

ANESTHESIA (ANES)

ANES 199. Undergraduate Research. 1-18 Unit.

Allows for qualified students to undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

ANES 200SI. Medicine in Movies: The Illness Experience. 1 Unit.

This dinner seminar will introduce students to films, documentaries, and shorts with strong bioethics themes. Viewings will encourage students to examine their own pre-conceptions and evaluate topics that elucidate illness as subjectively experienced by providers, patients and their families. This type of close viewing will not only allow participants to better answer the existential questions that illness provokes - what does it mean to experience suffering? to heal as well as treat? to contemplate morality? - but also encourages these future providers to incorporate effective communication techniques into their practices.

ANES 202. Anesthesiology and Pathophysiologic Implications for the Perioperative Patient. 1 Unit.

Provides participants a patient-care-related review of organ physiology and an in-depth discussion of the pathophysiologic mechanisms at work in the perioperative period that influence outcome in the surgical patient and their management. Organ systems addressed include cardiovascular, respiratory, renal, hematologic, and cerebral. Subject matter including airway management, ventilatory support, transfusion practices and the acute management of shock provides useful information for all students currently or in the future involved in acute care of the critically ill patient. Additional topics specific to anesthesia, including anesthetic pharmacology. Lecturers are Stanford anesthesia faculty and visiting guest faculty. Prerequisite: completion of first year curriculum is strongly encouraged.

ANES 203. Evaluating New Health Care Ventures: An Everyone Included Approach. 1-2 Unit.

With ever-growing innovation in healthcare, how do investors evaluate and fund new ventures in one of the most diverse, operationally complex and regulated industries? Health care investment is unique in its dynamic evolution across decades of scientific, business and regulatory development. How might patients, providers, technologists, and investors; which we define as our Stanford Medicine X Everyone Included team model help identify the best opportunities for the health care investor? This course focuses on how health care investors think and make strategic decisions, incorporating both changing financial metrics and qualitative investment theses. This colloquium will feature guest speakers including senior investment professionals, visionary business leaders and passionate new voices such as patient experts that have traditionally been absent from investment decisions. Students enrolling for 2 units prepare a final paper.

ANES 204. Medical Education in the New Millennium: Innovation and Digital Disruption. 1-2 Unit.

Focus is on the unique learning preferences and needs of today's Millennial medical learners (medical students, residents, fellows, practicing physicians, nurses, pharmacists, allied medical professionals) and the role thoughtful learning design and use of technology can play in meeting their unique needs. Grounded in learning theory, colloquium course will provide accessible information for learners at all levels to understand learning design and use of educational technologies in the new Millennium. Features speakers from wide range of medical education-related fields, including experts in instructional design, learning theory and medical education technologies. Students enrolling for 2 units prepare a final paper.

ANES 205. Engage and Empower Me: Myths and Truths of Designing for Patient Behavior. 2-3 Units.

Focus is on patient stories and real-life experiences of patient engagement, the neuroscience of behavior change and the principles of patient engagement. Together with patients, students participate in design sessions at Stanford's simulation center to create and test ways to modify behavior through design. Topics include the neuroscience behind motivating individuals into healthy behaviors, including patients in the care design process, how health educators, designers, techies and investors can improve success. Students enrolling for 3 units complete a class project.

ANES 206. 3D Printing and Biofabrication. 1-2 Unit.

Focus is on medical possibilities of 3D printing. Additive manufacturing, often termed 3D printing, uses automated techniques to produce physical objects using layer-by-layer construction methods. Biofabrication applies these same techniques to print physical objects from biological cells. Such techniques hold great promise to transform health and medicine to deliver more personalized care solutions for patients. This colloquium course explores the future of 3D printing and its impact on health and medicine. See <http://medicinex.stanford.edu/anes206/>. Students enrolling for 2 units prepare a final paper.

ANES 207. Medical Acupuncture. 2 Units.

Acupuncture is part of a comprehensive system of traditional Chinese Medicine developed over the past two millennia. This course reviews the history and theoretical basis of acupuncture for the treatment of various diseases as well as for the alleviation of pain. Issues related to the incorporation of acupuncture into the current health care system and the efficacy of acupuncture in treating various diseases are addressed. Includes practical, hands-on sections.

ANES 208A. Data Science for Digital Health and Precision Medicine. 1-2 Unit.

How will digital health, low-cost patient-generated and genomic data enable precision medicine to transform health care? This Everyone Included course from Stanford Medicine X and SHC Clinical Inference will provide an overview of data science principles and showcase real world solutions being created to advance precision medicine through implementation of digital health tools, machine learning and artificial intelligence approaches. This class will feature thought leaders and luminaries who are patients, technologists, providers, researchers and leading innovators from academia and industry. This course is open to undergraduate and graduate students. Lunch will be provided.

ANES 211SI. Themes in the History of Science and Medicine. 1 Unit.

What exactly is a diagnosis, and what is the history of that term? Why do Institutional Review Boards exist, and what atrocities in human medical experimentation occurred to prompt their creation? What is the role of narrative, social construction, and storytelling in medicine? This course will shed light on the ways physicians and scholars grapple with these and other important questions through a series of lectures from historians and philosophers of science, as well as bioethicists and scholars of narrative medicine. These perspectives on how scientific knowledge emerges and changes over time offer invaluable insights and frameworks for anyone aspiring to practice medicine or contribute to the collective body of scientific knowledge.

ANES 212. Machine Learning for Healthcare Quality: Precision Medicine AI Design Lab. 3 Units.

This course provides a hands-on introduction to building machine learning systems for healthcare quality analysis and improvement. We explore several unconditional topics, including data representation, data manipulation, data analysis and data visualization. Students will be introduced to these topics during lectures. The course also provides students with a significant opportunity to investigate the application of these ideas to real-world clinical quality improvement challenges. Working with clinical mentors from the Stanford University School of Medicine students will be expected to supplement machine learning theory with a quarter-long project targeting representative clinical quality improvement challenges. Students will be encouraged to think creatively about traditionally hard quality problems and requires to perform group research exposing them to designing practical machine learning systems for healthcare.

ANES 215. Journal Club for Neuroscience, Behavior and Cognition Scholarly Concentration. 1 Unit.

Review of current literature in both basic and clinical neuroscience in a seminar format consisting of both faculty and student presentations.

ANES 280. Early Clinical Experience in Anesthesia. 1-2 Unit.

Provides an observational experience as determined by the instructor and student. Prerequisite: consent of instructor.

ANES 299. Directed Reading in Anesthesiology. 1-18 Unit.

Prerequisite: consent of instructor.

ANES 306A. Critical Care Core Clerkship. 6 Units.

Provides experience managing adult patients in a critical care unit. Students learn how to optimize care for the acutely ill patient and the multidisciplinary approach to complex patients. Teaching emphasizes the review of basic organ physiology, the ability to determine the pathophysiologic mechanisms involved in critical illness, and the formulation of a physiologic based treatment plan. Students gain experience with the implementation of monitoring and therapeutic devices used in the intensive care units and begin to become adept at the evaluation, stabilization and management of the most critically ill patients expected to be encountered in today's acute care hospitals. Ward rounds, bedside evaluation and treatment, and individual interactions with attending, fellows and residents are part of the educational process. Assignments will be made either to the Stanford Medical-Surgical ICU Service, Stanford Surgical ICU Service, or the Palo Alto Veterans Administration Hospital Medical-Surgical ICU Service. Student preferences for a particular adult ICU site will be given consideration but cannot be guaranteed. Absences during the 306A clerkship: Students must contact the 306A Clerkship Director to obtain explicit advance approval for any planned absence from the clerkship. Unanticipated absences for illness or emergency must be communicated to the Clerkship Director as promptly as possible. Students with more than 2 days of unexcused absences (i.e., 3-5 days) will be required to make up one week at a later date. If the absence is longer than this, the time would be proportionately increased. Taking extra night or weekend call will not be considered a suitable substitute for missing weekdays during the clerkship. Arrangements to make up missed time must be made by the student with the 306A Clerkship Director. Students who anticipate missing a week (i.e., 5 weekdays) or more of the 306A Clerkship are encouraged to reschedule this clerkship during a different period. Students who miss either of the day-long ICU Medical Student Simulator courses will need to make these experiences up at a later date in order to receive a passing grade for this clerkship. Prerequisites: Adult: Med 300A and Surg 300A. Periods Available: P1-12, full-time for 4 weeks. 7 students per period for adult. Reporting Instructions: TBA. Units: 6 Drop Code: T Call Code: 4, every 4th night call, including weekends at all sites. Director: Erin Hennessey, M.D. & Juliana Barr, M.D. (650-493-5000 X64452), PAVAMC (112A), Building 101, Room A-321. Other Faculty: Paul Maggio, M.D. (Stanford Surgical ICU Service), Juli Barr, M.D. (PAVAMC Medical-Surgical ICU Service), Erin Hennessey, M.D. (Stanford Medical-Surgical ICU Service). Coordinator: Bernadette F. Carvalho (berniec@stanford.edu). nrniec@stanford.edu. Closed to Visitors.

ANES 370. Medical Scholars Research. 4-18 Units.

Provides an opportunity for student and faculty interaction, as well as academic credit and financial support, to medical students who undertake original research. Enrollment is limited to students with approved projects.

ANES 399. Graduate Research. 1-18 Unit.

Students undertake investigations sponsored by individual faculty members. Problems related to metabolism, toxicity, and mechanisms of anesthesia; pharmacologic studies involving pain management; the genetic and molecular basis of hemodynamic insufficiency. Animal studies may be included. Interested students should contact Drs. Trudell, MacIver, Clark, Giffard, Patterson, Angelotti, Drover, Chu, or Angst.

ANES 70Q. Critical Illness: Patients, Physicians, and Society. 3 Units.

Examines the various factors involved in shaping the critical care illness experience for three groups of people: the clinicians, the patients, and patients' families. Medical issues, economic forces and cost concerns, cultural biases, and communication errors can all influence one's perception. Helps students understand the arc of critical illness, and how various factors contribute to the interactions between those various groups. Includes an immersion experience (students are expected to round with clinicians in the ICU and to attend Schwartz rounds, a debriefing meeting about difficult emotional situation) and a mentoring experience (with critical care fellows), in addition to routine class work.

ANES 72Q. The Art of Medical Diagnosis. 3 Units.

The Art of Medical Diagnosis: Enhancing Observational Skills through the Study of Art is an interactive, multidisciplinary undergraduate course that explores various ways in which studying art increases critical observational skills vital for aspiring health care providers. Students will be introduced to the concept of 'Visual Thinking Strategies' through classroom, art creation, and museum based activities. Students will apply these skills to both works of art and medical cases. Significant focus will be on engaging in group discussions where they will collaboratively use visual evidence to generate and defend hypothesis. Drawing and sketching from life will play a critical role in honing observational skills through weekly assignments, workshops, and a final project. The interactive nature of this course pivots students away from a typical lecture based course to a self-directed learning experience.