

**LSOM Dean's Office for Research
Basic Science Technical Training**

Course Professor:

Chris Valdez, Ph.D.
Assistant Professor in Cellular and Integrative Physiology
Joe R. and Teresa Lozano Long School of Medicine
LSOM Dean's Office
Valdezc10@uthscsa.edu

Length of Course:

Fall Semester: August– November

Prerequisites & Eligibility:

- Course is available for 1st and 2nd year LSOM medical students

Learning Objectives

After completion of this course, learners will be able to:

- Develop a working knowledge of basic science techniques
- Gain firsthand technical training of essential basic science methodologies

Description

The next generation of physician leaders will interface at the frontline of clinical care and basic science research. Clinical care requires mechanistic knowledge of underlying disease progression to evaluate treatments. Physicians with a developed statistical background and Institutional Review Board experience can more readily lead clinical trials. Either as a co-investigator in a basic science grant or leading a clinical care unit, physicians with advanced basic science knowledge are called to lead in the medical community. To support the next generation of physician leaders, research training during medical school is critical for successful research opportunity achievements. The LSOM Dean's Office for Research has developed an elective to provide interested students with a *practical basic science foundation* that will further enable their contributions to research opportunities across campus. Through our elective, medical students will develop technical communication and critical thinking skills, which qualities are essential for the next generation of physician leaders.

Elective Goals:

Goal 1: Increase core technical knowledge in medical students

Provide medical students with a *didactic lecture series that systematically unravels the technical details behind foundational basic science methodologies*. To capitalize on this aim, the lectures will be led by peer colleagues such as senior graduate students and post-doctoral fellows. This approach not only provides an opportunity for peer-to-peer technical training but introduces novel teaching opportunity for the graduate and medical student community. Upon reviewing medical student research opportunities, we have selected techniques that are essential to research experiences on the LSOM campus.

Goal 2: Prepare medical students for research opportunities with hands-on technical training

Participate in an *accelerated hands-on technical training workshop* to increase the technical skillset of medical students before they engage in research opportunities. This will allow medical students to enter a laboratory with technical knowledge and execution capability that they would otherwise need to develop at the beginning of the research project. We invite senior graduate students and post-doctoral fellows to complete a live demo of a research technique. The hands-on training will complement the didactic lectures from Goal 1.

Requirements:

- 1-hour didactic lectures twice per month
- Participation in a hands-on technical workshop twice a month
 - Each workshop session will be 3-4 hours

Course Deliverables:

- Complete a pre-and post-course self-evaluation of technical knowledge and skillset
- Write a technical protocol for each method module
- Presentation of a project overview

Course Faculty

- Senior Graduate students and Post-Doctoral Fellows
 - Instructors provided peer-to-peer teaching, which introduces a team-based training paradigm between medical, graduate students, and post-doctoral fellows. This approach will seed technical communication skills that are invaluable for future physicians and scientists.
- Faculty will oversee student instructor leaders and provide guidance
 - Chris Valdez, PhD- Assistant Professor and Associate Director of Research Operations
 - Kate Lathrop, MD- Associate Dean for Medical Student Research
 - Manzoor Bhat, PhD- Vice Dean of Research and Department of Physiology Chair
 - Patrick Sung, PhD- Associate Dean of Research and Director of the Greeyhey Children’s Cancer Research Institute

Course Schedule:

The elective will be available for a class size up to 20 students. The class will meet for a Friday afternoon lecture and a Saturday morning hands-on technical training session. The Saturday morning training sessions are scheduled to begin at 9:30am and last 3-4 hours. In late-September, the hands-on Saturday training sessions will end, and the course will consist of only Friday afternoon lectures on data analysis collected from the course, presentation workshops, and a group presentation on October 27, 2023. The course dates are scheduled to change if requirements and other external factors deem necessary.

| Date | Class | Location | Time | Description | Potential Scheduling Conflicts (Source UME Leadership) |
|-----------------------|------------------------|-------------|-------------|--|---|
| Aug 4 th | Lecture | AL&TC 1.102 | 3:30-4:30pm | Western Blotting | |
| Aug 5 th | Workshop | | 9:30-12pm | | |
| Aug 18 th | Lecture | AL&TC 1.102 | 3:30-4:30pm | DNA Amplification | |
| Aug 19 th | Workshop | | 9:30-12pm | | |
| Sept 8 th | Lecture | AL&TC 1.102 | 3:30-4:30pm | Immunocytochemistry | |
| Sept 9 th | Workshop | | 9:30-12pm | | |
| Sept 15 th | Lecture | AL&TC 1.102 | 3:30-4:30pm | Fluorescence microscopy | |
| Sept 16 th | Workshop | | 9:30-12pm | | |
| Sept 29 th | Lecture and group work | AL&TC 1.102 | 3:30-4:30pm | Clinical and Basic Science Learning Exchange | MS2 students may have an ultrasound lab; they could try to trade with another student on a different day if they are scheduled at 3:30pm but would need to do this ASAP |
| Oct 13 th | Lecture and group work | AL&TC 1.102 | 3:30-4:30pm | Data Analysis I | |
| Oct 20 th | Lecture and group work | AL&TC 1.102 | 3:30-4:30pm | Data Analysis I | Some MS1 students will have a brief feedback session with their faculty but could try to schedule this outside of elective time if needed |
| Oct 27 th | Lecture and group work | AL&TC 1.102 | 3:30-4:30pm | How to give a scientific presentation during a lab meeting | There is a lecture from 1-2:50pm for MS1s |
| Nov 3 rd | Lecture and group work | AL&TC 1.102 | 3:30-4:30pm | Group Presentations | Some MS1 students will have their OSCE 1 practice labs; they could trade with another student but would need to do this ASAP |