ANES 199. Undergraduate Research. 1-18 Unit.
Allows for qualified students to undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

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.

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 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 Millenium: Innovation and Digital Disruption. 1-2 Unit.
Focus is on practical 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 Millenium. Features speakers from wide arrange 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://medinex.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.

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

ANES 243. Introduction to Integrative Medicine. 1 Unit.
Presentations by local, national, and international experts in various modalities of integrative medicine commonly used by patients in the US, including mind-body medicine (biofeedback, clinical hypnosis, meditation, yoga); traditional whole systems of medicine (traditional Chinese medicine, Ayurveda); biological therapies (botanical medicine, supplements, herbal medicine); manipulative therapies (chiropractic, massage); and acupuncture. Lectures focus on evidence supporting the potential value of various treatment modalities and explanations of both the traditional and proposed scientific mechanisms of actions. Most classes include an experiential portion.

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 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: Enhancing Observational Skills through the Study of Art. 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.

ANES 80Q. Researching Strange Things. 3 Units.
Devising and implementing strong scientific research designs to better understand complex and mysterious phenomena. Parapsychology topics include remote viewing, telekinesis, precognition, telepathic communication, and other forms of extrasensory perception. History of parapsychology research, including how science has debunked popular claims of supernatural feats; therapeutic approaches still used today but often discredited (such as homeopathy and crystal healing), as well as commonly-supported but controversial techniques such as hypnosis, acupuncture, and naturopathy. Emphasis on distinguishing between scientific and pseudoscientific research methods and how to properly design experiments regardless of the subject matter. Course format includes lectures, discussion, group projects, and research experimentation.