

MED 811: Analytics in Medicine 1 (AIM)

Autumn 2017

Mondays – 8:00 to 10:00 a.m.
Fridays – 10:00 a.m. to 12:00 p.m.
1001 Shadow Lane

Course Chairs:
Sandhya Wahi-Gururaj, MD
Ranjit Makar, MD

Course Description and Learning Objectives:

With the advancement of information and computational technology, healthcare and its delivery has rapidly evolved from an imprecise, population-based approach into a targeted system responsive to patients' unique biological, psychological, and social attributes. Modern technological advances provide for the vast collection and seamless processing of meaningful data from patients to healthcare providers, administrators, and analysts. Hence, twenty-first century physicians must be adept at managing a volume, velocity, and variety of data sources aimed to inform and improve healthcare delivery.

The longitudinal format of this course continues the development of students' skills in analyzing a variety of data sources, understanding the use of "big data" and statistical principles, and how networks of data inform healthcare analytics to improving healthcare systems and processes. This series of courses reviews analytical techniques, including the acquisition and management of data from online warehouses, and offers exposure to systems analysis, modes of continuous quality management, operations research techniques, exploratory data analytics, and ethics.

- Define evidence-based medicine (EBM) and describe the EBM process; *i.e.* using evidence in making medical decisions, and in the practice of life-long learning.
- Distinguish the roles and relationships between epidemiology and biostatistics in treating disease and improving health.
- Compute basic descriptive statistics and explore data analytic methods.
- Demonstrate a basic understanding of epidemiologic methods and study design.
- Combine appropriate epidemiological concepts and statistical methods.
- Demonstrate an understanding of physicians' fiduciary duties.
- Recognize ethical issues that may arise in the course of patient care.
- Think critically and systematically through ethical problems using bioethical principles and other tools of ethical analysis.
- Provide a reasoned account of professionally responsible management of ethical problems and act in accordance with those judgments.
- Articulate ethical reasoning to others coherently and respectfully.
- Utilize relevant ethics statements from professional associations to guide clinical ethical judgment and decision-making.
- Recognize the value and rationale of literature/guidelines/research obtained from online search engines and databases, *e.g.* Medline, National Guideline Clearinghouse

Required and Recommended Materials & Textbooks:

Required

- Fletcher, R. H., & Fletcher, S. W. *Clinical Epidemiology: The Essentials*. 5th ed. Wolters Kluwer | Lippincott, Williams & Wilkins.

- Hope, T. (2004). *Medical Ethics: A Very Short Introduction*. 1st ed. Oxford University Press.
- Lo, B. (2013). *Resolving Ethical Dilemmas: A Guide for Clinicians*. 5th ed. Wolters Kluwer | Lippincott, Williams & Wilkins.
- Riegelman, R. K. (2012). *Studying a Study and Testing a Test: Reading Evidence-based Health Research*. 6th ed. Lippincott, Williams & Wilkins.
- Weaver, A., & Goldberg, S. (2011). *Clinical Biostatistics and Epidemiology Made Ridiculously Simple*. 1st ed. MedMaster, Inc.

Recommended

- Glaser, A. N. (2013). *High-Yield Biostatistics, Epidemiology, and Public Health*. 4th ed. Lippincott, Williams & Wilkins.
- Strome, T. (2013). *Healthcare Analytics for Quality and Performance Improvement*. Hoboken, NJ: John Wiley & Sons, Inc.

Additional materials may be assigned and/or recommended at the onset and throughout the duration of the course to aid/facilitate aforementioned learning objectives.

Course Schedule & Weekly Objectives:

Week 1 – Monday, September 11, 2017

Topics include:

- Ethical dilemmas encountered as a medical student; impaired colleagues
 - Self-awareness, including professional identify and self-care
 - Medical trainee issues, including disclosure of student status, the tension between education and best care for patients, the hidden curriculum, and moral distress
 - Social media
 - Concerns about colleagues, including impairment, incompetence, and mistakes

Assigned Readings & Review Materials:

- Lo, B. (2013). *Resolving Ethical Dilemmas: A Guide for Clinicians*. 5th ed. Lippincott, Williams & Wilkins, pp. 247-258.

Week 2 – Friday, September 22, 2017

Topics include:

- Biostats/Epi Module 1: Role of Biostatistics and Epidemiology in Clinical Medicine

Assigned Readings & Review Materials:

- Fletcher, R. H., & Fletcher, S. W. *Clinical Epidemiology: The Essentials*. 5th ed. Lippincott, Williams & Wilkins, pp. 1-13.

Week 3 – Monday, September 25, 2017

Topics include:

- Biostats/Epi Module 2: Probability Concepts and their use in Evaluation of Diagnostic and Screening Tests

Assigned Readings & Review Materials:

- Weaver, A., & Goldberg, S. (2011). *Clinical Biostatistics and Epidemiology Made Ridiculously Simple*. 1st ed. MedMaster, Inc., pp. 1-8.

Week 4 – Friday, October 6, 2017

Topics include:

- Biostats/Epi Module 2: Probability Concepts and their use in Evaluation of Diagnostic and Screening Tests

Assigned Readings & Review Materials:

- Fletcher, R. H., & Fletcher, S. W. *Clinical Epidemiology: The Essentials*. 5th ed. Lippincott, Williams & Wilkins, pp. 28-30.

Week 5 – Monday, October 9, 2017

Topics include:

- Disclosure of information to patients, including medical errors and the delivery of bad news

Assigned Readings & Review Materials:

- TBD

Week 6 – Friday, October 20, 2017

Topics include:

- Biostats/Epi Module 3: Analyzing Data

Assigned Readings & Review Materials:

- Fletcher, R. H., & Fletcher, S. W. *Clinical Epidemiology: The Essentials*. 5th ed. Lippincott, Williams & Wilkins, pp. 18-27.

Week 7 – Monday, October 23, 2017

Topics include:

- Intro to ethical principles; Boy in the Bubble

Assigned Readings & Review Materials:

- Haberman, C. (2015 December 6). 'The Boy in the Bubble' Moved a World He Couldn't Touch. *The New York Times*. Retrieval at: http://www.nytimes.com/2015/12/07/us/the-boy-in-the-bubble-moved-a-world-he-couldnt-touch.html?_r=0

Week 8 – Friday, November 3, 2017

Topics include:

- Biostats/Epi Module 4: Quantifying and Comparing Measures

Assigned Readings & Review Materials:

- Lo, B. (2013). *Resolving Ethical Dilemmas: A Guide for Clinicians*. 5th ed. Lippincott, Williams & Wilkins, pp. 12-29.

Week 9 – Monday, November 6, 2017

Topics include:

- Biostats/Epi Module 4: Quantifying and Comparing Measures

Assigned Readings & Review Materials:

- Weaver, A., & Goldberg, S. (2011). *Clinical Biostatistics and Epidemiology Made Ridiculously Simple*. 1st ed. MedMaster, Inc., pp. 9-18.

Week 10 – Monday, November 27, 2017

Topics include:

- Shared decision making, including refusal of treatment and informed consent

Assigned Readings & Review Materials:

- Lo, B. (2013). *Resolving Ethical Dilemmas: A Guide for Clinicians*. 5th ed. Lippincott, Williams & Wilkins, pp. 211-215 & 234-237.

Week 11 – Friday, December 8, 2017

Topics include:

- Conflict of interest: Big Pharma; Pharmaceutical advertising and evaluation of medication

Assigned Readings & Review Materials:

- TBD

Week 12 – Monday, December 11, 2017

Topics include:

- Biostats/Epi Module 5: Quantifying the Natural History of Disease

Assigned Readings & Review Materials:

- Fletcher, R. H., & Fletcher, S. W. *Clinical Epidemiology: The Essentials*. 5th ed. Lippincott, Williams & Wilkins, pp. 1-13.

Week 13 – Monday, December 18, 2017

Topics include:

- Biostats/Epi Module 5: Quantifying the Natural History of Disease

Assigned Readings & Review Materials:

- Fletcher, R. H., & Fletcher, S. W. *Clinical Epidemiology: The Essentials*. 5th ed. Lippincott, Williams & Wilkins, pp. 50-60.

Course Requirements & Evaluation:

Active participation and preparation are integral parts of this longitudinal course. Students must engage in individual, small group discussions, case studies, and all problem-based activities to provide for an enriching and active learning environment designed to enhance critical thinking skills along with biostatistics, epidemiology, and research knowledge.

Students are expected to arrive on time to all problem-based learning sessions prepared to participate actively and engage in all educational activities. Moreover, students are expected to be respectful of each other, instructors, guests, and/or visiting faculty, as well as take full responsibility and accountability for their actions, choices, and decisions. This includes the demonstration of personal and professional integrity. Any student with a serious or multiple violations of professional behavior will be referred to the Medical Student Progress Committee (SPC) for review and potential action.

Attendance will be excused for matters pertaining to serious illness or in the event of a family emergency per the review and approval of the Senior Associate Dean for Student Affairs.

Grading:

A pass/fail (Pass/Fail) grade is based upon satisfactory participation in individual, small group discussions, problem-based learning activities, as well as the timely completion of written assignments, group exercises, and a satisfactory set of formative and summative narrative assessments. Additionally, quizzes may be administered to assess and reinforce basic bio-statistical and/or epidemiological concepts. Although points may not be awarded and a portion of the coursework may be presented in small PBL groups, all quizzes and methods of evaluation must be completed independently.

Students who fall below the minimum standards described, or who receive an 'Incomplete' grade, will undergo a formal remediation process. Students will coordinate and work with the course chair to develop a plan that addresses knowledge gaps, lack of competency and/or behaviors with specified activities, timelines and deadlines. (The plan will be submitted and presented to the UNLV SOM's Dean of Academic Affairs and Education for review, and subsequently referred to the Student Promotion and Conduct Committee, SPCC, for presentation by the Clerkship Director(s). Approval, and/or requested revisions will be determined by the SPCC given the complexity and suitability of the remediation plan.

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 Section 6: Professionalism in the UNLV SOM Student Handbook for guidelines pertaining specifically to dress and deportment.*)

University Expectations and Resources:

Academic Misconduct – Academic integrity is a legitimate concern for every member of the campus community; 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 Academic Misconduct Policy and are encouraged when faced with choices to always take the ethical path. Students enrolling in UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's function as an educational institution. An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another, from the Internet or any source, without proper citation of the sources. See the Student Academic Misconduct Policy (approved December 9, 2005) located at: <http://studentconduct.unlv.edu/misconduct/policy.html>.

Copyright – The University requires all members of the University Community to familiarize themselves 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 employee or student 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 information can be found at: <http://www.unlv.edu/provost/copyright>.

Disability Resource Center (DRC) – The UNLV Disability Resource Center (SSC-A 143, <http://drc.unlv.edu/>, 702-895-0866) provides resources for students with disabilities. If you feel that you have a disability, please make an appointment with UNLV SOM's Senior Associate Dean for Student Affairs, as well as a Disabilities Specialist at the DRC to discuss appropriate options.

If you are registered with the UNLV Disability Resource Center, please submit your Academic Accommodation Plan from the DRC to UNLV SOM's Office of Student Affairs to develop strategies for implementing an accommodations plan that meets both your needs and UNLV SOM requirements. Any information provided is private and confidential. To maintain confidentiality, please do not approach course chairs or instructors before or after class to discuss accommodation needs.

Religious Holidays Policy – Any student missing class quizzes, examinations, or any other class or lab work because of observance of religious holidays shall be given an opportunity during that semester to make up missed work. The make-up will apply to the religious holiday absence only. It shall be the responsibility of the student to notify the Senior Associate Dean for Student Affairs and the course chair or faculty preceptor no later than the end of the first two weeks of classes, January 31, of his or her intention to participate in religious holidays which do not fall on state holidays or periods of class recess. This policy shall not apply in the event that administering the test or examination at an alternate time would impose an undue hardship on the instructor or the university that could not have reasonably been avoided. For additional information, please visit: <http://catalog.unlv.edu/content.php?catoid=6&navoid=531>.

Incomplete Grades – Course or clerkship/elective faculty share responsibility with individual students to monitor their performance in the curriculum. The Student Progress Committee (SPC) follows student performance in the curriculum, and is responsible for approving all remediation plans once students have been assigned an insufficient grade, e.g. 'Incomplete' or 'Fail.' Remediation plans are developed by individual course directors, based upon individual student's identified academic and professional deficits, and tailored by both the course director and the SPC. The SPC determines deadlines for the adequate remediation of the course and provides final approval of the

remediation plan. Students have the option, upon request, to appear before the SPC when plans for remediation are being considered.

Please note: In Phase 3 of the curriculum, any remediation of elective or advanced clerkship deficits must be completed prior to April 1 to meet the School of Medicine's graduation requirements. Students are not permitted to remediate more than two (2) course grades of 'Incomplete' during a single academic year. Students who receive more than two incomplete grades must be reviewed by the SPC. *(Please refer to Section 7: Academic Policies in the UNLVSOM Student Handbook for guidelines pertaining specifically to academic progress and actions.)*

Tutoring & Academic Resources – The Academic Skills Team (AST) provides academic assistance for all UNLVSOM students taking UNLVSOM courses. Students are encouraged to stop by the AST to utilize a variety of academic services, including test-tasking skills and strategies, coping with test anxiety, and improving self-study skills in preparation for USMLE and board exams. The AST is located at: 2040 West Charleston Boulevard, 89102.

UNLV E-mail – By policy, faculty and staff should e-mail students' UNLV e-mail accounts only. All UNLV students receive a Rebelmail account after they have been admitted to the university. It is one of the primary ways students receive official university communication such as information about deadlines, major campus events, and announcements. Students' e-mail prefixes are listed on class rosters, and the suffix is: @unlv.nevada.edu.