BINF 5112

CS Seminar for Bioinformatics
CRN: 23008
Term: Spring 2025
Credit Hours: 1
Instructor: Dr. Anass Bouchnita
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Instructor office: Bell Hall 202
Time and location: Tuesdays 4:30-5:20 p.m., in Classroom Building C301
Office hours: Wednesdays 12:00 p.m.- 2:00 p.m., in person and by appointment.
Drop deadline: April 4, 2025.

Course description

Bioinformatics, a consistently evolving field, lies at the intersection of biology and computer science. It leverages the power of computational approaches to tackle and manipulate complex biological data. The role of computer science (CS) in bioinformatics is crucial, as it provides the tools and frameworks necessary to process, analyze, and interpret the vast amounts of data generated in biological research.
CS algorithms can be used to achieve a wide variety of objectives: identify patterns in biological data, predict protein structures, compare large RNA sequences, and gain insights into the genetic variations in a population, to name a few.

This seminar course will give the students the opportunity to become familiar with the latest trends, advances, and challenges related to the computer science applications in bioinformatics. Through oral presentations and class discussions, the students will learn to identify bioinformatics problems that require the use of computational skills.

Course objectives

By the end of the course, the students are expected to:

- develop the ability to identify bioinformatics problems that necessitate computational and statistical approaches.
- gain proficiency in clearly articulating and exchanging ideas about these complex topics with experts in the field.
- gain an understanding of the modern developments and challenges associated with the computer science components integral to bioinformatics research.

Learning modules

At the beginning of the course, every student will choose a paper that they will present during a seminar. At the same time, for each paper, two students will be appointed as peer reviewers.

During each seminar, a student will give an oral presentation which consists of approximately 25 minutes. It will present the problem and the algorithm used to solve it. Further, it will discuss the journal, the research group and the research perspectives.

After each talk, all students are invited to ask questions and provide feedback. Assigned reviewer students will have to write a small report containing a few papers which will be shared by the presenting student after the talk.

During the last lecture, each student will have the opportunity to address the questions posed by the reviewers. A tentative schedule is presented in Table 1.

Table 1: Tentative schedule of the course modules and examinations. The schedule might be subject to change depending on the achievement of the learning outcomes. The final exam will be organized during the exam week.

Week / Module	Content
Jan 21	Welcome to BINF 5112
Jan 28	Workshop on reading papers, giving presentations, and serving as a reviewer
Feb 4	Paper 1 presentation
Feb 5	Paper 2 presentation
Feb 11	Paper 3 presentation
Feb 18	Paper 4 presentation
Feb 26	Paper 5 presentation
Mar 4	Response to reviewers session I
Mar 11	Spring break
Mar 18	Workshop on key topics in CS in Bioinformatics
Mar 25	Paper 6 presentation
Apr 1	Paper 7 presentation
Apr 08	Paper 8 presentation
Apr 15	Paper 9 presentation

Apr 22	Paper 10 presentation
Apr 29	Response to reviewers session II
May 5	Conclusion and discussions

Required materials

Reading articles will be provided.

Course assignments and grading

The final grade will depend on the attendance and participation in the discussions (20%), the oral presentation (60%), and the quality of the review reports (20%).

Technology requirements

Course contents will be delivered via the Blackboard learning management system. Communication between students and the instructor will be mediated by the Blackboard discussion board or using UTEP email accounts. The student must have the last version of a stable browser like Google Chrome or Mozilla Firefox to explore Blackboard. If you still encounter any difficulties, update your browser, clear your cache, or use a different browser. The Blackboard software will be used for surveys, announcements, and additional course material. ADA students are advised to use word-processing software like Microsoft Office programs which is available for free via the UTEP Microsoft Office Portal. In addition, please reach out at the beginning of the course to accommodate the course for you. A tutorial for this software is available upon notice.

IMPORTANT: If you encounter technical difficulties beyond your scope of troubleshooting, please contact the UTEP Help Desk as they are trained specifically in assisting with the technological needs of students. Please do not contact me for this type of assistance. The Help Desk is much better equipped than I am to assist you!

Course communication

This is an in-person course, we will use the following communication channels to stay in contact:

Office Hours: My office hours will be held during the following time:
Wednesdays 12:00 p.m.- 2:00 p.m. Mountain Time in person by appointment.

Email: UTEP e-mail can be used if you have any inquiries regarding the course. I will attempt to answer within 24-48 hours. In the case the question requires a discussion, it is better to come to see me during office hours. Make sure to add the course number and use the UTEP e-mail. Also, make sure that the subject line clearly describes the inquiry. Finally, please provide your full name and university identification number at the end of the e-mail. A typical e-mail should look like this:

To: abouchnita@utep.edu Cc: … Subject: [BINF 5112] Inquiry about …
Hi … … … … Best regards, *First name Last time* *ID ….*

Announcements: Check the Blackboard announcements frequently for any updates, deadlines, or other important messages.

Netiquette

Online communication can be challenging because of the lack of body language and immediate feedback. Therefore, it is essential to follow some netiquette (network etiquette) guidelines to keep a positive and productive environment in the classroom. Failure to comply with these guidelines may result in disciplinary action.

o Communication should reflect polite consideration of others' ideas.
o Respect and courtesy must be provided to classmates and to the instructor at all times. No harassment or inappropriate postings will be tolerated.
o When reacting to someone else's message, address the ideas, not the person. Post only what anyone would comfortably state in a face-to-face situation.
o Blackboard is not a public internet venue; all postings to it should be considered private and confidential. Whatever is posted in these online spaces is intended for classmates and the instructor only. Please do not copy documents and paste them to a publicly accessible website, blog, or other space.

Attendance and participation

Attendance is necessary to complete the seminars with a satisfactory grade. Further, students are expected to read the textbook and work through the examples covered in class. Further, attendance and participation are explicitly taken into the final grade. Students are expected to attend class and arrive on time. Absent students are responsible to find out the material and homework that need to be made up. Absences due to illness or other emergencies can be justified with appropriate documentation. Participation in the class covers asking questions and participating in class discussions.

Excused absences and drop policy

I will not drop you from the course. However, if you feel that you are unable to complete the course successfully, please let me know and then contact the Registrar's Office to initiate the drop process. If you do not, you are at risk of receiving an "F" for the course. The deadline to drop the course is March 28, 2024.

Deadlines, late work and absence policy

Exams will be held in person during class. Submissions of peer-review and presentation slides will be completed over Blackboard. The exact time and modalities will be specified in separate announcements.

Make-up work

Missed exams cannot be made up, either. Again, exceptions can be given only in extraordinary and unavoidable circumstances with reasonable proof, and with advance notice in writing. Make-up work will be given only in case of a documented exceptional emergency.

Accommodations policy

The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other beneficiaries of
University programs, services and activities with documented disabilities in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Reasonable accommodations will be made unless it is determined that doing so would cause undue hardship for the University. Students requesting accommodation based on a disability must register with the UTEP Center for Accommodations and Support Services (CASS). Contact the Center for Accommodations and Support Services at 915-747-5148, email them at cass@utep.edu, or apply for accommodations online via the CASS portal.

Scholastic integrity

Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Cheating may involve copying from or providing information to another student, possessing unauthorized materials during a test, or falsifying research data on laboratory reports. Plagiarism occurs when someone intentionally or knowingly represents the words or ideas of another as one's own. Collusion involves collaborating with another person to commit any academically dishonest act. Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. All suspected violations of academic integrity at The University of Texas at El Paso must be reported to the Office of Student Conduct and Conflict Resolution (OSCCR) for possible disciplinary action. To learn more, please visit HOOP: Student Conduct and Discipline.

Copyright statement and course materials

All materials used in this course are protected by copyright law. The course materials are only for the use of students currently enrolled in this course and only for the purpose of this course. They may not be further disseminated.

Course resources

UTEP provides a variety of student services and support:

Technology Resources

Help Desk: Students experiencing technological challenges (email, Blackboard, etc.) can submit a ticket to the UTEP Helpdesk for assistance. Contact the Helpdesk via phone, email, chat, website, or in person if on campus.

Academic Resources

UTEP Library: Access a wide range of resources including online, full-text access to thousands of journals and eBooks plus reference service and librarian assistance for enrolled students.

Individual Resources

Military Student Success Center: Assists personnel in any branch of service to reach their educational goals.
Center for Accommodations and Support Services: Assists students with ADA-related accommodations for coursework, housing, and internships. Counseling and Psychological Services: Provides a variety of counseling services including individual, couples, and group sessions as well as career and disability assessments.