

**MED 821: Analytics in Medicine 2 (AIM)**  
*Spring 2018*

Mondays – 8:00 to 10:00 a.m.  
Friday (1 Wednesday) – 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:**

The second course, of a six-block series, builds upon the concepts introduced in AIM1 and continues to develop students' skills in analyzing a variety of information sources, apply statistical principles and biomedical informatics knowledge to network data, and use healthcare analytics as a means to make informed decisions for the improvement of patient care, healthcare systems and processes. This longitudinal sequence of courses procures students' analytical techniques, including the critical acquisition and management of data from online databanks, and offers further 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.
- Evaluate the credibility and rigor of medical literature and apply evidence to patient care.
- Critically evaluate new knowledge and determine its relevance in clinical problems and challenges presented by patient cases.
- Balance evidence, clinical expertise, and patient preferences in medical decision-making.
- 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*. 5<sup>th</sup> ed. Wolters Kluwer | Lippincott, Williams & Wilkins.

- Hope, T. (2004). *Medical Ethics: A Very Short Introduction*. 1<sup>st</sup> ed. Oxford University Press.
- Jonsen, A. R., Siegler, M., & Winslade, W. J. (2015). *Clinical Ethics: A Practical Approach to Ethical Decisions in Clinical Medicine*. 8<sup>th</sup> ed. McGraw Hill Education | Lange.
- Lo, B. (2013). *Resolving Ethical Dilemmas: A Guide for Clinicians*. 5<sup>th</sup> ed. Wolters Kluwer | Lippincott, Williams & Wilkins.
- Riegelman, R. K. (2012). *Studying a Study and Testing a Test: Reading Evidence-based Health Research*. 6<sup>th</sup> ed. Lippincott, Williams & Wilkins.
- Veatch, R. M., Haddad, A. M., & English, D. C. (2014). *Case Studies in Biomedical Ethics. Decision-Making, Principles, and Cases*. 2<sup>nd</sup> ed. New York, NY: Oxford University Press.
- Weaver, A., & Goldberg, S. (2011). *Clinical Biostatistics and Epidemiology Made Ridiculously Simple*. 1<sup>st</sup> ed. MedMaster, Inc.

### Recommended

- Glaser, A. N. (2013). *High-Yield Biostatistics, Epidemiology, and Public Health*. 4<sup>th</sup> 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, January 8, 2018

*Topics include:*

- Biostats/Epi Module 6: Epidemiologic Study Design

*Assigned Readings & Review Materials:*

- Fletcher, R. H., & Fletcher, S. W. *Clinical Epidemiology: The Essentials*. 5<sup>th</sup> ed. Lippincott, Williams & Wilkins, pp. 61-76.

#### Week 2 – Tuesday, January 16, 2018

*Topics include:*

- Biostats/Epi Module 6: Epidemiologic Study Design

*Assigned Readings & Review Materials:*

- Weaver, A., & Goldberg, S. (2011). *Clinical Biostatistics and Epidemiology Made Ridiculously Simple*. 1<sup>st</sup> ed. MedMaster, Inc., pp. 21-25.

#### Week 3 – Friday, January 26, 2018

*Topics include:*

- Organ transplantation

*Assigned Readings & Review Materials:*

- Lo, B. (2013). *Resolving Ethical Dilemmas: A Guide for Clinicians*. 5<sup>th</sup> ed. Lippincott, Williams & Wilkins, pp. 295-303.

**Week 4 – Monday, January 29, 2018***Topics include:*

- Access to health care: resource allocation, health care disparities, and the health care system

*Assigned Readings & Review Materials:*

- Shaughnessy, A. F., Gupta, P. S., Erlich, D. R., & Slawson, D. C. (April 2012). Ability of an Information Mastery Curriculum to Improve Residents' Skills and Attitudes. *Family Medicine*, 44(4). Retrieval at: <http://medicine.tufts.edu/~media/TUSM/PDF/Family%20Medicine/Information%20Mastery%20Residency%20Curriculum%20Study.pdf>

**Week 5 – Friday, February 9, 2018***Topics include:*

- Biostats/Epi Module 7: Estimating Risk and Interpretation of Data from Epidemiologic Studies

*Assigned Readings & Review Materials:*

- Fletcher, R. H., & Fletcher, S. W. *Clinical Epidemiology: The Essentials*. 5<sup>th</sup> ed. Lippincott, Williams & Wilkins, pp. 80-90.

**Week 6 – Monday, February 12, 2018***Topics include:*

- Biostats/Epi Module 7: Estimating Risk and Interpretation of Data from Epidemiologic Studies

*Assigned Readings & Review Materials:*

- Fletcher, R. H., & Fletcher, S. W. *Clinical Epidemiology: The Essentials*. 5<sup>th</sup> ed. Lippincott, Williams & Wilkins, pp. 80-90.

**Week 7 – Friday, February 23, 2018***Topics include:*

- Strengths and weaknesses of systematic reviews and meta-analyses

*Assigned Readings & Review Materials:*

- TBD

**Week 8 – Monday, February 26, 2018***Topics include:*

- Maternal-fetal medicine, including reproductive technologies and termination of pregnancy

*Assigned Readings & Review Materials:*

- Lo, B. (2013). *Resolving Ethical Dilemmas: A Guide for Clinicians*. 5<sup>th</sup> ed. Lippincott, Williams & Wilkins, pp. 216-232.

Week 9 – Monday, March 12, 2018

*Topics include:*

- Biostats/Epi Module 7: Estimating Risk and Interpretation of Data from Epidemiologic Studies

*Assigned Readings & Review Materials:*

- Fletcher, R. H., & Fletcher, S. W. *Clinical Epidemiology: The Essentials*. 5<sup>th</sup> ed. Lippincott, Williams & Wilkins, pp. 80-90.

Week 10 – Monday, March 19, 2018

*Topics include:*

- Lifestyle choices and patient complicity

*Assigned Readings & Review Materials:*

- Fletcher, R. H., & Fletcher, S. W. *Clinical Epidemiology: The Essentials*. 5<sup>th</sup> ed. Lippincott, Williams & Wilkins, pp. 93-107.

Week 11 – Wednesday, March 28, 2018

*Topics include:*

- Evidence-based medicine in understanding diagnostic pitfalls

*Assigned Readings & Review Materials:*

- TBD

Week 12 – Monday, April 2, 2018

*Topics include:*

- Biostats/Epi Module 7: Estimating Risk and Interpretation of Data from Epidemiologic Studies

*Assigned Readings & Review Materials:*

- Fletcher, R. H., & Fletcher, S. W. *Clinical Epidemiology: The Essentials*. 5<sup>th</sup> ed. Lippincott, Williams & Wilkins, pp. 80-90.

Week 13 – Friday, April 13, 2018

*Topics include:*

- Using EVB to understand research related to therapies

*Assigned Readings & Review Materials:*

- TBD

Week 14 – Monday, April 16, 2018

*Topics include:*

- Protection of patient privacy and confidentiality; withholding information; patient secrets

*Assigned Readings & Review Materials:*

- Lo, B. (2013). *Resolving Ethical Dilemmas: A Guide for Clinicians*. 5<sup>th</sup> ed. Lippincott, Williams & Wilkins, pp. 200-201.

Week 15 – Friday, April 27, 2018

*Topics include:*

- Biostats/Epi Module 8: Applications to Clinical Medicine

*Assigned Readings & Review Materials:*

- TBD

Week 16 – Monday, April 30, 2018

*Topics include:*

- Cross-cultural communication, including cultural competency and humility

*Assigned Readings & Review Materials:*

- Lo, B. (2013). *Resolving Ethical Dilemmas: A Guide for Clinicians*. 5<sup>th</sup> ed. Lippincott, Williams & Wilkins, pp. 323-330.

Week 17 – Monday, May 14, 2018

*Topics include:*

- Evidence-based medicine

Week 18 – Monday, May 21, 2018

*Topics include:*

- Biostats/Epi Module 8: Applications to Clinical Medicine

*Assigned Readings & Review Materials:*

- TBD

Week 19 – Friday, June 1, 2018

*Topics include:*

- Research with human subjects, including institutional review boards

*Assigned Readings & Review Materials:*

- Lo, B. (2013). *Resolving Ethical Dilemmas: A Guide for Clinicians*. 5<sup>th</sup> ed. Lippincott, Williams & Wilkins.

**Week 20 – Monday, June 4, 2018**

*Topics include:*

- Evidence-based medicine

**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 skill 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 (P/F) 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.