Upward Bound Math and Science Center
Medical Project Research

Summer 2025

As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course.
– Apar Pokhrel

Instructor Information

Instructor Name
Apar Pokhrel

Office Hours
By appointment only (Teams/Canvas/Study Hall)

Email Address
utaubms@gmail.com

Communication Guidelines
My preferred communication method is email.

Course Information

Time and Place of Class Meetings

Monday/Thursday 2:40 – 4:10 PM Preston Hall (PH) 207

View Campus Map

Time Zone

This course operates on Central Time. All times listed for class meeting times, exams, and assignment deadlines are in Central Time.

Description of Course Content

This course is geared towards students' interest in medicine, health, and biomedical research. Students will explore these topics in depth, gain skills in literature research (scientific journal articles, dataset), data mining, bioinformatics, hypothesis generation, research models, and scientific writing. The curriculum will emphasize teamwork and individual projects to enhance communication and critical thinking skills.

Student Learning Outcomes

By the end of this course, students will be able to:

1. **Identify and explain key concepts** in medicine, health, and biomedical research, including scientific methods and experimental design, and data-driven inquiry.
2. **Critically evaluate scientific literature**, including peer-reviewed journal articles, to identify hypotheses, methods, results, and conclusions.
3. **Communicate scientific findings** effectively through written reports, presentations, and posters, using proper scientific language and formatting.
4. **Conduct basic data mining and analysis** with beginner-level coding to find patterns in genetic, clinical, or public health datasets.
5. **Collaborate effectively** in team-based research projects, demonstrating leadership, accountability, and constructive peer engagement.
6. **Reflect on potential career paths** in biomedical science, research, and healthcare based on course experiences and exploration.

Textbooks and Other Course Materials

Required Textbooks and Materials

No required textbook is needed for this course. All reading materials, including scientific journal articles, case studies, and data sets, will be provided by the instructor or made accessible through Canvas.

Code examples and in-class demonstrations will be uploaded to GitHub. Check out UBMS-Medical-Research for updates.

Expectations for Out-of-Class Study

Students should expect to spend additional time outside of class on activities such as reading materials, completing assignments, and preparing for exams.

In-Class Expectations

Students should adhere to the guidelines in the Student Handbook, respect classmates and the instructor, practice proper internet etiquette. Computers and cell phones should be muted when not in use and not visible or seen.

Grading Information

Graded Assignments & Values

Assignment Name	Value (%)
Participation & Attendance	10
Individual Research Project	25
Post-test	20
Literature Reviews	15
Mid-term Quiz	15
Bioinformatics Group Project	15
Total	**100**

Students are expected to keep track of their performance throughout the semester which Canvas facilitates and seek guidance from available sources (including the instructor) if their performance drops below

Range (pts or %)	Letter Grade
[86.5 – 100]	A
[74.5 – 86.5)	B
[64.5, 74.5)	C
[54.5, 64.5)	D
[0, 54.5)	F

Make-Up Exams & Late Work Policy

Make-up exams will be permitted if a class period for the exam is cancelled or under unusual circumstances with prior notification from the student.

Grade Grievances

Any appeal of a grade must be made by contacting the instructor and following the procedures and deadlines set by the Upward Bound Math & Science program.

University & Course Policies

UTA students are encouraged to review the institutional policies and informational sections below and reach out to the specific office with any questions. To view this institutional information, please visit the Institutional Information page (https://resources.uta.edu/provost/course-related-info/institutional-policies.php), which includes the following policies, among others:Drop Policy: Refer to the Director of the Upward Bound Math & Science Center and the Student Handbook.

- Disability Accommodations
- Title IX Policy
- Academic Integrity

Attendance

Attendance is mandatory. Notification of absences must be sent via e-mail to the Upward Bound

Symposium and Awards Banquet

Math & Science Symposium will be held on July 7, 3:00 -5:00 pm. This gives you an opportunity to present your research and showcase your accomplishments! Family members, instructors, and university staff are invited to attend.

Awards Banquet and Ceremony will be held on July 7, 6:00 – 9:15 pm to recognize the achievements of the summer participants.

Generative AI Use in This Course

The use of Generative AI (GenAI) in course assignments and assessments must align with the guidelines established by the instructor. Unauthorized use of GenAI could result in breaches of academic integrity. Instructors bear the responsibility of clearly delineating the permissible uses of GenAI in their courses, underscoring the importance of responsible and ethical application of these tools.

The UTA Office of Community Standards articulates the university's stance on academic integrity and scholastic dishonesty. These standards extend to the use of GenAI. Unauthorized or unapproved use of GenAI in academic work falls within the scope of these policies and will be subject to the same disciplinary procedures.

As the instructor of this course, I have adopted the following policy on Student use of GenAI:
Restricted Use of GenAI

Approach	Description
Restricted Use of GenAI	While this course recognizes the potential benefits of Generative AI (GenAI) as a supplementary tool for certain learning activities, its use is restricted to specific assignments where GenAI's role is clearly defined and aligns with the course's Student Learning Outcomes (SLOs). These assignments will be clearly marked, and students must adhere to the guidelines provided for GenAI use. Unauthorized use of GenAI outside these parameters will be considered a breach of academic integrity.

Academic & Wellness Resources

Academic Success

Students can access STEM Halls for help. Students can also utilize individual study time Monday-Thursday 1:30- 2:30 pm to work on projects. Instructor will be available through individual appointments if needed.

The English Writing Center (411LIBR)

The Writing Center offers **FREE** tutoring in 15-, 30-, 45-, and 60-minute face-to-face and online sessions to all UTA students on any phase of their UTA coursework. Register and make appointments online at the Writing Center (https://uta.mywconline.com). Classroom visits, workshops, and specialized services for graduate students and faculty are also available. Please see Writing Center: OWL (http://www.uta.edu/owl) for detailed information on all our programs and services.

UTA CARE Team

NOTE: If a person's behavior poses an immediate threat to you or someone else, contact UTA Police at 817-272-3303 or dial 911. If you or someone you know needs to speak with a crisis counselor, please reach out to the MAVS TALK 24-hour Crisis Line (https://www.uta.edu/student-affairs/caps/crisis)at 817-272-8255 or the National Suicide and Crisis Lifeline (https://988lifeline.org/) at 988.

Librarian to Contact

Each academic unit has access to Librarians by Academic Subject (https://libraries.uta.edu/research/librarians) that can assist students with research projects, tutorials on plagiarism, and citation references, as well as support with databases and course reserves.

Safety Information & Resources

Face Covering Policy

Face coverings are not mandatory; all students and instructional staff are welcome to wear face coverings while they are on campus or in the classroom.

Emergency Exit Procedures

Should we experience an emergency event that requires evacuation of the building, students should exit the room and move toward the nearest exit, which is located to your right. (Evac_PH_207.pdf). When exiting the building during an emergency, do not take an elevator but use the stairwells instead. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

MavAlert System

The MavAlert system sends information to cell phones or email accounts of subscribed users in case of an emergency. Anyone can subscribe to MavAlerts at Emergency Communication System (https://www.uta.edu/uta/emergency.php).

Emergency Phone Numbers

In case of an on-campus emergency, call the UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial 911. Non-emergency number 817-272-3381

Course Schedule

Class Date(s)	Topic(s)	Activities	Assignments
June 2, Mon	Course Introduction & Pre-test	- Course overview & syllabus - Course Expectations - Pre-test	
June 5, Thu	Medical Research Fields & Career Interests	- Medical research overview, Scientific Method, Research methodologies - Current research areas - Research labs @ UTA - Career interest activities	**Individual Research Project Assigned**
June 9, Mon	Literature Reviews	- Explore some medical/ public health datasets - Deep dive into medical journals/articles - Article annotations, group discussion	**Literature Review assigned**
June 12, Thu	Opportunities for Medical Research	- Explore free medical research programs and REUs - Investigate online resources based on interests, pathways to Science	
June 16, Mon	Introduction to Bioinformatics	- Explore basic coding to analyze & interpret biological data - Guided exploration of BLAST & NCBI , and other datasets - Bioinformatics worksheet	**Literature Review Due** **Bioinformatics Group Project Assigned**
June 19, Thu	Bioinformatics in Medical Research	- introduce current hot topics in genomic medicine, vaccines development, drug discovery, CRISPR, genomics - exploration activities in Human Genome project, ML models, and visuals	**Mid-term assigned**

Class Date(s)	Topic(s)	Activities	Assignments
June 23, Mon	Lab Visits & Speakers	Luber Lab, plus a few others TBA	
June 26, Thu	Slides Creation & Presentation Practice	- Slides layout & content - Presentation Practice - Reviews and Feedback	**Bioinformatics Group Project Due**
June 30, Mon	Final Classes	-Final Reflections -Q&A - Final Project Reviews	
July 3, Thu	Final Presentations & Project Submission	- Post Test	**Individual Research Project due** **Post-test assigned**
July 7, Mon	Math & Science Symposium Awards Banquet & Ceremony		