

STRUCTURE OF THE HUMAN BODY 2024-2025

COURSE INFORMATION

CONTENTS

	Page
1. Course Overview	1
2. Methods of Instruction	2-3
3. Attendance and Absences	3
4. Important Dates	4
5. Text Books	4-5
6. Quizzes and Exams	5-6
7. Review Sessions	6
8. Post Exam Review	6
9. Grading	7
10. Remediation	8
11. Introduction to the Laboratory	8-11
12. Contact Information	11

1. COURSE OVERVIEW

The primary goal of the Structure of the Human Body course is to provide students with a firm understanding of the general anatomy and development of the human body, including the osteology, musculature, circulatory system, viscera, and the human nervous system, including the cortex, brainstem, cerebellum, deep brain structures, spinal cord, peripheral nerves, sensory systems, motor systems, and the autonomic nervous system. This will be achieved through demonstrations using prosected donors, student dissection, anatomical models, plastinated specimens, online learning modules, labeled gross specimens and models, medical imaging, lecture, guided review sessions, and independent learning. Our course specific goals and objectives can be found on the SHB Sakai page under Course Information or at <https://sakai.luc.edu/portal/directtool/55b95516-a047-4050-b928-ca9037bbacc4/>.

2. METHODS OF INSTRUCTION:

A. Lectures

Most lectures will last 50 minutes; some shorter or longer depending on the faculty member. All lectures are prerecorded using the Panopto software platform and delivered asynchronously through Sakai or Lumen to view at your convenience. The PowerPoint presentation will also be provided. Lectures are scheduled the night before the associated lab session, but are generally available several days ahead of time. Lectures are essential to understanding what is presented in the laboratory sessions, so please view these ahead of time so that you are prepared for lab. **Adequate background preparation by the student is necessary in order to benefit from the laboratory**

sessions. PLEASE come to all laboratory sessions ready to identify structures referred to in the lectures.

A textbook is recommended for reference, although a student can excel in the course by watching the lecture videos, using the Sakai teaching aides, attending labs, and studying the PowerPoint presentations.

Clinical correlation lectures illustrate the clinical applications of gross anatomy. Anatomical concepts from these lectures can be included on the exams, but examination questions will not refer to specific cases or examples given by the clinical faculty on exams.

B. Laboratory Sessions

Anatomy is a visual and practical discipline, and therefore relies *heavily* on the laboratory as a learning forum. Please remember that a rewarding experience for the student of gross anatomy is largely dependent upon the wisdom, foresight and social conscience of those who donate their bodies for research and education after death. Make the most of this unique and important learning experience. These donors are your first “hands on training” with a patient.

In line with current school policy, attendance at Small Group Lab Sessions is **Mandatory, and attendance will be taken daily**. Failure to attend and participate in laboratory sessions will result in an evaluation of **Does Not Meet Expectations** in your Professional competency component of the course. If, for whatever reason, you find that you have a legitimate reason for being unable to attend a particular small laboratory session, you should seek advance permission from the Office of Student Affairs. Please note that laboratory sessions will not be recorded. Violation of laboratory rotation protocol (switching sessions without expressed permission by the course director or assistant course director) may also result in a “Professionalism” mark of concern.

The SHB laboratory is a self-directed, hands-on, small group learning experience. Students will be assigned to one of four lab sessions starting at either 8:30 am, 9:15 am, 10:00 am, or 10:45am. Each group will spend 45 minutes in the laboratory each day reviewing the assigned “Should-Find” list of structures. Students will be provided with a variety of teaching aides including bones, skeletons, models, worksheets, drawings, prosected donors (whole body), prosected specimens, plastinated specimens, and digitized images. Instructors will be available to aide in verifying structures from that day’s “Should Find” list. It is expected that students will work together in small groups to identify structures using the knowledge gained from the pre-recorded lectures. After each exam, the groups will rotate to a new starting time.

Students will also be assigned to a dissection group (subset of your lab group). Each group will be assigned to dissect a particular region of the body on a specific student dissection donor. The region assigned will be a relevant dissection for the upcoming exam. Students will work within a group to complete the assigned dissection. The laboratory is open 24 hours. Each student is expected to participate in the dissection activity and not just be an observer. The time commitment for this activity is gauged to be 25-30 hours per group, and the expectation is that each student will contribute a minimum of 5-10 hours. Students will be required to find, clean and identify as many structures on the assigned “Should Find” list as possible. Prior to the exam, all students in an assigned dissection group will demonstrate to the faculty the structures that have been dissected and identified on their donor. Your ability to identify what you have dissected will be graded by the faculty. We will not be grading the quality of the dissection, however care must be taken during dissection to avoid damaging the structures that need to be identified. A laboratory dissection guide will be available for the specific areas to be dissected. In addition, faculty will be present during the

first laboratory session of your required dissection to assist with some basic techniques for dissection.

C. Independent Learning, Computer-Based Instruction and other Learning Resources:

The SHB Sakai page is designed to promote the use of multimedia in the integration of the basic and clinical sciences.

- Practice practical PowerPoints – available on Sakai.
- Lecture content review questions – available on Sakai.
- Discussion page – to ask anonymous questions of faculty.
- Muscle Tables – contain tons of information about every muscle.

A variety of other “hands on” teaching aids are available, including:

- Individual bones and full skeletons - available in the laboratory (L60).
- Epoxy-embedded sectioned human bodies - on display in the LL hallway.
- Gross anatomy models - to be studied in the laboratory during lab sessions or any other time. The library also has an extensive collection of models and bone boxes which can be checked out (requests can be made at the front desk).
- Prosected donors - available in the laboratory.
- Student-dissected donors - available in the laboratory.

3. ATTENDANCE AND ABSENCES

Laboratory attendance is mandatory. Students **must** attend lab with their assigned lab group, ***during their scheduled lab time.*** Students are not permitted to change groups or attend another lab time other than that which they are scheduled to attend. In order to be marked present, students will be required to use whatever attendance method is employed on the day of lab. These may include, but are not limited to: a unique QR code for that day, a sign-in sheet, or any other method chosen by the faculty for that day. Faculty will announce at the beginning of each lab session how to sign in for that day. Shadowing is not an excuse to miss lab. You will have ample opportunity to shadow throughout your tenure at Loyola, but each lab is given only once.

Unexcused absences or violation of rotation protocol will result in a mark for “Concern” within the ***Professionalism*** Competency Assessment of the student grade. All excused absences must be approved by the office of Student Affairs. Notify the Course Director, Dr. Frysztak, and the Course Coordinator, Jessica Bumbaris, via email once the absence has been approved. Multiple unexcused absences will require a meeting with the Course Director or the Assistant Course Director. Students are required to follow the protocol listed in the Academic Policy Manual:

Per the [Academic Policy Manual](#): *Petitions for approved absences for serious but non-emergent reasons from activities in which attendance is mandatory (i.e. labs, quizzes, exams) must be submitted prior to the start of the course, if possible, but in no case less than one month before the date in question. Such petitions are to be reviewed by the Course Director, Course Coordinator, and Associate Dean for Student Affairs or designate. A student must have a serious reason for an excused absence or request for a change in an exam date. The petition should detail the nature of the conflict and available supporting documentation should be attached (e.g., copy of a jury summons or invitation to present a*

poster). *A petition for permission to be absent is a request, requires review, and is not automatically approved simply by submission.*

Exam Absences: Students who are ill or have other extenuating circumstances either prior to, or on a scheduled exam day **must contact the Dean of Student Affairs prior to the exam** to obtain an excused absence. Excused absences are granted according to university policy; proper documentation will be required, and no exceptions will be made. You must also notify Jessica Bumbaris, the SHB Course Coordinator, so that alternative arrangements for a make-up exam can be made.

4. IMPORTANT DATES

Sept. 24: Opening Blessing Ceremony (Required)
Sept. 25: First Day of SHB lab
Sept. 30 – Oct. 4: Fall Break
Oct. 18: Exam 1
Nov. 5: Exam 2
Nov. 19: Exam 3
Dec. 6: Exam 4
Dec. 9: Closing Blessing Ceremony (Required)
Dec. 19: Exam 5

5. TEXT BOOKS:

Most texts are available electronically via the [Health Sciences Library](#) website.

A. RECOMMENDED TEXTS:

Hansen, J.T. (2019/2022). *Netter's Clinical Anatomy*, 4th or 5th edition, Elsevier Inc. ISBN 978-0323531887 or 978-0323826624; Digital Version: 978-0323826631

Rohen, J.W., *et al.*, (2015). **Color Atlas of Anatomy: A Photographic Study of the Human Body, 8th ed.**, Wolters Kluwer / Lippincott Williams & Wilkins. ISBN 978-1451193183.

Netter, F.R. (2019). *Atlas of Human Anatomy*, 7th ed. Saunders. ISBN 978-0323393225.

Mtui, E., Gruener, G, and Dockery, P. (2015). *Fitzgerald's Clinical Neuroanatomy and Neuroscience*, 7th ed. Elsevier. ISBN 9780702058325.

Sadler, T. W. (2014). *Langman's Medical Embryology*, 13th ed. Lippincott Williams & Wilkins. ISBN 978-1451113420.

Gilroy, A.M. et al., (2020). *Atlas of Anatomy*, 4th ed., Thieme. ISBN 978-1684202034.

Haines, D.E. et al., (2011). *Neuroanatomy: An Atlas of Structures, Sections, and Systems, 8th ed.*, Lippincott Williams & Wilkins, ISBN 978-1605476537.

Cochard, L.R., et al. (2011). *Netter's Introduction to Imaging, 1st ed.* Saunders. ISBN 978-1451191646.

B. RECOMMENDED FLASHCARDS:

Hansen, J.T. (2014). *Netter's Anatomy Flash Cards, 4th ed.*, Saunders. ISBN 978-0323185950.
[Cards] (Not available via the Health Science Library; See Dr. Frysztak)

6. ASSIGNMENTS & EXAMS:

A. Dissection:

Each laboratory dissection team will be required to present their identified structures to the faculty on the assigned donor they dissected. Faculty will evaluate the groups' dissection based on correctness of naming structures, ease of identifying each required structure, and overall presentation of the dissection. The dissection grade is a maximum of **10 points**. All students in a group will participate and receive the same grade, so please come to a group consensus on what is being identified!

B. Examinations:

There are a total of five written exams throughout the course. Each exam will consist of:

- **4 multiple-choice type questions per lecture hour**, and will follow the format suggested by the USMLE Board of Examiners.
- **3 practical style identification questions per lab session**, using digitized images from the donor bodies and specimens in the lab. These images may include exceptional student dissections. Each question will contain an image and 5 choices.
- All exams are completed in an online format, and may also contain radiological images, cross-sectional images, drawings, and other visuals.
- All questions will be in the USMLE-best answer format, and will be directly linked to a specific learning objective.
- After each exam you will receive back a report including your exam score and a list of the learning objectives linked to the questions that you answered incorrectly. This list should serve as the basis for re-reviewing course content to ensure your full understanding of course concepts, and content for the future.
- All students are expected to sit for each exam at the date and time indicated in the course schedule, as documented in the SSOM Academic Policy Manual. If circumstances arise that may prevent you from taking a scheduled examination (e.g. serious illness or an emergency situation) you should immediately contact **BOTH** the Office of Student Affairs **AND** the course directors as soon as possible, so that a timely determination can be made regarding a potential excused absence. Students who are unable to sit for an exam for a **legitimate** reason, as adjudicated by the Office of Student Affairs, will have their exam rescheduled for a later date. The rescheduling of any exams will be determined by mutual agreement of the

Office of Student Affairs, the Office of Educational Affairs, and the Course Director, as outlined in the SSOM Academic Policy Manual.

- **Academic Honesty**

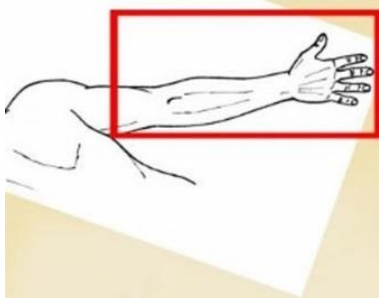
Per the [Academic Policy Manual](#), students must practice academic honesty in all examinations and assignments. Students who do not follow this practice will be reported to Student Affairs for further review, which may lead to dismissal.

- *The following is an example of a typical “boards style” written exam question:*

A man pushes a piano across the floor. At the wrist, the force is transmitted from the carpal bones to the radius. At the elbow, the force is transmitted from the ulna to the humerus. Which one of the following structures transmits the force from the radius to the ulna?

- A. annular ligament
- B. bicipital aponeurosis
- C. flexor retinaculum
- D. intermuscular septum
- E. interosseous membrane

- *The following is an example of a digital practical question:*



3. Identify the structure at the tip of the yellow arrow:

- A. Extensor digitorum m.
- B. Extensor carpi radialis longus m.
- C. Extensor carpi radialis brevis m.
- D. Extensor carpi ulnaris m.
- E. Flexor carpi ulnaris m.



Correct Answers:
1) E
2) D

C. REFLECTION:

Every student will be required to write a reflection on their dissection experience (typically due one week after the associated exam). The reflection is an independent **PASS/FAIL component** of the SHB Course. This should be based on how dissecting your donor's body, and anatomy lab in general, affected you personally, your educational process, and your perception of medicine in general. Students that either do not participate, or fail to meet expectations, will be required to remediate their performance. These reflections will go into a book which will be made available to the families of donors.

7. REVIEW SESSIONS

On most Fridays, and prior to each exam, faculty will hold an Open Lab Review session, followed by a Lecture Review to any student questions. It is highly recommended that students take advantage of these learning opportunities and attend these sessions. This is your chance to ask the faculty directly any questions you have concerning the upcoming exam.

8. GRADING

The final course grade will be based on your assessment of the Medical Knowledge and Professionalism competencies. The graded components are the five exams, along with the oral lab dissection presentation. The maximum number of points possible in the course will be 422, and will be broken down as follows:

Component	Written	Digital Practical	Dissection	Total
Exam 1	76	24	-	100
Exam 2	60+6 US	30	-	96
Exam 3	64	18	-	82
Exam 4	56+4 US	15		75
Exam 5	44	15	-	59
Dissection	-	-	10	10
Total:	310	102	10	422

Final Grades: Medical Knowledge:

Final grades for medical knowledge are pass/fail based on cumulative exam and dissection performance. Passing is 70.0%.

Grade	Points Earned (422 possible)
Pass (70.0% and above)	294-422
Fail (< 70.0%)	293 or less

There are 422 possible points in SHB. Each "point" has the same weight/value.

9. REMEDIATION

Students who fail to achieve the minimum score required for a passing grade in the course **may** be allowed the opportunity to take a make-up remediation exam if they have achieved an overall grade above 60% (252 points). The make-up exam will be prepared by the course director in collaboration with the Associate Dean for Medical Education and will be a rigorous, yet fair assessment to ensure that the student has achieved sufficient mastery of the course content to be allowed to continue to the next academic level. Remediation exams will be administered at the end of the academic year and will be scheduled by the Office of Student Affairs and the Academic Center for Excellence in consultation with the Course Director. All students requiring remediation should meet with the Course Director well in advance of the scheduled date of the exam to discuss both the exact format of the exam and their proposed study approach. The exam will consist of a comprehensive written examination (approximately 1 question per lecture and 1 question per lab). Those students achieving a score of greater or equal to **70%** on the remediation exam will have their F grade converted to a P*. Students who fail to successfully achieve the minimum passing score will receive a failing grade and be required either to repeat the course in its entirety, or alternatively, may be subject to automatic administrative action by the School, as outlined in the [Academic Policy](#).

Please note that students with a final cumulative course score of <60% may be denied the opportunity to remediate their failure of the course by an end-of-year remediation exam, and may instead be required to repeat the course. The decision to allow such students the opportunity to take a remediation exam will be made by the Student Promotions Committee following a recommendation provided by the Course Director.

10. INTRODUCTION TO THE LABORATORY

As mentioned above (Section II. Methods of Instruction), students will be assigned to a section of 45 students as well as a smaller dissection group. Each section will spend 45 minutes in the lab. Starting time will be based on your section, and each section will rotate to a new start time after each exam. Students will be required to find the 20-30 structures listed on that day's "Should Find" list. It is recommended that each student print the Should-Find List and bring it to the lab to take notes on. Faculty will be available in the lab, as well as other clinical faculty and/or residents, to answer questions. Each lab group can view bones, models, and 5 prosections of complete bodies, and other smaller specimens. Students should regularly check the SHB homepage for the lab schedule and group assignments.

A. LAB SET-UP: The SHB laboratory sessions are held in the Lower Level of the Stritch School of Medicine (Cuneo Bldg), Room L60A. Access is restricted, so a valid ID will be necessary to enter the anatomy lab. Access is also monitored by security cameras at all times.

B. LAB REGULATIONS:

- 1) Students are provided with gloves, scalpel blades, lab coats, atlases and other dissection tools for use in the lab. Lab coats are slightly used and donated from various departments around campus. There will be a scheduled day for students to pick-out a lab coat; students will be contacted via email once the date is scheduled.
- 2) Unauthorized personnel are not allowed in the laboratory without the permission of the Course Director. Authorized persons include faculty of SSOM, residents, graduate students, and medical students currently enrolled in or assisting with the course, the staff associated with the course, and maintenance personnel.
- 3) Visiting student groups from high schools and other educational institutions are permitted entry after class hours only when accompanied by their school advisor and a faculty or staff member approved by the Course Director.
- 4) Members of the SSOM Committee on Admissions and office staff may accompany applicants to view formal dissection periods during class hours.
- 5) When you have finished working on or studying from a body or specimen, **please ensure that the dissected region is damp and the body or specimen is fully covered.**
- 6) **No cameras are allowed** in the laboratory without permission from the Course Director.
- 7) No human tissue, skeletal material, electric and non-electric dissection tools, or materials used to cover the specimens may be taken from the laboratory at any time.
- 8) Smoking, eating, and drinking are not permitted in the laboratory.
- 9) At all times, a respectful attitude must be maintained toward the donors, which have been obtained for your benefit.
- 10) Students are required to maintain the laboratory in a clean, orderly condition. Do not leave paper towels or other trash on the floors or tables. Return all tools used to the appropriate cupboards or drawers. Place used scalpel blades in the **red “SHARPS” safety containers** labeled for this purpose. Compliance for maintaining a clean and orderly lab environment is a component of the Professionalism competency goal for SHB and SSOM.
- 11) All fluid must be drained from the dissecting table as it accumulates. Please wipe up any spills on the floor immediately, as fluids make the floor hazardous. Transfer excess fluid into the waste collection drum located in the lab.
- 12) All exposed skin of students dissecting must be covered. Garments worn in the laboratory should be washed at frequent intervals. Shoes worn in the lab must adequately protect the top of the foot (**NO open-toed shoes or sandals**). Gloves must be worn by all persons dissecting human tissue. Students may wear lab coats over street clothes or non-hospital scrubs.

- 13) Respect for others in the close-quarter conditions of the lab around the dissection tables must be shown. If you are ill or have an upper respiratory tract infection, a surgical mask should be worn to cover the mouth and nose. If you test positive for Covid, please follow all guidelines as regularly posted by the University.
- 14) Report any injury (laceration, fall), lightheadedness, or skin irritation to a faculty member immediately. If injured, you may be taken immediately to the ER, or security may be called to initiate transport if necessary.
- 15) **Professional behavior must be exhibited at all times. No disrespect toward fellow students, faculty, staff, the laboratory and its resources, or the donors will be tolerated at any time.**
- 16) No music playing (including radios) is allowed during scheduled lab sessions. After 3 pm, tolerant music playing is permitted, or you may use your earbuds.

C. LAB SECURITY:

The Multifunction Labs (L60) are open 24/7 to first year medical students, faculty and other personnel possessing the proper identification and key card access. Students are expected to comply with the Laboratory Regulations (Section 10-B) at all times.

Washroom facilities for are provided immediately adjacent to the dissection area in the lower level locker rooms. Changing space and lockers are available in the hallway immediately adjacent to the main elevators. Please bring a lock to ensure your belongings are secure; we are not responsible for any lost or stolen items. Please maintain the cleanliness of these areas as a courtesy to the many others using them. All personal items must be removed from lockers daily. The gray lockers will be emptied at the end of the course and all materials disposed of.

Visitors to the facility **must** be cleared through the course directors (please see Laboratory Regulations).

D. DONORS:

Prior to the development of body donor programs, the majority of bodies used in medical education were from unidentified or unclaimed individuals. As more people began to donate their bodies in the last half of the 20th century, many institutions have been able to use *consented donors* for all of their medical education needs. Here in Illinois, Stitch faculty are board members of the Anatomical Gift Association of Illinois (<https://www.agailinois.org/>). The AGA strictly adheres to a consented donation process for *all* anatomical specimens.

The nomenclature used to refer to these individual donors has not changed at the same pace. Many educators, students and lay persons still refer to these individuals as “cadavers” or “corpses.” While technically correct, is not as respectful as the term “donor.” The terms “cadaver” and “corpse” are used in everyday language, where they are often an impersonal reference to an unfamiliar body that has not been ascribed a specific purpose, role, or outcome. Often, these terms may have a negative connotation in many people’s minds.

Since these individuals altruistically donated their bodies to the institution specifically for your benefit as medical students, it is more appropriate to refer to them as “donors.”

By using appropriate terms in the anatomy laboratory, the proper respect for the donors can be maintained, humanity can be ascribed to the donors, and this can assist the professional development and identity formation of you, the students. Please be respectful and mindful that our donors were mothers, fathers, sisters, brothers, aunts, uncles and dear friends to those that loved them throughout their lives. Their sacrifice to donate their bodies so that you can learn the intricacies of the human body should be honored and revered.

Faculty and staff will try to consistently model this behavior in all their interactions with students both in and out of the lab, and with the general public, to foster respect and dignified approaches to the processes of body donation and the use of donor bodies.

E. EMBALMING:

The embalming process is done professionally by State of Illinois-licensed embalmers employed by the AGA of Illinois. All human tissues used in the course are obtained from the AGA of Illinois, which receives them as donations.

The embalming solution contains:

- 5% formaldehyde
- 33% methanol
- 33% glycerine
- 27% phenol.
- MSDS sheets for each component are available upon request.

Students who experience respiratory or contact-sensitivity reactions to these ingredients are advised to notify the Course Director and seek medical attention, if necessary. Adequate

precautions against skin contact must be taken (e.g. wearing gloves, wearing proper dissection clothing and lab coats, as well as impermeable plastic aprons, face masks, etc., as necessary). Our Safety and Security office inspects the dissection bays; air handling and air exchange are at OSHA standards that are monitored and maintained.

F. HUMAN DIVERSITY:

As a health care professional, it is important to be aware and acknowledge the diversity in the human form. While you should know the common aspects of human anatomy, you should continually appreciate the wide variety inherent in the people you serve. Each of your patients will represent one small portion this broad swath of humanity.

The question of inclusive anatomical representation has only very recently also been addressed by the American Association of Medical Illustrators and the American Association for Anatomy. We hope that a wider variety of images will be forthcoming in the future. Until then, we appreciate any recommendations and your understanding in this work.

11. CONTACT INFORMATION

SHB Course Director:

Robert Fryszak, Ph.D.

Associate Professor, Department of Medical Education
SSOM Bldg 120, Room 264

rfryszak@luc.edu

SHB Assistant Course Director:

Eva Murdoch, Ph.D.

Associate Professor, Department of Medical Education
Osler, 262

708-216-1192

emurdoc@luc.edu

Janet Kelly, Ph.D. (professor emeritus)

Assistant Professor, Department of Medical Education
Osler, 263

Greg Gruener, MD, MPA, MHPE

Vice Dean for Education, SSOM

Professor, Department of Neurology
SSOM 320

708-216-0468

ggruener@luc.edu

Course Coordinator:

Jessica Bumbaris, MA

Room 310

708-216-8779

jbumbaris@luc.edu