

MED 802

Foundations of Medical Science (FMS)

(Fall Semester)

Kirk Kerkorian School of Medicine at UNLV
625 Shadow Lane

COURSE DESCRIPTION AND LEARNING OBJECTIVES

IMS introduces the foundational principles of the basic biomedical sciences that are relevant to the continued study of human medicine. The first two weeks focus on molecular biology and cell biology. Week three is dedicated to essential elements of medical genetics, taught in the context of selected genetic disorders. Week four establishes foundational concepts of pharmacology and general pathology, and initiates the study of both nutrition and microbiology. Weeks five and six cover basic immunology. The course will consist of 6 hours/week of Problem-Based Learning (PBL), which will occur in small group settings, and 8-10 hours of Resource sessions.

At the conclusion of this course, students will be able to:

- Recognize and describe salient foundational concepts of human medicine within the subjects of biochemistry, molecular biology, cell biology, medical genetics, pharmacology, pathology, microbiology, nutrition, and immunology.
- Develop pertinent clinical questions related to the diagnosis and/or treatment of human illness, and utilize appropriate resources to answer those questions in a self-directed fashion

REQUIRED AND RECOMMENDED TEXTBOOKS

Required

- Kuvlesky Abbas, A. K., & Lichtman, A. H. (2014). Basic Immunology: Functions and Disorders. 4th ed. Elsevier Saunders.
- Ferrier D (2017). Biochemistry (Lippincott Illustrated Reviews). 7th ed. Wolters Kluwer.
- Lodish H, Berk A, Kaiser CA et al. (2016). Molecular Cell Biology. 8th ed. Macmillan. § Kumar V, Abbas AK (2014). Robbins & Cotran Pathologic Basis of Disease (Robbins Pathology). 9th ed. Elsevier Saunders.
- Pawlina W (2015). Histology: A Text and Atlas with Correlated and Molecular Biology. 7th ed. Lippincott, Williams & Wilkins.
- Whalen K (2014). Pharmacology (Lippincott Illustrated Reviews). 6th ed. Wolters Kluwer.

Recommended

To be determined at the onset and throughout the duration of the course to aid/facilitate learning objectives.

COURSE SCHEDULE & WEEKLY OBJECTIVES

Please refer to the Canvas calendar for the specific hour-by-hour schedule.

Week 1

Topics Include:

- Introduction to Anatomy
- Building Blocks of Life
- Acid-base, aminos, enzymes
- Protein structure and function

Week 2

Topics Include:

- Anatomy: back and spinal cord
- DNA structure and function
- Transcription & translation
- Cell structure – sorting
- Trafficking
- Cytoskeleton, ECM
- Adhesion & motility
- Cell cycle

Week 3

Topics include:

- Anatomy: shoulder and axilla
- Digestion and absorption
- Anaerobic glucose, PPP
- TCA & Ox Phos
- Fatty acid degradation
- Gluconeogenesis
- Glycogenesis and lipogenesis
- Ketogenesis
- Protein, AA degradation

Week 4

Topics include:

- Anatomy: Brachial Plexus
- Introduction to Microanatomy
- Basic tissue types
- Metaplasia and dysplasia

Week 5

Topics include:

- Anatomy: arm and forearm
- Inflammation and repair
- Cell injury and death
- Basics of genetics
- Nutrition

Week 6

Topics include:

- Anatomy: hand & joints of the upper extremity
- Innate immunity
- Adaptive
- T and B-cells
- Immunodeficiencies
- Hypersensitivity
- Introduction to Microbiology
- Bacteriology

- Mycology/Parasitology
- Virology

Week 7

Topics include:

- Anatomy: Gluteal region and anterior thigh
- Pharmacokinetics
- Pharmacodynamics
- Antibiotics
- Immunosuppressants

COURSE REQUIREMENTS & EVALUATION

Three (3) summative National Board of Medical Examiners (NBME) exams will be administered throughout the duration of the course, in addition to quizzes and written assignments. Active participation is an integral part of this course. Students must engage in individual, small groups, and class discussions to effectively contribute to all active learning activities as well as offer and receive constructive feedback and assessment. Students are expected to arrive on time to all course sessions and prepared to participate actively and engage in all learning and small group activities. Additionally, students are expected to be respectful, take responsibility and accountability for their own choices, actions, and/or decision. This includes the demonstration of personal and professional integrity.

GRADING

A pass/fail (P/F) grade is based upon satisfactory participation in small group activities, the timely completion of learning assignments and exercises, and successfully passing each of the three (3) summative NBME exams. The passing threshold for each NBME exam will be derived using known performance characteristics of the exam items, and will be set at the discretion of the Course Director.

DRESS CODE

Students represent not only themselves, but also the medical profession to those with whom they have contact. Appropriate and professional attire should be worn, especially when students are in patient care settings or when contact with patients is anticipated. Students should be aware that personal appearance may serve to inspire or hinder the establishment of the trust and confidence that are essential in the doctor-patient relationship. Jeans, sandals, and shorts (and other casual attire) are not considered professional dress. Scrubs are worn in the operating room, in the anatomy lab or in other clinical circumstances to protect the operator's clothing from soilage. Scrubs, in general, should not be worn outside of the lab or hospital, and scrubs worn in the operating room should not be worn outside of the operating room. (Please refer to the Professionalism section in the Student Handbook for guidelines pertaining specifically to dress and deportment.)

POLICIES

Academic Misconduct

Academic integrity is a legitimate concern for every member of the University community. We all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility, and professionalism. By choosing to join the UNLV community, students accept the expectations of the Student Academic Misconduct Policy, and are encouraged to always take the ethical path whenever faced with choices. Students enrolling at UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's educational mission. An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another person, from the Internet or any other source without proper citation of the source(s). See the [Student Conduct Code](https://www.unlv.edu/studentconduct/student-conduct), <https://www.unlv.edu/studentconduct/student-conduct>.

Auditing a Course

Auditing a course allows a student to continue attending the lectures and/or laboratories and discussion sessions associated with the course, but the student will not earn a grade for any component of the course. Students who audit a course receive the same educational experience as students taking the course for a grade, but will be excused from exams, assessments, and other evaluative measures that serve the primary purpose of assigning a grade.

Classroom Conduct

Students have a responsibility to conduct themselves in class and in the libraries in ways that do not interfere with the rights of other students to learn, or of instructors to teach. Use of devices such as cellular phones and pagers, or other potentially disruptive activities are only permitted with the prior explicit consent of the instructor. Students are specifically prohibited to record classes without instructor authorization, including online/remote classes (either audio only, or video and audio). The instructor may rescind permission at any time during the class. If a student does not comply with established requirements or obstructs the functioning of the class, the instructor may initiate an administrative withdrawal of the student from the course.

Since the COVID-19 pandemic forced some instruction to be delivered remotely starting in Spring 2020, numerous students have asked instructors to record their synchronous classes, so that they can access them at their convenience. Instructors who agree to record their classes (audio only, or video and audio) should inform students in advance. Recorded lectures may not be broadly released to anyone, but made available exclusively to those students enrolled in the class during the particular academic term. Recorded lectures must be stored securely, and are subject to the Nevada System of Higher Education's Records Retention Policy, meaning that the recordings can only be deleted 120 days after the end of class (i.e., after grades are posted). Once this requirement is met, the recordings should be deleted. Class recordings are protected from disclosure, as they are deemed part of an educational record under the Family Educational Rights and Privacy Act (FERPA).

Copyright

The University requires all members of the University Community to familiarize themselves with, and to follow copyright and fair use requirements. You are individually and solely responsible for violations of copyright and fair use laws. The University will neither protect nor defend you, nor assume any responsibility for student or employee violations of fair use laws. Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as disciplinary action under University policies. Additional [copyright policy information](https://www.unlv.edu/provost/copyright) is available at <https://www.unlv.edu/provost/copyright>.

Disability Resource Center (DRC)

The [UNLV Disability Resource Center](https://www.unlv.edu/drc) (Student Services Complex, SSC-A, Room 143, <https://www.unlv.edu/drc>, telephone 702-895-0866) provides resources for students with disabilities. Students who believe that they may need academic accommodations due to a permanent disability, temporary or permanent medical need, or academic support due to pregnancy are encouraged to contact the DRC as early as possible in the academic term. A Disabilities Specialist will discuss what options may be available to you. Students who are already registered with the DRC should request their accommodations online each semester, and make an appointment to discuss their accommodations with their instructors.

Final Examinations

The University requires that final exams given at the end of a course occur on the date and at the time specified in the Final Exam schedule. The Final Exam schedule is typically available at the start of the semester, and the classroom locations are available approximately one month before the end of the semester. See the [Final Exam Schedule](https://www.unlv.edu/registrar/calendars), <https://www.unlv.edu/registrar/calendars>.

Identity Verification in Online Courses

All UNLV students must use their Campus-issued ACE ID and password to log in to WebCampus-Canvas.

UNLV students enrolled in online or hybrid courses are expected to read and adhere to the [Student Academic Misconduct Policy](https://www.unlv.edu/studentconduct/misconduct/policy), <https://www.unlv.edu/studentconduct/misconduct/policy>, which states that “acting or attempting to act as a substitute for another, or using or attempting to use a substitute, in any academic evaluation or assignment” is a form of academic misconduct. Intentionally sharing ACE login credentials with another person may be considered an attempt to use a substitute, and could result in investigation and sanctions, as outlined in the Student Academic Misconduct Policy.

UNLV students enrolled in online courses are also expected to read and adhere to the [Acceptable Use of Computing and Information Technology Resources Policy](https://www.it.unlv.edu/policies/acceptable-use-computing-and-information-technology-resources-policy), <https://www.it.unlv.edu/policies/acceptable-use-computing-and-information-technology-resources-policy>, which prohibits sharing university accounts with other persons without authorization.

To the greatest extent possible, all graded assignments and assessments in UNLV online courses should be hosted in WebCampus-Canvas or another UNLV-managed platform that requires ACE login credentials for access.

Incomplete Grades

The grade of “I” (Incomplete) may be granted when a student has satisfactorily completed three-fourths of course work for that semester/session, but cannot complete the last part of the course for reason(s) beyond the student’s control and acceptable to the instructor, and the instructor believes that the student can finish the course without repeating it. For undergraduate courses, the incomplete work must be made up before the end of the following regular semester. Graduate students receiving “I” grades in 500-, 600-, or 700-level courses have up to one calendar year to complete the work, at the discretion of the instructor. If course requirements are not completed within the period indicated, a grade of “F” will be recorded, and the student’s GPA will be adjusted accordingly. Students who are fulfilling an Incomplete grade do not register for the course, but make individual arrangements with the instructor who assigned the “I” grade.

Library Resources

Librarians are available to consult with students on research needs, including developing research topics, finding information, and evaluating sources. To make an appointment with a subject expert for this class, please visit the [Libraries’ Research Consultation](https://guides.library.unlv.edu/appointments/librarian) website, <https://guides.library.unlv.edu/appointments/librarian>. You can also [ask the library staff](https://ask.library.unlv.edu/) questions via chat and text message at <https://ask.library.unlv.edu/>.

Missed Classwork

Any student missing class, quizzes, examinations, or any other class or laboratory work because of observance of religious holidays will be given an opportunity during that semester to make up the missed work. The make-up opportunity will apply to the religious holiday absence only. It is the responsibility of the student to notify the instructor within the first 14 calendar days of the course for Fall and Spring courses (except for modular courses), or within the first 7 calendar days of the course for Summer and modular courses, of their intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit the Missed Classwork policy, under Registration Policies, on the [Academic Policies](https://catalog.unlv.edu/content.php?catoid=32&navoid=8271&hl=) webpage, <https://catalog.unlv.edu/content.php?catoid=32&navoid=8271&hl=>.

In accordance with the policy approved by the Faculty Senate regarding missed class time and assignments, students who represent UNLV in any official extracurricular activity will also have the opportunity to make up assignments, provided that the student submits official written notification to the instructor no less than one week prior to the missed class(es).

The spirit and intent of the policy for missed classwork is to offer fair and equitable assessment opportunities to all students, including those representing the University in extracurricular activities. Instructors should consider, for example, that in courses which offer a “Drop one” option for the lowest assignment, quiz, or exam, assigning the student a grade of zero for an excused absence for extracurricular activity is both contrary to the intent of the Faculty Senate’s policy, and an infringement on the student’s right to complete all work for the course.

This policy will not apply in the event that completing the assignment or administering the examination at an alternate time would impose an undue hardship on the instructor or the University that could be reasonably avoided. There should be a good faith effort by both the instructor and the student to agree to a reasonable resolution. When disagreements regarding this policy arise, decisions can be appealed to the Department Chair/School Director, College/School Dean, and/or the Faculty Senate Academic Standards Committee.

For purposes of definition, extracurricular activities may include, but are not limited to academic recruitment activities, competitive intercollegiate athletics, fine arts activities, liberal arts competitions, science and engineering competitions, and any other event or activity sanctioned by a College/School Dean, and/or by the Executive Vice President and Provost.

Rebelmail

Rebelmail is UNLV's official email system for students and by University policy, instructors and staff should only send emails to students' Rebelmail accounts. Rebelmail is one of the primary ways in which students receive official University communications, information about deadlines, major Campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the University. Sending emails within WebCampus-Canvas is also acceptable.

Tutoring and Coaching

The Academic Success Center (ASC), at the Claude I. Howard Building, provides tutoring, academic success coaching, and other academic assistance for all UNLV undergraduate students. For information regarding tutoring subjects, tutoring times, and other ASC programs and services, please visit the [ASC website](https://www.unlv.edu/asc), <https://www.unlv.edu/asc>, or call 702-895-3177. The ASC is located across from the Student Services Complex (SSC). Academic success coaching is located on the second floor of SSC A, Room 254. Drop-in tutoring is located on the second floor of the Lied Library, and on the second floor of the College of Engineering building (TBE A 207).

UNLV Writing Center

One-on-one or small group assistance with writing is available free of charge to UNLV students at the [Writing Center](https://writingcenter.unlv.edu/), <https://writingcenter.unlv.edu/>, located in the Central Desert Complex, Building 3, Room 301 (CDC 3–301). Walk-in consultations are sometimes available, but students with appointments receive priority assistance. Students may make appointments in person or by calling the Center, telephone 702-895-3908. Students are requested to bring to their appointments their Rebel ID Card, a copy of the instructions for their assignment, and two copies of any writing they have completed on their assignment.

Diversity Statement

As an institution of higher learning, UNLV represents a rich diversity of human beings among its faculty, staff, and students, and is committed to aspiring to maintain a Campus environment that values that diversity. Accordingly, the University supports understanding and appreciation of all members of its community, regardless of race, sex, age, color, national origin, ethnicity, creed, religion, disability, sexual orientation, gender, gender identity, marital status, pregnancy, genetic information, veteran status, or political affiliation. Please see [University Statements and Compliance](https://www.unlv.edu/about/statements-compliance), <https://www.unlv.edu/about/statements-compliance>.

A successful learning experience requires mutual respect and trust between the students and the instructor. Accordingly, the instructor asks that students be willing to listen to one another's points of view, acknowledging that there may be disagreements, keep discussion and comments on topic, and use first person, positive language when expressing their perspectives.

EDUCATIONAL PROGRAM OBJECTIVES (EPO)

Medical Knowledge

1. Apply principles of the sciences integral to medicine (biomedical, clinical, and cognate) to determine the etiology, pathophysiology, diagnosis, treatment, and prevention of significant human diseases.
2. Demonstrate clinical reasoning to develop and narrow a differential diagnosis by systematically merging clinical information with knowledge of mechanisms and epidemiology of disease.
3. Display critical judgment by formulating clinically relevant questions, identifying, and appraising salient evidence in a self-directed manner, and combining this knowledge with patient contextual factors, characteristics, and values in medical decision-making.

Interpersonal and Communication Skills

4. Communicate effectively and professionally with patients, families, peers, and other healthcare personnel.
5. Share knowledge with others in an organized and effective manner.

Patient Care and Procedural Skills

6. Conduct and document a situation-appropriate patient history and physical examination.
7. Identify and propose an appropriate shared treatment plan for acute and chronic diseases that reflects medical knowledge, patient contextual factors, and the best available evidence.
8. Correctly perform basic procedural skills with attention to patient comfort and safety.
9. Provide appropriate patient-centered counseling to promote disease prevention and optimize health outcomes.
10. Apply principles of integrative medicine, wellness, hospitality, nutrition, and pain management to patient care.

Task-Based Learning and Improvement

11. Demonstrate the self-reflection necessary to identify personal strengths and weaknesses in the learning and practice of medicine.
12. Address personal weaknesses and continuously work to improve the learning and practice of medicine through personal change and utilization of appropriate educational and other resources.

Task-Based Learning and Professionalism

13. Apply an understanding of the scientific method to appraise data, research, and evidence relevant to the effective care of patients.
14. Demonstrate professional conduct and accountability in learning and patient care.
15. Display respect and empathy for patients as humans and awareness of their diverse and unique qualities.
16. Recognize ethical issues that arise in clinical cases and research, apply the principles of medical ethics, and explain ethically justifiable options.

System-Based Practice

17. Advocate for the improvement of public health outcomes through community engagement and the analysis of social determinants of health and disease.
18. Recognize the key elements of the healthcare system in the United States and describe how these elements interact to impact the delivery of healthcare.