarity with, e.g., SQL injection attacks |
| And for whatever time we may have left... | | |
| 15. Query Optimization | 23, Lecture | |
| 16. `No-SQL' DBMSes | Lecture | |

Topics may be added, removed, or reordered as time and circumstances dictate.

- **Topic Schedule:** The University requires that all syllabi include an expected schedule of topics and class events (e.g., exams). Please be aware that any number of unforeseen circumstances can cause a schedule to become inaccurate. Thus, you should not rely on this schedule. It is your responsibility to pay attention to, and adhere to, changes announced in class, by email, and/or via the discussion board.

| Week | Date | Class # | Scheduled Topics | Assigned Today | Due Today |
|---|---|---|---|---|---|
| 1 | 01/14 | -- | --- | --- | --- |
| | 01/16 | 1 | Syllabus, 1 | Program #1 | --- |
| 2 | 01/21 | 2 | 1,2 | --- | --- |
| | 01/23 | 3 | 2 | --- | Program #1(A) |
| 3 | 01/28 | 4 | 2,3 | --- | --- |
| | 01/30 | 5 | 3 | Program #2 | Program #1(B) |
| 4 | 02/04 | 6 | 3 | --- | --- |
| | 02/06 | 7 | 3,4 | --- | --- |
| 5 | 02/11 | 8 | 4 | --- | --- |
| | 02/13 | 9 | 4,5 | Homework #1 | Program #2 |
| 6 | 02/18 | 10 | 5 | --- | --- |
| | 02/20 | 11 | 6 | --- | Homework #1 |
| 7 | 02/25 | 12 | 7 | Homework #2 | --- |
| | 02/27 | 13 | Midterm #1 | --- | --- |
| 8 | 03/04 | 14 | 7 | --- | --- |
| | 03/06 | 15 | 8 | Homework #3 | Homework #2 |
| [ ---------- S P R I N G | B R E A K ---------- ] | | | | |
| 9 | 03/18 | 16 | 8 | --- | --- |
| | 03/20 | 17 | 8 | Program #3 | Homework #3 |
| 10 | 03/25 | 18 | 8 | --- | --- |
| | 03/27 | 19 | 9 | --- | --- |
| 11 | 04/01 | 20 | 10 | --- | --- |
| | 04/03 | 21 | 11 | Homework #4 | Program #3 |
| 12 | 04/08 | 22 | 11,12 | --- | --- |
| | 04/10 | 23 | 12 | --- | Homework #4 |
| 13 | 04/15 | 24 | 12 | Program #4 | --- |

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|---|---|---|---|---|---|
| | 04/17 | 25 | Midterm #2 | --- | --- |
| 14 | 04/22 | 26 | 13 | --- | Program #4(A) |
| | 04/24 | 27 | 13,14 | --- | --- |
| 15 | 04/29 | 28 | 14,15 | --- | Program #4(B) |
| | 05/01 | 29 | 15 | --- | --- |
| 16 | 05/06 | 30 | 16 | --- | Program #4 |
| | 05/08 | -- | No Class; Reading Day | --- | --- |
| Finals | 05/14 | -- | Final Exam (Wed 3:30p) | --- | --- |

We will stick to the exam dates if at all possible. The rest of the dates are less firm, but we'll try to stick to them, too.

## Academic Dishonesty (*i.e.*, Cheating):

*See Also:*
- The Department of Computer Science Course Policy on Collaboration: http://www2.cs.arizona.edu/policies/collaboration.html
- The University of Arizona Code of Academic Integrity: https://deanofstudents.arizona.edu/policies/code-academic-integrity
- The Arizona Board of Regents list of Prohibited Conduct: https://public.powerdms.com/ABOR/documents/1491965
- The Arizona Board of Regents Student Code of Conduct: https://public.powerdms.com/ABOR/documents/1491970 (in particular, see part F, "Prohibited Conduct")
- University Libraries' "Avoid Plagiarism" Page: https://lib.arizona.edu/research/citing/plagiarism

Most, if not all, assignments in this class will be individual assignments, to be worked on outside of class. *All individual work assigned to you in this class is to be completed only by you*. It is not acceptable for you to `borrow' (a.k.a. steal, copy, coerce, etc.) solutions or parts of solutions from other entities (people, books, web sites, artificial intelligences, etc.) or have other entities create part or all of your solutions for you. Yes, acquiring answers and solutions via the Internet is a violation of academic dishonesty! However, it **IS** acceptable (and encouraged!) for students to help one another understand the assignment requirements and other high-level issues. In short, do your own work, but feel free to discuss conceptual difficulties with each other. Of course, you may always ask me or a TA for help, but don't expect that we'll just hand you solutions; we'll make you work for them. Doing is learning!

The class policy on cheating is simple: If we determine by a preponderance of the evidence that a student or students violated one or more of the policies of academic conduct governing this class, at minimum **all** complicit students will receive no points for the academic activity or activities in question. Additional sanctions are possible depending on the circumstances of the offense(s) and the policies of the department, university, and Arizona Board of Regents, up to and including expulsion from the university. Academic integrity infractions are reported to both the Dean of Students and the Dean of the College of Science. If you have a history of violations, the penalty is likely to be much worse than just a zero on an assignment. *Multiple violations in this class will result in a recommendation of a failing course grade, at minimum*. We take academic dishonesty very seriously, as you should be able to tell; we expect you to take it just as seriously.

**Please** take the time to read the references linked above. Ignorance of the policies is not an acceptable excuse for their violation. For your convenience, here is the section of the University's Code of Academic Integrity entitled "Prohibited Conduct":

> Conduct prohibited by this Code consists of all forms of academic dishonesty, including, but not limited to: 1. Cheating, fabrication, facilitating academic dishonesty, and plagiarism as set out and defined in the Student Code of Conduct, ABOR Policy 5-308-E.11, and F.1 2. Submitting an item of academic work that has previously been submitted or simultaneously submitted without fair citation of the original work or authorization by the faculty member supervising the work. 3. Violating required disciplinary and professional ethics rules contained or referenced in the student handbooks (hardcopy or online) of

undergraduate or graduate programs, or professional colleges. 4. Violating discipline specific health, safety or ethical requirements to gain any unfair advantage in lab(s) or clinical assignments. 5. Failing to observe rules of academic integrity established by a faculty member for a particular course. 6. Attempting to commit an act prohibited by this Code. Any attempt to commit an act prohibited by these rules shall be subject to sanctions to the same extent as completed acts. 7. Assisting or attempting to assist another to violate this Code.

The bottom line: **Do your own work!** If you have any doubts, please come talk to us -- **before** you do anything you might regret.

## Grades and Grading:

*See Also:* • UA General Catalog's Grades and the Grading System: https://catalog.arizona.edu/policy/courses-credit/grading/grading-system

• Family Educations Rights and Privacy Act (FERPA): https://www.registrar.arizona.edu/privacy-ferpa/ferpa

- **Assignment Weighting:** Details for each component can be found in the following subsections.

| | | |
|---|---|---|
| Homeworks | = | 16 % total (4 @ 4% each) |
| Programs | = | 24 % total (4 @ 6% each) |
| Midterm Exams | = | 40 % total (2 @ 20% each) |
| Comprehensive Final Exam | = | 20 % |
| Total | = | 100 % |

By department policy, the final exam is *required*.

I use the common 90-80-70-60 grading scale. It's possible that final grade cutoffs will be lowered a little (from 89.5% to 88.5% for the bottom of the 'A' range, for example) but they will never be raised. I make such determinations only at the end of the term, after the final exam has been graded.

- **Class Attendance:**

*See Also:* • UA General Catalog's Class Attendance Policies: https://catalog.arizona.edu/policy/courses-credit/courses/class-attendance-participation

• Dean of Students Attendance and Absences page: https://deanofstudents.arizona.edu/policies/attendance-policies-and-practices

We do not take (and so do not grade you on) attendance during lectures. That said, we strongly recommend that you attend all of the lectures. Experiencing, and participating in, "live" lectures is a valuable learning practice. Please be aware that there is no guarantee of due-date extensions or any other accommodations when you are absent from class and/or miss a deadline. This includes students who enroll in the class after the first day of class. Please contact me to discuss your situation. Absences pre-approved by the UA Dean of Students (or dean's designee) will be honored.

If you feel sick, or may have been in contact with someone who is infectious, stay home. Except for seeking medical care, avoid contact with others and do not travel. Notify your instructor(s) if you will be missing up to one week of course meetings and/or assignment deadlines. If you must miss the equivalent of more than one week of class due to a qualified emergency (the birth of a child, mental health hospitalization, domestic violence matter, house fire, hospitalization for physical health (concussion/emergency surgery/coma/COVID-19 complications/ICU), death of immediate family, Title IX matters, etc.), the Dean of Students is the proper office to contact.

- **Late Enrollment:**

If you enroll in the class after the first graded activity has been assigned, please see the instructor to discuss possible adjustments to due dates.

- **Homeworks and Programs:**

  The idea behind the homework and program assignments is to help you get more hands-on experience with the material as preparation for the exams. The more practice you get, and the more you `step back' and examine the context of the exercises as you do them, the more you will benefit.

  - *Quantity and Frequency:*

    We traditionally assign four written homeworks and four programs. Homework assignments are due approximately one week from the day they are assigned, while programs are due approximately two weeks after they are assigned. These are generalities; do not be surprised if these quantities change.

  - *Facilities:*

    The Department of Computer Science lab in Gould-Simpson 930 is available for your use for the programming assignments. Nearly all students find it convenient to work on the assignments elsewhere; we expect that all of the software we use in this class will be accessible from an off-campus networked computer. If you do decide to use a system outside of our department's control for your work, it is your responsibility to learn how to set it up and use it effectively.

  - *Assignment Submissions:*

    In this class, we expect to receive electronic submissions of **all** assignments, including written homeworks. For the written homeworks, you may use a word processor (such as Microsoft Word or LibreOffice), a document formatting package (such as LaTeX), or even (as a last resort, please) a scanner to convert handwritten answers to portable electronic form (such as PDF). The purpose of insisting on electronic submissions is to ensure that each assignment has a reliable timestamp, so that everyone is clear on whether or not an assignment is late. We anticipate using 'turnin' on Lectura for all submissions.

    No matter the form, we expect your written work to have your answers clearly marked, to include sufficient detail to enable us to follow your reasoning, and to be legible so that we can easily read your words, understand your explanations, and decipher your diagrams. Difficulties in any of these areas will likely result in a loss of points. This isn't high school; you are preparing yourselves for careers, and as such you need to get in the habit of preparing your work in a professional manner. Here's another way to look at it: Make it easy for us to see that you know your stuff.

    For programs, my usual code documentation and style guidelines are available from the class web page. Documenting code is not the most enjoyable activity you'll ever experience, but it is important to do, and to do well. Program documentation/style is worth about 25% of your score on a program. Also, expect us to compile and run your programs on lectura to verify their completeness. Be certain that your program runs correctly on lectura before you submit it.

  - *Returning of Graded Assignments:*

    We expect to be able to grade and return assignments before the next like assignment is due. That is, expect the first homework to be graded before the second homework is due, expect the third program to be graded before the fourth program is due, etc. If the grading of an assignment will take more time, we will keep you informed.

  - *Late Assignment Policy:*

    Each assignment will have a clearly stated due date and time. Typically, the time will be five minutes after the start of class on the due date. Electronic submissions received after that time will be considered late. Assignments submitted within the first 24 hour period after the due date and time are considered to be one day

late. Submissions received within the next 24-hour period are two days late, etc. Any day of the week, including Saturdays, Sundays, and all holidays, count as days for the purpose of determining lateness.

At the start of the term, you are granted five no-penalty late days that can be used on either programs or homeworks. However, how late days may be applied differs by assignment type:

- **Homeworks**: *No homework may be submitted more than 24 hours late and still receive any points*. Thus, you can use a maximum of one late day per homework assignment. If your late days are exhausted, a homework submitted within 24 hours after the due date will lose 20%. Beyond 24 hours late, it is worth no points. We have this limit because we will be providing solutions to the homeworks once submissions are closed.

- **Programs**: Programs, unlike homeworks, may be submitted if they are more than 24 hours late. When a program is submitted late, you will lose no points until you have exhausted your late days. When your late days have been exhausted, you will lose 20% per day the program is late. After five such deductions, your score for that program will necessarily be zero.

  For example, if a program is due at 8am on the 12th but you submit your code at 8:30am on the 13th, it is considered to be two days late. If you had three late days remaining, you'd lose two of them but would still be able to earn full credit on the assignment if it works correctly and is well-structured and well-documented. If you had only one late day remaining, you'd lose it and 20% (that is, your program will be graded out of a maximum of 80%).

Final detail: No matter how many late days you have saved, no assignment will be accepted after the start of Reading Day.

Why the difference between homeworks and programs? We anticipate providing solutions to homeworks, but not to programs. If we were as open-ended on homeworks as programs, solutions could not be provided for 10 days after due dates. By that time, the homework solutions would not be as useful.

- *Incomplete or Incorrect Assignments:*

  It is up to you to decide whether to submit an incomplete assignment or to use a late day (or days, in the case of programs) in hope of completing the assignment. If you feel that you deserve an extension of the due date based on *exceptional* circumstances, contact me and I will consider your request.

  Each assignment will be worth a certain number of points. We will award partial credit to incorrect and/or semi-legible submissions when appropriate. If you feel that your assignment was graded improperly, please contact the TA(s) to discuss your concerns. If you are still unsatisfied, contact me.

- *Discussing Your Score:*

  We deduct points from imperfectly-completed assignments so that you know where you need to improve on future assignments. If you don't understand why you lost points for a particular problem, or you would like to hear specific suggestions for improvement, we want you to come talk with us about your concerns.

  For this discussion to be most productive, you should contact the TA(s) and arrange a mutually-agreeable meeting time. Come to the meeting with a list of your specific questions and concerns (so that you don't forget anything).

  If, after this meeting, you are not satisfied, make an appointment to discuss your concerns with me. Always meet with the TA(s) first; they have first-hand knowledge of the grading.

  To keep grading discussions from dragging out across the semester, *you need to let a member of the class staff know about your grading concerns within a week of the class (not you individually) receiving the graded assignment*, unless there are exceptional circumstances. Any complaints about scores received after that week

will not result in any score changes (but we'd still be happy to talk about your concerns).

- **Exams:**

Exam formats will be fairly consistent throughout the semester. Exams will consist primarily of short answer and problem-solving questions, but code-writing questions are also possible. The use of calculators or any other electronic devices is NOT permitted on exams unless warranted by special circumstances.

I expect all students to take the exams at the announced exam times. I give make-up exams only in *extreme* circumstances. I decide if a circumstance is "extreme." For example, being in a documented car accident on the way to the exam is likely to count as an extreme circumstance. Circumstances that are **not** considered to be extreme include losing a cell phone, breaking up with a significant other, forgetting to set/heed an alarm clock, having the sniffles, discovering that your dog is actually a bear cub, etc. Please be aware that missing a midterm exam isn't necessarily a disaster; see below.

- *Midterm Exams:*

  General Information: Midterms will be 75 minutes long and will focus on the material covered in class and on the assignments since the time of the previous midterm (or the start of the term in the case of the first midterm). As new material in this class usually builds upon the old, you should expect that your knowledge of material covered by previous exams will be necessary for success on subsequent exams.

  Grading Timetable: We will do our best to return graded midterm exams within two class meetings of the date of the exam. If grading will take more time, we will keep you informed.

  Regrade Requests: After midterm exams are graded, they will be returned to you. If you feel that your exam was graded improperly, prepare a brief memo that explains which problems concern you and why. *Within one week of the date on which the exam was returned to the class*, submit the memo to me. **I will regrade the entire exam**, paying particular attention to the problems you highlighted in the memo. Because errors in grading can cause scores to be too high as well as too low, it is possible that your grade will go down as a result of the regrade. Be sure to review your entire exam before you ask for a regrade.

- *Comprehensive Final Exam:*

  *See also:* • Final Exam Regulations: https://registrar.arizona.edu/faculty-staff-resources/room-course-scheduling/schedule-classes/final-exams/final-examination

  • Final Exam Schedule: https://registrar.arizona.edu/faculty-staff-resources/room-course-scheduling/schedule-classes/final-exams/final-exams-spring-2025

  By department policy, final exams are *required* in all undergraduate classes. By university policy, final exams must be held during the time slot assigned by the final exam schedule. I have listed that time near the beginning of this syllabus. (If you see that I have listed the exam time incorrectly, please let me know.) **The final will be comprehensive** and will have a format similar to that of the midterms. If you miss the final under less than extreme circumstances, you will receive a score of zero for the final.

  At the end of the semester, *if at least two-thirds of the students have submitted class evaluations*, we will replace your lowest midterm exam score with a percentage-equivalent copy of your final exam score, but only if the final score is higher than at least one of your midterm scores. (Thus, this is a potential bonus but never a penalty.) We do this not only to encourage class evaluations, but also to reward you for demonstrating an improved mastery of the material over the course of the semester. However, it can also help you if you should miss a midterm because your car broke down, your alarm clock didn't go off, you suffered a distressingly bad hair day, or any other non-extreme quirk of fate. Please note that should you miss multiple midterms under sub-extreme circumstances, you will receive a zero for those additional missed midterms.

- *Exam Seating:*

If room capacity permits, leave a seat vacant between you and your neighbor. If need be, we will reseat students before or even during an exam to maintain an honest evaluation environment for all students. Don't be surprised if you see me taking pictures of the class during the exam. That action doesn't necessarily mean that we think that someone is cheating; it also happens to be a convenient way to document attendance.

- **Quizzes:**

  I am not planning to give quizzes in this class because I haven't found them to be beneficial in past offerings. However, should adding them to the grade breakdown be requested or warranted, I will consider adjusting the grade distribution to incorporate them.

## Class Policies:

- **Classroom Behavior:**

  *See Also:* • Office of Diversity and Inclusion: http://diversity.arizona.edu/

  - *Maintain an Effective Learning Environment:* To foster a positive learning environment, students and instructors have a shared responsibility. We want a safe, welcoming, and inclusive environment where all of us feel comfortable with each other and where we can challenge ourselves to succeed. To that end, our focus is on the tasks at hand and not on extraneous activities (e.g., texting, chatting, reading a newspaper, making phone calls, web surfing, etc.).

  - *No Audible Alerts:* While class is in session, please disable all noise-makers on your communication devices in favor of an inaudible alert mode, or just turn the device off. If you receive a call or message that requires an immediate verbal response, kindly leave the room before replying. Should you be expecting an urgent call and wish to leave your phone's ringtone enabled, all I ask is that you tell me in advance so that I know not to glare at you when your phone rings.

  - *Use of Electronic Devices During Lecture:* I ask that you limit your in-class use of electronic devices (laptop computers, tablets, cell phones, etc.) to activities that are directly relevant to the class. Such activities may include taking notes and running example programs from the class web page. Playing games, following your friends on social media, and watching TV shows, movies, and cute cat videos are all examples of activities you should not be doing in class. You're paying a lot of money to be in this class; you should pay attention and get your money's worth. Your neighbors are also paying to be here; your behavior should not distract them, either. Should your activities become a distraction to me or to your classmates, I'll ask you to either stop or to leave the room until you are able to focus on the class material.

  - *Asking Questions:* Is encouraged! During class, feel free to interrupt with questions whenever they occur to you. I may ask you to hold off on your question for a few moments if I'm in the middle of an explanation, but I'll come back to you. If I forget, just remind me.

  - *Answering Questions:* Is also encouraged! I frequently ask questions of the class during lectures to judge the level of understanding (and to break up the monotony). Some students really like answering questions, sometimes to the point of discouraging anyone else from answering. If you are an eager answerer, pace yourself; let someone else answer an easy one once in a while, and save the hard ones for yourself.

  - *Chatting with Your Classmates:* Sometimes you can't resist making a comment to your friend. I don't want you to injure yourself by trying to hold it in. Go ahead and whisper that comment. Just don't let it grow into a conversation. If what you have to say is that irresistibly juicy, write a note or hold the thought until after class. We're confident that the passage of time will not diminish its wit and hilarity. The point, of course, is to avoid distracting the instructor and/or other students.

- **Response Time:**

The instructor and TAs will attempt to reply to email and discussion board postings from students within 24 hours (48 hours on weekends/holidays). This means that if you wait until the evening before an assignment is due to post a question, you may not get a reply before the due date and time. There's a classic sentence that covers this: *A failure to plan on your part does not constitute an emergency on our part*. We want to help, but like you, we have tasks other than email and discussion board postings that require our attention.

Important note: We encourage you to answer the posted questions of other students if and when you are able to do so. This is why we have a discussion board that is open to the entire class.

To help your email stand out in our inboxes, please prefix your subject lines with "CSc 460:", as in "CSc 460: Could you repeat yesterday's lecture as a puppet show?" Doing this will help reduce the chance that your email is inadvertently marked as 'spam'. (BTW, the answer to that question is always "No.")

- **Extra Credit:**

*There will be no opportunities for extra credit points*. Use your time to concentrate on doing well on the assigned work. If your grade in this class is important to you, start taking this class seriously **now**, not just after you do poorly on the first exam.

- **Missed Classes:**

*See also:* • Religious Accommodation Policy http://policy.arizona.edu/human-resources/religious-accommodation-policy

All holidays or special events observed by organized religions will be honored for those students who show affiliation with such religions. Absences pre-approved by the UA Dean of Students office will be honored when it is reasonable to do so. No matter the reason for missing class, the student is always responsible for the missed material.

- **Auditing:**

*See also:* • Audit Policy: https://catalog.arizona.edu/policy/registration-tuition-fees/registration-enrollment/audit

• Change of Schedule Instructions: https://registrar.arizona.edu/records-enrollment/enrollment/change-schedule

If you are auditing this class, you may continue to attend lectures. You can turn in assignments if the TAs agree to accept them. You may not take exams, but I'll give you a paper copy if you ask nicely.

- **Senioritis:**

Colloquially, *senioritis* is the lack of academic ambition that some students experience as they approach graduation. Some of you are planning to graduate at the end of this semester, with this class satisfying one or more of your graduation requirements. This class can do that only if you do well in it. Being an expectant college graduate does not guarantee you a passing grade in this class. If your performance in this class earns you a grade that delays your graduation, so be it. Gathering sufficient intellectual and ethical motivation to avoid that fate is your responsibility.

## University and Department Policies:

- **CS Course Syllabus Policies and Resources:**

In addition to what follows, the CS Department has a page of CS Course Syllabus Policies and Resources that you are welcome to consult.

- **Computer Science Academic Advising:**

*See also:* • CS Academic Advising: https://www.cs.arizona.edu/undergraduate/advising

• UA Advising Resource Center: https://advising.arizona.edu/

If you have questions about your academic progress this semester, or your chosen degree program, consider contacting your CS academic advisor (see link above). Your academic advisor and the UA Advising Resource Center can guide you toward university resources to help you succeed. Computer Science major students are encouraged to email advising@cs.arizona.edu for academic advising related questions.

- **On Dropping a Class:**

*See Also:* • Dates and Deadlines Calendar: https://registrar.arizona.edu/dates-and-deadlines

• Grades & the Grading System: https://catalog.arizona.edu/policy/courses-credit/grading/grading-system

If you find yourself thinking about dropping this (or any other) class, first make sure that that's what you really want to do. Chatting with the instructor and your academic adviser may help. If you drop within the first two weeks of the semester, there will be no notation on your transcript; to an employer, it will be as though you'd never enrolled. During the third through the tenth weeks, a drop will be recorded on your transcript by a 'grade' of "W" ("withdrawn"). After the tenth week, dropping becomes a challenge, because you will need to provide documentation to the dean's office explaining why you were unable to drop the class during the first ten weeks of the semester.

- **Grades of `Incomplete':**

*See Also:* • Registrar's Incomplete (I) Grade page: https://registrar.arizona.edu/faculty-staff-resources/grading/grading-policies/incomplete

• Grades & the Grading System: https://catalog.arizona.edu/policy/courses-credit/grading/grading-system

The university's course catalog contains all of the details about incompletes, but this is the key sentence:

> The grade of I may be awarded only at the end of a term, when all but a minor portion of the course work has been satisfactorily completed. The grade of I is not to be awarded in place of a failing grade or when the student is expected to repeat the course; in such a case, a grade other than I must be assigned.

The phrase "a minor portion" is accepted to mean "20% or less". To qualify for an incomplete, a student must have maintained a passing grade for the class until the term is nearly complete, and then, due to an unusual and substantiated cause beyond the student's control, the student is unable to complete the class work. In short, you can't get an "I" just because you aren't happy with your grade.

- **Accessibility and Accommodations:**

*See Also:* • UA Disability Resource Center Information for Students: http://drc.arizona.edu/students/overview (520-621-3268)

• UA SALT Center: http://www.salt.arizona.edu

The university and the Disability Resource Center (DRC) have asked all instructors to include in class syllabi the following information about the availability of reasonable accommodations for students with disabilities:

> Accessibility and Accommodations:
>
> At the University of Arizona we strive to make learning experiences as accessible as possible. If you anticipate or experience barriers based on disability or pregnancy, please contact the Disability Resource Center (see above) to establish reasonable accommodations.

Please allow students with accessibility needs first chance at the accessible table(s) and chair(s) in the classroom.

Additional help is available from the UA Strategic Alternative Learning Techniques (SALT) Center. SALT provides fee-based services for students with various learning disabilities.

Under the guidelines of the Rehabilitation Act of 1973 and the Americans with Disability Act of 1990, students are obligated to notify the school that they need accommodation.

- **Helping Students in Need:**

  *See Also:*

  • Student Assistance Program from the Dean of Students: https://deanofstudents.arizona.edu/support/student-assistance (520-621-7057, DOS-deanofstudents@email.arizona.edu)

  • UA Campus Health: https://health.arizona.edu/ (520-621-9202, after hours 520-570-7898)

  • UA Campus Health Counseling and Psych Services (CAPS): https://caps.arizona.edu/ (24/7 hotline: 520-621-3334)

  • UA "Notice.Care.Help." Form: https://arizona-advocate.symplicity.com/care_report/index.php

  • UA Ombuds: https://ombuds.arizona.edu/

  • Office of Institutional Equity: https://equity.arizona.edu/

  • Campus Pantry: https://campuspantry.arizona.edu/

  • Survivor Support Services: https://survivorsupport.arizona.edu/ (520-621-5767)

If you know of a student (including yourself) who appears to be struggling and in need of help, of any form, the university offers a range of services. Help is available from the links above; please don't hesitate to take advantage of those resources. If you do not know where to turn, the Dean of Students office is a good place to start.

The UA Ombuds Office helps with a wide variety of issues, concerns, questions, conflicts, and challenges. The primary mission of the Ombuds Program is to assist individuals in resolving conflict, facilitating communication, and assisting the University by surfacing issues and providing feedback on emerging or systemic concerns. Communications with the Ombuds Committee are informal and off-the-record. The Ombuds Committee is governed by the following standards: (1) Confidentiality; (2) Impartiality; (3) Informality; and (4) Independence.

Please be aware that UA faculty are required to report allegations of sex discrimination to the Title IX office. This means that if you tell me about a situation involving sexual harassment, sexual assault, dating violence, domestic violence, or stalking that involves another student or employee, or that happens on campus or in a UA program, I must share that information with the Title IX Coordinator.

- **Department of Computer Science Code of Conduct**

  *See Also:*

  • Department of Computer Science Code of Conduct: https://www.cs.arizona.edu/code-conduct

  • The ABoR Student Code of Conduct: https://public.powerdms.com/ABOR/documents/1491970

The Department of Computer Science is committed to providing and maintaining a supportive educational environment for all. We strive to be welcoming and inclusive, respect privacy and confidentiality, behave respectfully and courteously, and practice intellectual honesty. Disruptive behaviors (such as physical or emotional harassment, dismissive attitudes, and abuse of department resources) will not be tolerated. The complete Code of Conduct is available on our department web site. We expect that you will adhere to this code, as well as the ABoR Student Code

of Conduct, while you are a member of this class.

- **Safety on Campus and in the Classroom:**

  *See Also:*
  - In Case of Emergency: https://cirt.arizona.edu/case-emergency/overview (In short: Call 911!)
  - UA Police Department: https://uapd.arizona.edu/ (Non-Emergency: 520-621-UAPD(8273))
  - UAlert: https://cirt.arizona.edu/ualert/ualert-services
  - Safety Preparedness Training (Active Shooter) : https://uapd.arizona.edu/community-engagement/active-shooter-video
  - Building Emergency Plans https://cirt.arizona.edu/resources/building-emergency-plans

  Acts of violence at educational institutions are increasing in frequency. Should you find yourself in danger of being attacked, CIRT recommends "Run, Hide, Fight": First, try to escape. If you cannot, find a place to hide. As a last resort, fight using anything you have available as a weapon. For a list of emergency procedures for all types of incidents, please visit the CIRT link, above.

  The university offers UAlert, a free service that notifies users of active incidents on or near campus. Members of the campus community are added to the system automatically. Visit the link, above, to adjust your settings.

- **Disruptive, Harassing, and/or Threatening Behaviors:**

  *See Also:*
  - UA Nondiscrimination and Anti-harassment Policy: http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy
  - UA Policy on Disruptive Behavior in an Instructional Setting: http://policy.arizona.edu/education-and-student-affairs/disruptive-behavior-instructional-setting
  - UA Policy on Threatening Behavior by Students: http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students
  - Hazing Policy of the University of Arizona: http://policy.arizona.edu/education-and-student-affairs/university-arizona-hazing-policy

  The University of Arizona is committed to creating and maintaining an environment free of discrimination. In support of this commitment, the University prohibits discrimination, including harassment and retaliation, based on a protected classification, including race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, gender identity, or genetic information. For more information, including how to report a concern, please see the "UA Nondiscrimination and Anti-harassment Policy" link, above.

  The university takes a very dim view of antisocial behaviors. In particular, if you're upset with me or a TA, please talk directly with us, calmly and with facts at hand, about your concerns.

## Caveat:

The information contained in this syllabus, other than the grade and absence policies, are subject to change with reasonable advance notice, as deemed appropriate by the instructor. Whenever possible, changes will be announced to the class before the on-line version of this document is altered.

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If you have any comments about this page, drop me a note at mccannl@acm.org