

OST 597 – Biomedical Research Structure and Methods

Spring Semester - 2024

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Notice to Students: Although Elective syllabi at MSUCOM have a consistent format; vitally important details differ by Elective. For this reason, you must read the syllabus thoroughly at the onset of each elective to understand what educational activities will be provided and what is expected of you.

Section 1 – Course Information

Elective Description

“Biomedical Research Structure and Methods,” is a 2-credit elective course offered in the Spring Semester. Over 30 faculty from within and outside MSU give talks on their research and introduce the students to a wide variety of research types and methods. These faculty are also interested in accommodating COM students in their research projects and mentoring them in research. The students will attend lectures and workshops and participate in large group case discussions. Students that successfully complete this course will be encouraged to undertake a Capstone research project under the rubric of OST 599 Biomedical Research Elective. These students will receive assistance to find a research mentor and carry out a project.

Course Goals and Objective

The goal of this course is for the student to achieve an understanding of research hypotheses, methodology, research ethics, introductory biostatistics, design of research proposals, data collection and manuscript writing. The course provides the student with exposure to a wide spectrum of research; basic science and molecular research, translational and clinical research, health services research and epidemiological research. In conjunction with the Capstone Research Project program, the goal is for medical students to understand research principles and methods and apply them by carrying out a research project with a research mentor, ideally resulting in conference presentations and publications.

The primary learning objectives for this course are to understand:

1. How research questions and hypotheses are developed
2. Basic research methodology and different study designs
3. Different methods and principles in translational research
4. Basic biostatistical and epidemiology concepts

You will meet the objectives listed above through a combination of the following activities:

- Attend all lectures and faculty facilitated workshops via Zoom Webinars.
- Active participation in large-group case discussions via Zoom Webinars.
- Completion and submission of assignment

Course Coordinator

(Note - Preferred method of contact is shown in italics)

Name: Furqan B. Irfan, MBBS (MD), PhD

Phone: (517) 353-7785

Email: irfanfur@msu.edu (preferred method)

Address: Room 325A, West Fee Hall, 909 Wilson Road, East Lansing, MI 48824

Staff or Student Coordinator

Name: Michelle Volker, CHRS, CFMLAS

Phone: 517-884-3827

Email: volkerm@msu.edu (preferred method)

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Curriculum Assistant (CA)

Name: Patty Roberts

Phone: 517-204-4803 (cell)

Email: robe1204@msu.edu (preferred method)

Address: 909 Wilson Rd, 317 West Fee Hall, East Lansing, MI 48824

Instructors

Name	Email	Phone	Site
Furqan B. Irfan, MD, PhD	irfanfur@msu.edu	517-885-3828	East Lansing
Zhou Guoli, MD, PhD	zhoug@msu.edu	517-432-4190	East Lansing
Itziar Familiar, PhD	familiar@msu.edu	517 884-2906	East Lansing

There are over 30 guest lecturers from within and outside MSU that give a talk on their research and have agreed to take COM students for research mentorship as Capstone projects after completion of this course.

Lines of Communication

- For administrative aspects of the Course: Contact the curriculum assistant or course coordinator.
- For content questions relating to a specific lecture or topic: contact the faculty presenter for that specific portion of the course or your SE MI on-site instructor.
- For absences/missed exams (see excused absence information below)

Office Hours

Questions concerning may be discussed individually by making an appointment with the Course Coordinator via phone, email or Zoom.

Textbooks and Reference Materials

Required

- None

Recommended

1. D. Celentano M. Szklo (2018). *Gordis Epidemiology*. Sixth Edition. Philadelphia: Elsevier Saunders.
2. A. Aschengrau, GR Seage (2018). *Essentials of Epidemiology in Public Health*. Fourth Edition Jones and Bartlett Learning, MA
3. Pagano, M. and Gauvreau, K. (2000). *Principles of Biostatistics*. Second Edition Belmont, CA: Wadsworth.

Note: These books can be expensive and are only recommended for students who want to get a deeper understanding of Research Methodology, Epidemiology and Biostatistics. The information and learning materials provided in the course are sufficient to achieve the course goals.

Elective Structure

The course will be delivered in a blended format, with online reading materials, lectures, large group case discussions and workshops.

This research elective course will be completed during the Spring Semester. The student will be expected to attend classroom lecture and workshop sessions via Zoom on **Monday evenings from 5:00pm-8:00pm.**

Teaching and learning approach in this course will include a combination of different methods. Learn before lecture (LBL) will consist of reading material and published articles. Instructors will deliver lectures and facilitate active-learning workshops with practical research case discussions.

This will be an elective, one semester (14 weeks) course. The course content will cover the basic principles and methods of biomedical research and its application to conduct research. Please see D2L for exact class dates.

Each lecture will be followed by a large group case discussion via Zoom.

The lecture, large-group case discussion and workshop topics will be the following:

- Translational research
- Biostatistics 1: Statistics for lab. Scientists
- Translational Research case studies
- Clinical Research case studies
- Research Ethics
- Developing a Research Question and Hypothesis
- Literature search and reference management software
- Case-control study
- Conduct a case-control study
- Cross-sectional study
- Conduct a cross-sectional study
- Cohort study
- Conduct a cohort study
- Qualitative Research
- Meta-Analysis
- Quality Improvement projects
- Essential components of an abstract, research presentation and manuscript

Course Requirements

- Participation in weekly lectures and large group discussions
- Participation in active-learning workshops via Zoom
- Completion and submission of assignments

Required Exams/Assessments

- None

Elective Grades

The course will be graded overall as Pass/Fail. The cutoff percentage for passing the course is 70%.

The table below describes the graded course activities including points and activity description. The first column includes the points possible, and the second column includes a description for each activity.

Course tasks and assignments will be assessed on the basis of:

- Participation in the lectures and large group case discussions
- Completion of the workshop assignments

<i>Points</i>	<i>Description</i>
50%	<i>Participation in the lectures and large group case discussions</i>
50%	<i>Completion of the workshop assignments</i>
100%	Total Points Possible

Late Work Policy

Students should submit the assignment on time. Any work submitted late will result in decreased course grade for the assignment activity.

Viewing Grades

Students will receive a Certificate of Completion or a Certificate of Participation (for those students who are not able to attend all lectures and workshops (at least 70% attendance required))

Student Evaluation of the Course

We want your feedback on how to improve this course.

- **Informal Feedback:** Feel free to approach the Course Coordinator, Dr. Irfan, or any of the other course faculty with your reactions and suggestions. Or write out your comments and email them to the Course Coordinator or Faculty. From time to time, we may also convene focus groups of students, as an additional way to elicit your opinions and suggestions.
- **Formal Evaluation:** In addition to the above, we ask every student in the class to complete formal on-line Elective evaluation upon conclusion of the Elective. Student Elective evaluations are highly recommended. Student feedback provides Elective Coordinators with valuable information regarding their performance, the performance of their instructors and the quality of the Elective. The information gained from these evaluations is used to continuously improve future offerings of this Elective.

Section 2 – Policies

Please refer to the [MSUCOM Student Handbook](#) for these and other policies.

Academic Honesty and Professionalism

Every student is responsible for their behavior and is expected to adhere to all MSU and MSUCOM policies of academic honesty and professionalism, as outlined in the MSUCOM Student Handbook and the MSU Medical Student Rights and Responsibilities. These documents may be found on the MSUCOM website. Additional guidance on academic integrity may be found on the MSU Ombudsperson's website at <https://ombud.msu.edu/resources-self-help/academic-integrity>.

Incidents of academic dishonesty or professional misconduct will be addressed by the faculty, administration, or staff; such action may include, but is not limited to: giving a failing grade, referring a student for judicial review, directing the student to the Associate Dean of Medical Education, evaluation by the Committee on Student Evaluation, and other actions outlined in the Medical Student Rights and Responsibilities document.

Types of Class Sessions

MSUCOM designates lectures and other class sessions by their delivery method. While additional terms may be used in a specific course, the following will provide general guidance to the type of session:

- Live or livestream lecture: broadcast at a designated time; intended to be viewed synchronously
- Online Lecture: recorded content, may be viewed asynchronously
- Webinar: more interactive session where student participation is expected
- Lab: may refer to on-site clinical skills training or online lab session; see details

Changes to Course Schedule or Requirements

Due to external circumstances, the course requirements published in the course syllabus and/or course schedule may be subject to change. Timely notification Communication regarding changes will be provided to enrolled students via the course D2L site and/or email. Any changes made will consider the MSU Code of Teaching Responsibility and the MSU Medical Students Rights and Responsibilities.

Mandatory and Optional Class Sessions

All lectures and other class sessions are considered to be integral to the course, and students are expected to attend, view, or participate in each session. Some sessions are designated as "mandatory" in that attendance at the session on the scheduled date and time is required. Depending on the course, a student may earn points for attending or participating in a mandatory session or may lose points for failing to attend or participate. Availability of make-up points for missed sessions is at the discretion of the course coordinator. Optional class sessions are offered by faculty to assist students in learning or reviewing course content.

Absences from Mandatory and Examinations/Assessments

It is the responsibility of the student to know which class sessions are deemed as mandatory and comply with the MSUCOM policy regarding absences from mandatory sessions and examinations. This policy may be found in the MSUCOM Student Handbook on the MSUCOM website. Requests for an excused absence must be arranged with the course faculty.

Computer-Based Testing

It is the responsibility of each student to know and comply with the MSUCOM policy on computer-based testing. This policy may be found in the MSUCOM Student Handbook on the MSUCOM website.

Administration of quizzes, examinations, and other assessments may be self-proctored, virtual proctored, or classroom proctored. Regardless of the proctoring method, you are expected to take the exam in a quiet, private setting. Just like in a proctored exam, you are not to access notes, textbooks, references, your phone, or other materials, and you are not to interact with fellow students or others. Remember that integrity is defined as what you do when no one is looking.

You are also expected to not record, photograph, take screen shots, make notes of, or otherwise attempt to make a copy of any exam item for any purpose, including your personal use. A student who is discovered to have cheated or breached exam security will be subject to formal disciplinary action, up to and including dismissal from MSUCOM.

If you have concerns or evidence of an exam security breach on this or any exam, you may report that to an MSUCOM administrator or through the online concern form.

Medical Student Rights and Responsibilities

If problems arise between instructor and student, both should attempt to resolve them by informal, direct discussions. If the problems remain unsolved, the Associate Dean for Medical Education and/or the MSU Ombudsperson may be consulted. The MSU Medical Student Rights and Responsibilities (MSRR) document defines processes for additional steps, including submission of a formal grievance. The MSSR may be found in the MSUCOM Student Handbook and online at splife.studentlife.msu.edu.

iClicker Reef/(iClicker Student) Policy

It is your responsibility to know and comply with the iClicker Reef (iClicker Student) Policy. This policy may be found in the MSUCOM Student Handbook. If you forget your device or if it does not work, for whatever reason, no make-up experiences will be provided, and no points will be given.

If iClicker Reef/Iclicker Student is used to take attendance for an on-campus event, you will be expected to arrive to the physical location on time and to stay for the duration of the assigned activity. If iClicker Polling is used to take attendance for an online event, you will be expected to start the session at the scheduled time and participate for the duration of the assigned activity.

As a matter of professionalism, please note that under no circumstances should you provide access to your iClicker Reef/Student account to another student by sharing your device and/or account login, nor should you accept another student's device or login credentials to access iClicker Polling on their behalf. Answering questions or checking in for attendance on behalf of another student by using their device or account is considered to be academic dishonesty and may result in disciplinary action up to and including dismissal from the college.

Remediation

The MSUCOM Policy for Retention, Promotion and Graduation requires successful completion of each required course to progress in the curriculum. Remediation is not available for preclerkship electives.

Student Safety and Well-being

The MSUCOM website and Student Handbook provide information on student safety, campus security, access to medical care and counseling services, and to policies on injuries and exposures. If you have an injury or acute illness on campus, an incident report should be completed. The form is available on the MSUCOM intranet or from Academic Programs.

Academic Support Resources at MSUCOM

As a way to acclimate you to the curriculum at MSUCOM, we have created a program called On Target: <https://michiganstate.sharepoint.com/sites/OnTargetforAcademicSuccess>

On this site you will find semester roadmaps which gives a general overview of each semester, tools needed to be successful in the curriculum and targeted resources for your unique learning situation. In each semester's road map, you will also find course expectations, tips for success, potential trouble spots, longitudinal course integration, and specific course study guides.

Requests for Accommodations

Michigan State University is committed to providing equal opportunity for participation in all programs, services and activities. Requests for accommodations by persons with disabilities may be made by contacting the Resource Center for Persons with Disabilities (RCPD) at 517-884-7273 or online at rcpd.msu.edu. Once eligibility for an accommodation has been determined, you may be issued a Verified Individualized Services and Accommodation (VISA) form. Each VISA includes an expiration date; to request an accommodation, you must have an active VISA. You may work with RCPD to renew a VISA.

During the preclerkship curriculum, the college will help to coordinate accommodations for additional testing time. Provide your VISA to Nancy Thoma, thoman@msu.edu, A333 East Fee Hall at the start of the term and/or at least two weeks prior to the assessment event (test, project, labs, etc.). Requests for accommodations received with less notice will be honored whenever possible. You may choose whether or not you wish to use accommodations for a particular event. For other accommodations, you may also review your VISA with the course coordinator and curriculum assistant assigned to that course.

Title IX Notifications

Michigan State University is committed to fostering a culture of caring and respect that is free of relationship violence and sexual misconduct, and to ensuring that all affected individuals have access to services. For information on reporting options, confidential advocacy and support resources, university policies and procedures, or how to make a difference on campus, visit the Title IX website at titleix.msu.edu.

Limits to confidentiality. Essays, journals, and other materials submitted for this class are generally considered confidential pursuant to the University's student record policies. However, you should be aware that University employees, including instructors, may not be able to maintain confidentiality when it conflicts with their responsibility to report certain issues to protect the health and safety of MSU community members and others. Instructors must report the following information to other University offices (including the Department of Police and Public Safety):

- Suspected child abuse/neglect, even if this maltreatment happened when you were a child;
- Allegations of sexual assault, relationship violence, stalking, or sexual harassment; and
- Credible threats of harm to oneself or to others.

These reports may trigger contact from a campus official who will want to talk with you about the incident that you have shared. In almost all cases, it will be your decision whether you wish to speak with that individual. If you would like to talk about these events in a more confidential setting, you are encouraged to make an appointment with the MSU Counseling and Psychiatric Services.

Addendum: Course Schedule

The course schedule for the current semester will be posted to D2L. Changes to the course schedule will be noted on the class academic calendar ("Google calendar") and communicated to students via D2L and/or email. The schedule for the most recent offering of this course will be posted on the MSUCOM website under Current Students/Preclerkship Curriculum.

