**SURGERY (SURG)**

**SURG 100. Virtual and Real: Clinical Anatomy and Sports Injuries. 3 Units.**
This undergraduate course is designed to teach human anatomy through radiographs, CT scans, MRIs and cadaver material with the emphasis on the understanding of common clinical conditions and sports injuries. To aid students in developing their image interpretive skills, additional resources such as virtual interactive scans, the 3D anatomy table, and interactive digital applications will be utilized. This course divides the anatomy of the body into five areas; each area will be presented in a two-week block. In the first week of each block, students will develop an understanding of human anatomy through the identification of relevant structures on prosecutions (cadaver material), and in the second week, students will utilize this knowledge in the interpretation of radiographs, CT scans and MRIs. The anatomy will be taught in relation to common clinical conditions and sports injuries; and, student projects will focus on the understanding of the anatomy and treatment of these conditions and injuries.

**SURG 101. Regional Study of Human Structure. 5 Units.**
Enrollment limited to seniors and graduate students. Comprises two parts, lecture and lab, both of which are required. Lectures in regional anatomy and dissection of the human cadaver; the anatomy of the trunk and limbs through the dissection process, excluding the head and neck.

**SURG 101A. Head and Neck Anatomy. 3 Units.**
Introduces students to human anatomy of the head and neck through a dissection based course. Students use proper anatomical terminology to describe structures and their relationships. Emphasis on typical anatomy as seen in healthy individuals, with some examples of anatomical variation introduced through dissection and clinical cases. Ideal for senior undergraduate students who have completed SURG 101 or equivalent, are familiar with basic anatomy, and have some dissection experience. Prerequisites: Surgery 101 or equivalent.

**SURG 150. Principles and Practice of International Humanitarian Surgery. 4 Units.**
Open to undergraduate students. Focus is on understanding the theory behind medical humanitarianism, the growing role of surgery in international health, and the clinical skills necessary for students to partake in global medical service. Guest speakers include world-renowned physicians and public health workers. Students work in groups to complete a substantial final project on surgical program development.

Same as: SURG 250

**SURG 199. Undergraduate Research. 1-18 Unit.**
Investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

**SURG 203A. Clinical Anatomy. 11 Units.**
Introduction to human structure and function presented from a clinical perspective. Includes clinical scenarios, frequently used medical imaging techniques, and interventional procedures to illustrate the underlying anatomy. Students are required to attend lectures and engage in dissection of the human body in the anatomy laboratory. Surgery 203A presents structures of the thorax, abdomen, pelvis, back, upper and lower limbs.

**SURG 203B. Clinical Anatomy. 4 Units.**
Continues the introduction to human structure and function from a clinical perspective. Includes clinical scenarios, frequently used medical imaging techniques, and interventional procedures to illustrate the underlying anatomy. Students are required to attend lectures and engage in dissection of the human body in the anatomy laboratory. Surgery 203B presents structures of the head and neck.

**SURG 204. Introduction to Surgery. 1 Unit.**
Designed to give pre-clinical MD students a broad overview of all the surgical specialties. Lectures by leading surgeons from General Surgery, Plastic Surgery, Neurosurgery, Orthopaedic Surgery, Head and Neck Surgery, Transplantation Surgery and Cardiac Surgery highlight the array of diseases and operations performed in their disciplines. In addition, each lecture gives students a "roadmap" as to how to enter that discipline.

**SURG 205. Technical Training and Preparation for the Surgical Environment. 1 Unit.**
This course is designed for preclinical medical students interested in acquiring the technical skills and a clinical orientation necessary to learn and participate in the surgical environment. Additionally, the course will introduce students to the profession of surgery, with opportunities for surgical faculty mentorship. Scrub training starts the course to facilitate the learning of sterile technique required prior to participation in the operating room. Students will learn techniques in preparing for an operative case with a resident and attending surgeon. Technical training will include basic knot tying and suturing workshops. Students will employ these techniques in operative cases through simulation. The class will require a mandatory operative shadowing experience with an attending surgeon outside of normal class hours. Preference is given to second year students.

**SURG 208. Plastic Surgery Tutorial. 2 Units.**
Diagnosis, theory, and practice of plastic and reconstructive surgery. Limited to two students per faculty member.

**SURG 209. Plastic Surgery. 1-18 Unit.**
Students participate in plastic and reconstructive surgery as functioning members of the clinical team. Students are exposed to operative surgery, emergency and trauma care, evaluation of operative candidates in the outpatient setting, and also attend teaching conferences. Limited to four students. Prerequisite: completion of first year or clinical experience.

**SURG 214. Medical Etymology. 1 Unit.**
A survey of medical etymology and terminology that parallels preclinical medical education. Topics focus on Greek and Latin roots and their appearances in the medical lexicon.

**SURG 230. Obesity in America. 1 Unit.**
Prevalence and effects of the obesity epidemic in America and the growing prevalence of associated comorbidities such as diabetes, hypertension, hyperlipidemia, sleep apnea, and joint problems. Risk factors, multi-disciplinary treatment options, the role of food in society, patients' perspectives, and current research in the field.

**SURG 231. Healthcare in Haiti and other Resource Poor Countries. 1 Unit.**
Originally developed to highlight healthcare in extreme poverty in Haiti, related lectures have been added covering healthcare in resource poor environments with the objective to introduce students to the complexity and unique problems of working in the Third World's healthcare morass.

**SURG 232. Social Emergency Medicine and Service Learning. 2-3 Units.**
Focus on understanding the social determinants of health and exploring the relationship between emergency medicine and public health affecting the Emergency Department patient population by: 1) Discussion and critique of relevant literature; 2) Learning about community resources for patient's social needs; 3) Shadowing ED physicians. Topics include how public health initiatives can improve access to hospital and community resources, and how patients receive care in a busy, fast-paced environment. 2 Units. Service learning component (Additional 1 Unit of Credit): Requires prerequisite of Med 157 Community Health Course, a 3-quarter commitment, personal statement and faculty approval. Students conduct screening and intervention for ED patients; Service Learning option requires prerequisite of Med 157 Community Health course, and enrolling for 3 units.
SURG 241. Portraiture and Facial Anatomy for Artists. 4 Units.
Focus is on the art of portraiture and underlying structures of the face, fundamental anatomical elements such as the skull and muscles of facial expressions, and the intersections between human anatomy and art. Studio sessions incorporate plastic models, dry bones, cadaveric specimens, and live models. Encourages use of proper anatomical terminology for describing structures and their relationships.
Same as: ARTSTUDI 139

SURG 242. Art and Anatomy Studio. 1 Unit.
Lectures highlight the intersections and influences between human anatomy and art. Studio sessions provide an opportunity for students to immerse in anatomically inspired studio projects. Drawing, mixed media, and some painting mediums will be used during the studio sessions. Plastic models, dry bones, cadaveric specimens, and live models will be used for the studio sessions. Class time includes art instruction, creation and feedback. May be repeated for credit. Honing individual style is encouraged; both beginning and advanced students are welcome. Previous coursework in anatomy is recommended, but not required.
Same as: ARTSTUDI 243

SURG 250. Principles and Practice of International Humanitarian Surgery. 4 Units.
Open to undergraduate students. Focus is on understanding the theory behind medical humanitarianism, the growing role of surgery in international health, and the clinical skills necessary for students to partake in global medical service. Guest speakers include world-renowned physicians and public health workers. Students work in groups to complete a substantial final project on surgical program development.
Same as: SURG 150

SURG 251A. Imaging Anatomy. 1 Unit.
Accompanies existing clinical anatomy course for first year medical students (SURG 203A). Sessions focus on the anatomical region being taught and dissected during the same week in SURG 203A. Students revisit anatomy using a variety of basic and advanced imaging modalities. Emphasis on correlating imaging to dissection, studying anatomical variations, discussing clinical vignettes. Enrollment limited to MD students.

SURG 251B. Imaging Anatomy (Head & Neck) II. 1 Unit.
Accompanies existing clinical anatomy course for first year medical students (SURG 203B) concentrating on the head and neck region. Sessions focus on the anatomical region being taught and dissected during the same week in SURG 203B. Students revisit anatomy using a variety of basic and advanced imaging modalities. Emphasis on correlating imaging to dissection, studying anatomical variations, discussing clinical vignettes. Enrollment limited to MD students.

SURG 252. Bedside Anatomy. 1 Unit.
Provides an opportunity to revisit anatomy in a clinical context. Using case discussions, clinical vignettes, radiological imaging, and hands-on exercises, students are challenged to apply their knowledge of anatomy to explain common diagnostic maneuvers and interventional procedures performed at the bedside or in the outpatient setting. Emphasis will be on anatomical considerations in successfully performing these procedures and avoiding errors that may arise due to anatomical changes, oddities, or variations.

SURG 253. Topics in Simulation of Human Physiology & Anatomical Systems. 1 Unit.
Biweekly interdisciplinary lecture series on the development of computational tools for modeling and simulation of human physiological and anatomical systems. Lectures by instructors and guest speakers on topics such as surgical simulation, anatomical & surgical modeling, neurological Systems, and biomedical models of human movement. Group discussions, team based assignments, and project work. Prerequisite: Medical students, residents or fellows from school of medicine, and computationally oriented students with a strong interest to explore computational and mathematical methods related to the health sciences.
Same as: CME 520

SURG 254. Operative Anatomy and Techniques. 1 Unit.
For preclinical students; provides a background in and integrates knowledge of surgical anatomy and therapy. Surgical or operative anatomy differs from gross anatomy in that the area exposed during surgery may be limited, the dissection may require exposing other seemingly unrelated anatomical structures with unique landmarks, and the procedure may require unusual technical facility. Provides an opportunity for students to understand the goals of representative surgical procedures (translating pathophysiology to surgical decision making to actual incision). Students learn surgical skills and perform the dissection of a number of commonly performed operations in the bio-skills laboratory. Emphasizes hands-on participation in surgical procedures in the laboratory and is taught by attending physicians in general, cardiothoracic, vascular, plastic, head and neck, urologic, and orthopedic surgery.

SURG 255. Quality & Safety in U.S. Healthcare. 3 Units.
The course will provide an in-depth examination of the quality & patient safety movement in the US healthcare system, the array of quality measurement techniques and issues, and perspectives of quality and safety improvement efforts under the current policy landscape.
Same as: HRP 254

SURG 256. Clinical Anatomy and Surgical Education Series. 2 Units.
Intended for first-year MD students. Builds on prior experience in the first-year medical curriculum consisting of the required Clinical Anatomy and the elective Operative Anatomy courses. Focuses on case-based didactic sessions for teaching the approach to a variety of surgical cases and their management. Students perform simulated cadaveric surgical procedures using standard operative instruments and techniques based on clinical case presentations and analysis. Covers hand surgery, vascular surgery, minimally invasive surgery, ear surgery and eye surgery specialties.
Same as: CASES

SURG 271. Anatomy of Medical Mysteries. 1 Unit.
This elective course for medical students explores areas of health and disease that are poorly understood presently. A variety of topics are covered such as placebo effect, techniques of meditation, presence of extra-sensory perception, and near death experiences. Scientific evidence for and against these topics presented and discussed. Current literature is evaluated and reading assignments are included. Prerequisites: SURG 203A and SURG 203B.

SURG 281A. Musculoskeletal Disorders. 1 Unit.
Focuses on in-depth understanding of human musculoskeletal anatomy, biomechanics, and disease processes. Emphasis will be on the dynamic nature of musculoskeletal tissue with its complex biochemistry and cellular activity. Topics include fundamentals of musculoskeletal development, growth, repair and vascularization. In addition, students receive an introduction to musculoskeletal imaging, forensics, pathology, and the clinical principals of fixation and treatment protocols.
SURG 281B. Musculoskeletal Disorders II. 1 Unit.
Continuation of in-depth understanding of human musculoskeletal anatomy, biomechanics, and disease processes. Emphasis will be on the dynamic nature of musculoskeletal tissue with its complex biochemistry and cellular activity. Topics include fundamentals of musculoskeletal development, growth, repair and vascularization. In addition, students receive an introduction to musculoskeletal imaging, forensics, pathology, and the clinical principals of fixation and treatment protocols.

SURG 290. 3D Biomedical Visualization: Techniques, Methods, and Applications. 1 Unit.
Explores the power of digital anatomy. How 3D anatomical data sets like CT and MRI scans are created from human specimens; how they are processed, analyzed, and rendered. Focus on how digital content is best used for learning anatomy, patient education, and clinical practice.

Carried out under the supervision of one or more members of the staff. Prerequisite: consent of instructor.

SURG 298. Procedure-Based Specialty Capstone Course. 1 Unit.
Designed for graduating medical students entering a procedure-based internship or residency (e.g. general surgery, surgical sub-specialties, obstetrics-gynecology, anesthesia, and emergency medicine). Prepares students with practical, high-yield clinical and procedural skills. Clinical skills include fielding common calls regarding surgical patients, obtaining informed consent, completing operative dictations, discharging patients, writing prescriptions, running trauma surveys, and interpreting surgically relevant radiology studies. The hands-on portion of the course covers basic open and laparoscopic surgical skills utilizing bench models, laparoscopic box trainers, and full cadaveric simulations. Prerequisite: graduating medical student. For those students who are not enrolled for the quarter in which this Capstone Course is offered, please contact Karen Cockerill at misskay@stanford.edu to register.

SURG 299. Directed Reading in Surgery. 1-18 Unit.
Consists of studies in progress, including cardiovascular and circulatory problems; gastric physiology; hemostatic disorders; homotransplantation; liver disorders; orthopedic pathology; bone growth; radiation injury; immunology, bacteriology, pathology, and physiology of the eye; physiological optics; comparative ophthalmology; neurophysiology of hearing; spatial orientation and disorientation; nasal function; and psychophysics of sensation. Prerequisite: consent of instructor.

SURG 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.

SURG 399. Graduate Research. 1-18 Unit.
Students undertake investigations sponsored by individual faculty members.

SURG 60Q. Virtual to Real: Fundamentals of Human Anatomy. 3 Units.
Advances in imaging technologies allow us to interact with anatomical information in ways that have not been previously possible. This course is designed to teach human anatomy through the interpretation of radiographs and CT scans, and the correlation of these images to real anatomy. Utilizes resources such as virtual interactive scans via the virtual anatomy table and interactive digital applications to aid students in developing their image interpretive skills. First six weeks focus on image interpretation and the remaining four weeks on the utilization of this knowledge in the understanding and identification of human anatomy on human prosecutions (cadaver material).

SURG 68Q. Current Concepts in Transplantation. 3 Units.
Preference to sophomores. Biological aspects of cell and organ transplantation, including issues that arise in the popular media. Diseases for which transplantation is a treatment, the state of the art in human transplantation, transplantation of animal tissue into humans (xenotransplantation), development of new tissue and organs in the laboratory (tissue engineering and cloning), and development of drugs and biological strategies to promote long-term survival of the tissue or organ (tolerance). How to write a scientific abstract, critique scientific literature, and research and present topics in contemporary transplantation.

SURG 70Q. Surgical Anatomy of the Hand: From Rodin to Reconstruction. 2 Units.
The surgical anatomy of the hand is extremely complex in terms of structure and function. Exploration of the anatomy of the hand in different contexts: its representation in art forms, the historical development of the study of hand anatomy, current operative techniques for reconstruction, advances in tissue engineering, and the future of hand transplantation.

SURG 71Q. Procedural Anatomy. 3 Units.
Study of human anatomy through the understanding of eight to ten common conditions, such as diseases, injuries, and genetic defects, that affect the head and neck region and the associated surgical procedures to treat these conditions. Students are exposed to the modalities involved in confirming the diagnosis of these common conditions, the benefits and risks of the procedures to treat these conditions, and the anatomy affected by the conditions and procedures. The laboratory component exposes students to surgical procedures on cadaver material and the learning of anatomy via 3D digital images, the 3D dissection table and models. The focus is on learning clinically relevant anatomy of the head and neck region.

SURG 72Q. Anatomy in Society. 3 Units.
Preference to sophomores. The influence of human anatomy on the design of commercial products and performance (such as headphone and ear bud design, automobile interior design, table music performance and handicap devices design). How societal advancements have evolved to increasingly accommodate human form and function. Guest speakers are experts in the fields of audiology, design and music. Exposure to human anatomy via cadaver material, 3D digital images, the 3D dissection table and models.