Anatomical Principles of Surgery (ANAT 510)
Syllabus, Summer 2026

Generally, Mon. 9:00 am - 1:00 pm (lecture + lab; see schedule for Wed. exceptions)
Surgical Training and Research (STAR) Lab (Wks. 1-8) and Robbins E301 (Week 9)

Course Director

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Other Faculty

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Course description

In this team-taught course, students learn how anatomic relationships and considerations affect surgical decision making. It meets once per week during the eight-week summer session, with each week focusing on a different surgical specialty, including general, vascular, neurological, urological, orthopedic, and head and neck (otolaryngology). Students build on their pre-existing knowledge of human anatomy and learn through a combination of framing lectures and cadaveric surgical simulations directed by clinical surgical faculty. It is a 3-credit course.

Class Format

Classes will take place in the Surgical Training and Research (STAR) Lab, a core facility located in the Animal Resource Center in the basement of the Biomedical Research Building. Special key card access is required to enter (and exit!) the STAR facility, and this will be requested for all students registered for the course. The STAR lab will supply surgical gowns and other PPE in addition to scalpels and other surgical tools. You must wear scrubs and suitable shoes to lab (additional details below).

On the first day of class, you should meet Dr. Croft at the BRB guard desk. From there, we will go to the STAR lab and briefly review the syllabus. This will be followed by a lab activity facilitated by General Surgery residents that will cover sterility and aseptic technique, suturing, and knot-tying, all skills essential for surgery that will be used in subsequent labs. We will also review surgical tools. Before or after this lab session, the director of the STAR lab (Dr. Steve Schomisch), will give an orientation to the STAR facility.

On “typical” class days (weeks 2-8), lectures will take place in the STAR lab conference room and generally last around an hour. This will be followed by a three-hour lab, during which students will work in groups of four on “soft-embalmed” cadavers to perform 2-3 common surgical procedures. Students should arrive to class in scrubs.

The final day of class will consist of final presentations and will take place in E301.

Prerequisites and intended student population

This course is intended for MS and MD students in the School of Medicine. Course director permission is required to enroll. In addition, a student must have experience with cadaveric human anatomy through one of the following courses:

- ANAT 401, Multimodal Human Anatomy
- ANAT 411, Gross Anatomy
- Block 7 Structure (WR2/MD curriculum)

Enrollment is limited due to constraints of the STAR lab, and priority will be given to students who have taken ANAT 411.

Learning Resources

Pre-readings will be available on Canvas. A digital version of the 9th Edition of *Moore's Clinically Oriented Anatomy* can be accessed via this link (CWRU single sign-in required). You can also access it via the CWRU library catalog.

Learning Objectives

Upon completing this course, students will be able to:

- Demonstrate basic surgical technical skills including maintaining sterility, suturing, knot tying, instrument handling, and tissue dissection
- Demonstrate the steps of each of the basic surgical procedures addressed in this course (detailed below)
- Explain at least two common pathological conditions commonly treated by each surgical procedure discussed in this course
- Describe the key anatomic structures, relationships, and principles that determine the specific design and execution of each surgical procedure in this course
- Compare and contrast the approaches and anatomical realms of the seven surgical specialties included in the course

Specific learning objectives for each lab will be listed on Canvas.

Course Schedule

Week	Date	Topic	Surgeon	Procedures
1	June 1	Sterility, Skills, Tools	Abul-Khoudoud	• Sterility • Suturing and knot-tying • Surgical tools
2	June 8	General Surgery	Donatelli-Seyler	• Open cholecystectomy • Anastomosis of colon versus creation of end colostomy • Open appendectomy
3	June 15	Otolaryngology	Shah	• Thyroidectomy • Submandibular gland excision
4	June 22	Neurosurgery - Cranium	Tomei	• Pterional craniotomy and anterior skull base exposure • Suboccipital craniotomy and 4th ventricle access

5	July 1 ***Wed***	Orthopedic Surgery	Beucler	• Carpal tunnel release • Trigger thumb procedure • Volar approach to distal radius • Dorsal approach to distal radius
6	July 8 ***Wed***	Neurosurgery - Spine	Bazarek	• Posterior lumbar decompression • Lateral approaches to thoracolumbar spine • Anterior approaches to lumbar spine
7	July 13	Vascular Surgery	Budik, Hlavaty	• Carotid endarterectomy • Common femoral and profunda endarterectomy
8	July 20	Urology	Shoag	• Radical cystectomy • Pelvic lymph node dissection • Ileal conduit
9	July 27	Final Presentations	n/a	*Class in E301*

Attendance, Assessment, and Grading

Since this is a lab-based course that only meets nine times during the summer, attendance is mandatory. You should not miss any classes unless absolutely necessary. If you miss more than one class, your final grade will drop by one letter grade (e.g., from an A to a B or from a B to a C). If you cannot attend at least 8/9 sessions, you should not enroll in the course.

Grades will generally be assigned as follows: A= 90-100%; B= 80-89%; C= 70-79%; D= 60-69%; F= 59% and below. The passing score for a medical student is 80%. The final grade will be calculated based on the following components:

- Weekly quizzes (40% of final grade):
  - During weeks 2-8 of the course, you will take a quiz covering the week's class (i.e. there will be seven quizzes in total). It will focus on the material presented in the pre-lab lecture and the procedures done in lab and cover important concepts, relationships, and clinical aspects. The readings are designed to complement information provided in class but may include additional information; you will not be asked about procedures that are not covered in class.
  - Quizzes will be open the following day from 7 am to 7 pm. If you know you will not be available to take the quiz, contact Dr. Croft to arrange taking it early. If you miss the quiz, you may take it late, but 2 points will be deducted from your score.
  - Quizzes will be administered via Canvas and use Respondus Lockdown Browser. Before the course begins, you should visit [U]Tech's Respondus LockDown Browser page and download the Getting Started for Students Guide. If you have trouble installing the software, contact [U]Tech.
- Anatomy Review Presentation (20% of final grade):
  - You will be assigned to one of the weekly modules and will produce a 25- to 30-minute video presentation (or a series of shorter presentations) that review(s) the relevant anatomy for that week. You will be paired with at least one other student, and creativity is encouraged!
  - Your presentation(s) must be submitted via Canvas by 5 pm three days before the corresponding lab (i.e., Friday for a Monday lab and Sunday for a Wednesday lab). For example, the presentation reviewing the anatomy for the lab on June 8th must be uploaded by 5 pm on June 5th. Scores for late submissions will be reduced by 10% if

submitted after 5 pm on the due date, 20% if submitted one day late, and 30% if submitted two days late.
    - If you upload more than one file for this group assignment, let Dr. Croft know so that he knows to download multiple submissions. Your presentation(s) will be made available to other students via Canvas so they can review it prior to lab.
    - The presentation will be graded following a rubric available on Canvas.
- Class Feedback (10% of final grade):
    - You will be required to provide feedback on about half of the classes (the days you are not on cadaver transport). It will be submitted via a Google Form (the link will be provided on Canvas) and due by 5 pm the following day (Tuesday or Thursday).
    - You will be asked what you liked about various components (lecture, lab, materials), as well as what could be improved.
    - This feedback will be de-identified and forwarded to the attending surgeon to show our appreciation for their participation and to help improve the course next year.
- Final Presentation (20% of final grade):
    - You will be assigned a surgical specialty for the final presentation that is different from your review presentation surgical specialty. It is OK to trade as long as your topic remains distinct from your review topic and you inform Dr. Croft. You must present on a surgical speciality covered in the course.
    - Your presentation should be ~10-12 minutes and cover a common surgical procedure. You cannot present on a procedure we did in lab. Your presentation should include the rationale, key anatomical landmarks, relationships, and principles important for its successful execution. Creativity is encouraged, and you should practice your talk to ensure it fits within the 10-12-minute time frame.
    - Clinical faculty can serve as mentors for these presentations. Therefore, you should reach out to the corresponding faculty member before or during lab to get their thoughts and perspective. Note that some faculty may not respond quickly to emails.
    - Your proposed topic must be submitted via Canvas by Wednesday, July 15th. You should not consider it final until it is approved by Dr. Croft, who will provide feedback via Canvas. Once your topic is approved, you should post it to the Discussion Board so others are aware. Duplicates or closely similar topics are not allowed, and in cases of overlap, priority will based on submission date.
    - You must include at least five literature citations (i.e., journals or reference resources, like the pre-readings) and not simply rely on websites or videos.
    - Your presentation slides are due at 8 am on Sunday, July 26th. They will be provided to other students to facilitate providing feedback.
- Peer Feedback (5% of final grade):
    - You will be required to submit feedback on the final presentations of several of your peers. It will be due at 10 pm on the final day of class.
    - Peer feedback will be submitted via Canvas using a Google Form, similar to lab feedback. It will be de-identified and forwarded to the presenter.
    - Guidance on providing feedback will be available on Canvas, and the quality of feedback will factor into your score.
- Professionalism (5% of final grade) will be based on:
    - Teamwork and collaboration, as evaluated by the course director and reflected in any peer feedback.
    - Punctuality and contributions to lab activities (e.g., cadaver transport, dissection, maintaining a clean lab table and equipment, etc.)

Lab Supplies

You must obtain scrubs before the first lab on June 1st. Soiled scrubs must be returned to the same area. All other lab supplies and PPE will be provided by the STAR lab.

Lab Specimens

This course uses lightly embalmed cadavers that will be stored in the Anatomy cooler and will need to be moved to the STAR lab during weeks 2-8. You will be divided into two cadaver transport teams (A Team and B Team). On the days your team is designated to move cadavers, you must meet by the Anatomy cooler **by 8:45 am** to help with this task. Your team will also be responsible for returning the cadavers to the cooler at the end of lab.

Lab Safety

Please be very careful with scalpels, needles, and all other sharp tools to avoid injury. Do not try to balance them on the cadaver or leave them in a place where they might accidentally injure someone. Best practice is to store them in an emesis basin when they are not in use. Sharp instruments must be disposed of in the sharps container.

If you are injured in lab, you should report the injury to Dr. Croft, who can help with basic first aid. You should follow CWRU procedures and report the injury to Heath Services (216-368-2450).

If you feel lightheaded or queasy at any time during lab, you should immediately find a place to sit down; you do not want to risk fainting and injuring yourself in a fall.

Lockers

There is a locker room by the ground floor Anatomy labs (G01), and you are free to use any unoccupied locker to store your coat, street clothes, shoes, and anything else you do not want to bring with you to the STAR lab. These lockers do not have built-in locks, so you must bring one if you want to secure your belongings. However, you are also free to leave items in the STAR lab conference room during lab (computers, purses, etc.).

University Enrichment & Engagement

It is the intent that all students regardless of their background and perspective be well-served by this class. Further, we intend to present material whose content is respectful and deliver it in a respectful manner. We expect that all students, instructors and guests will help foster an atmosphere of respect, trust and safety in the classroom.

If you have suggestions for how to make the class content or environment more respectful, or have specific incidents to report, please reach out to an instructor. If you are not comfortable reaching out to an instructor, you can contact the School of Medicine Graduate Education Office (som-geo@case.edu) or the , which includes additional information about CWRU policies and resources

Disability Accommodations

In accordance with federal law, if you have a documented disability, you may be eligible to request accommodations from Disability Resources. In order to be considered for accommodations you must first register with the Disability Resources office. Please contact their office to register at 216-368-5230 or get more information on how to begin the process. Please keep in mind that accommodations are not retroactive.

Mental Health Resources

CWRU is committed to supporting and advancing the mental health and well-being of our students. During the course of your academic career, you may experience personal challenges that represent barriers in learning. While some stress is to be expected in the higher education experience, it can be compounded by unexpected setbacks or life changes outside the classroom. You should contact an instructor about any issue that could affect your education and contact support services on campus that have staff stand ready to assist you:

- University Health and Counseling Services (UHandCS)
    - Counseling Services and 24/7 on-call counselor 216/368-5872
    - Health Services and 24/7 Nurse on call 216/368-2450

Academic Integrity

Visit this website for the Academic Integrity policy for graduate courses.

Generative Artificial Intelligence (GenAI)

As described above, students at CWRU are expected to uphold the highest ethical standards of academic conduct. These standards also apply to using generative AI. You must obtain the course director's permission before using any generative AI software for any assignment unless stated otherwise in the syllabus. Using these tools without permission puts your academic integrity at risk.

A variety of GenAI tools are available, but if you plan to upload any copyrighted material (e.g., journal articles, book chapters), you should use internal CWRU services so the content is not added to publicly-accessible models. CWRU services include CWRU AI, Microsoft Copilot, and Google Gemini. A comparative chart with links can be found on [U]Tech's site here. Note that different services will generate different results. Results may also vary from day to day.

Your GenAI results depend to a large degree on your prompts. The better your prompts, the better your results, or rather, the closer they will be to your expectations. There are many different models (mnemonics) for constructing prompts, but a simple an effective one is RTC: role, task, criteria:

- ROLE: Who should the AI tool be? (graduate student, surgeon, first-year medical student, high school student)
- TASK: What do you want the AI to do? (summarize this document, create questions, create a step-by-step guide)
- CRITERIA: What are the specific parameters? (make the summary no more than 200 words, make the questions fill-in-the-blank, provide the output as bullet points or a chart, etc.)

Using Gen AI is an iterative process. Even with the "ideal" prompt, you likely won't get exactly what you are looking for. Keep giving more directions to get it closer to your expectations: use simpler language; summarize in eights steps instead of three; suggest three images for each step, etc.

Note that GenAI can "hallucinate" or provide incorrect information. You should fact-check your results as much as possible!

Equity and Title IX

Title IX of Education Amendments of 1972 ("Title IX") prohibits discrimination based on sex, including sexual harassment, in education programs that receive federal funding. This includes providing support to anyone impacted by sex discrimination or sexual harassment. The Title IX Coordinator is responsible for implementing Title IX and is in CWRU's Office of

Equity. The Title IX Coordinator is also responsible for making sure that the procedures in CWRU's policy prohibiting sex discrimination and sexual harassment are followed and all persons are treated fairly and with respect.

Members of the CWRU community and others should direct questions about the application of Title IX to situations impacting the CWRU community, and its educational programs and activities, to the Title IX Coordinator. Information on the Office of Equity and Title IX is located on the Office of Equity webpage Office of Equity webpage.

CWRU Public Safety

The Case Western Reserve University Division of Public Safety provides quality service, safety, and a positive educational experience for the campus community. Members of the CWRU community – students, faculty, staff, and guests – are encouraged to report all criminal actions, emergencies, or other public safety related incidents to CWRU Division of Public Safety. For an emergency, call 216-368-3333. For a non-emergency, call 216-368-3300. Members of the community are encouraged to download the Spartan Safe app which offers easy access to critical resources and safety tools.