

CSE 515 - Multimedia and Web Databases

Fall 2021

1. Contact Information

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2. Office Hours

Tu-Th 9:00-10:00am

You are welcome to reach out to me outside of these office hours. However, I spend a significant portion of my time interacting with my graduate students; therefore, please send me an email first to arrange a mutually agreeable meeting time.

3. Course Description (from course catalogue)

Data models for multimedia and Web data; query processing and optimization for inexact retrieval; advanced indexing, clustering, and search techniques.

4. Enrollment Requirements

Prerequisites: CSE408 and CSE412, or by permission of instructor.

5. Overall Course Objectives

To teach the state of the art in nontraditional database applications, including multimedia and Web, and prepare students for research in database technologies that address the needs of these applications. This course will cover techniques and challenges associated with storage and retrieval of multimedia and Web data and query processing and optimization techniques for inexact data retrieval. The course will stimulate students to reason about the open problems in the area.

6. Expected Learning Outcomes

Major topics, include data models for multimedia and web data; query processing and optimization for inexact retrieval; advanced indexing, clustering, and search techniques:

- What is multimedia? (Semantic Heterogeneity, fuzziness, subjectivity, ranked processing, etc.)
- Abstract models (Set, vector, sequence, tree, graph)
- Vector Spaces
- Similarity/Distance
- Feature Selection
- High-to-Low Dimensional Embedding/ Eigen decomposition
- High-to-Low Dimensional Embedding/Generative models
- Tensors and tensor decompositions
- Deep Learning
- Distance-preserving Vector-Space Embedding of Objects
- Sequence/time series representations
- Graph representations
- Index structures

- Nearest neighbor search
- Locality Sensitive Hashing (LSH)
- Clustering
- Classification
- Evaluation of Retrieval

7. Grade Policies

Projects: 30% Projects; 30% Midterm; 35% Final; 5% Participation

- A-E, +/- grading will be used.
- The course project will be divided into three main phases. Group research projects will involve students working in teams in an original research concept.
- Participation score is a function of active in-class participation, along with meaningful course-related interactions during office hours, through emails, and/or Piazza.
- Any questions, corrections, or appeals on grades must be done in writing within two days. State the problem and rationale for any change in grade in your appeal. Give the written petition and the material in question to me in person or place it in my mailbox in the department office.

8. Absence Policies

- Any health-related absence under which assigned work and/or tests can be made up requires appropriate documentation.
- For excused absences related to religious observances/practices, see [ACD 304-04](#), "Accommodation for Religious Practices"
- For excused absences related to university sanctioned events/activities, see [ACD 304-02](#), "Missed Classes Due to University-Sanctioned Activities"
- For excused absences related to missed class due to military line-of-duty activities that are in accord with [ACD 304-11](#), "Missed Class Due to Military Line-of-Duty Activities," and SSM 201-18, "Accommodating Active Duty Military"
- Any other absence, such as attending a scientific conference, requires advance approval by the instructor.

9. Recommended Textbook and Reading Materials

"Data Management for Multimedia Retrieval", K. Selcuk Candan and Maria Luisa Sapino, Cambridge University Press (May 31, 2010).

Students will be assigned other reading materials throughout the semester.

10. Policy Regarding Expected Classroom Behavior

While the course is fully-onsite, there may be online components. During any online activity,

- mute yourself unless you are called to address the class
- use "First-name Last-name" as your screen name.

Students are required to read and act in accordance with university and Arizona Board of Regents policies, including student Code of Conduct: Arizona Board of Regents Policies 5-301 through 5-308:

<https://www.azregents.edu/board-committees/policy-manual>

and the ASU Computer, Internet and Electronic Communications Policy:

<http://www.asu.edu/aad/manuals/acd/acd125.html>

Until further notified, per ASU policy, faculty, staff, students and visitors, are required to wear face coverings in classrooms, labs, offices and community spaces.

11. Academic Integrity and Copyright Laws

Students in this class must adhere to ASU's academic integrity policy, which can be found at <https://provost.asu.edu/academic-integrity/policy>). Students are responsible for reviewing this policy and understanding each of the areas in which academic dishonesty can occur. In addition, all engineering students are expected to adhere to both the ASU Academic Integrity [Honor Code](#) and the Fulton Schools of Engineering [Honor Code](#). All academic integrity violations will be reported to the Fulton Schools of Engineering Academic Integrity Office (AIO). The AIO maintains record of all violations and has access to academic integrity violations committed in all other ASU college/schools.

12. Copyright

All course content and materials, including lectures (Zoom recorded lectures included), are copyrighted materials and students may not share outside the class, upload to online websites not approved by the instructor, sell, or distribute course content or notes taken during the conduct of the course (see [ACD 304-06](#), "Commercial Note Taking Services" and ABOR Policy [5-308 F.14](#) for more information).

You must refrain from uploading to any course shell, discussion board, or website used by the course instructor or other course forum, material that is not the student's original work, unless the students first comply with all applicable copyright laws; faculty members reserve the right to delete materials on the grounds of suspected copyright infringement.

13. Policy Against Threatening Behavior

Students, faculty, staff, and other individuals do not have an unqualified right of access to university grounds, property, or services. Interfering with the peaceful conduct of university-related business or activities or remaining on campus grounds after a request to leave may be considered a crime. All incidents and allegations of violent or threatening conduct by an ASU student (whether on- or off-campus) must be reported to the ASU Police Department (ASU PD) and the Office of the Dean of Students.

See also the Student Services Manual, SSM 104-02

14. Warning of Offensive Class Materials

In case any course content appears to be offensive, please bring this to the attention of the instructor.

15. Disability Accommodations

Suitable accommodations will be made for students having disabilities. Students needing accommodations must register with the ASU disabilities resource Center and provide documentation of that registration to the instructor. Students should communicate the need for an accommodation in sufficient time for it to be properly arranged. See [ACD 304-08](#) Classroom and Testing Accommodations for Students with Disabilities.

16. Harassment and Sexual Discrimination

Arizona State University is committed to providing an environment free of discrimination, harassment, or retaliation for the entire university community, including all students, faculty members, staff employees, and guests. ASU expressly prohibits discrimination, harassment, and retaliation by employees, students, contractors, or agents of the university based on any protected status: race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, gender identity, and genetic information.

Title IX is a federal law that provides that no person be excluded on the basis of sex from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity. Both Title IX and university policy make clear that sexual violence and harassment based on sex is prohibited. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can seek support, including

counseling and academic support, from the university. If you or someone you know has been harassed on the basis of sex or sexually assaulted, you can find information and resources at <https://sexualviolenceprevention.asu.edu/faqs>.

Mandated sexual harassment reporter: As an employee of the University I am considered a mandated reporter and therefore obligated to report any information regarding alleged acts of sexual discrimination that I am informed of or have a reasonable basis to believe occurred.

ASU Counseling Services, <https://eoss.asu.edu/counseling>, is available if you wish to discuss any concerns confidentially and privately.

Any information in this syllabus (other than grading and absence policies) may be subject to change with reasonable advance notice.