ANAT2511

FUNDAMENTALS OF ANATOMY

Course Outline

Term 3, 2022

School of Medical Sciences

Faculty of Medicine & Health

Table of Contents

1. Staff

Position	Name	Email	Consultation times and locations
Course Convenor	Ms Anneliese Hulme	a.hulme@unsw.edu.au	Arranged via email
Co-convener	Dr Tom Duncan	t.duncan@unsw.edu.au	

2. Course information

Units of credit: 6

Exclusion Courses: ANAT2111, ANAT2151, ANAT2200, ANAT2241

Teaching times and locations:

http://timetable.unsw.edu.au/2022/ANAT2511.html

2.1 Course summary

This course is designed as a stand-alone subject for students who will benefit from knowledge of basic anatomy. The aim of this course is to provide students with an understanding of the structural organization of the human body at a gross (macroscopic) and histological (microscopic) level, i.e., the position, form and structure of organs and 'systems. The course is designed to provide an understanding of the human body that underpins its functioning and medical and biomedical engineering designs. The course provides an overview of the structure of the major components of each of the body systems and includes an overview of the microscopic structure of its tissues. The course is strengthened by an emphasis on the relationship between structure and function. In addition, students will gain familiarity with anatomical and medical terminology and their meanings.

2.2 Course aims

This course aims provide students with an understanding of the structure and organisation of the human body as it relates to function.

The course focuses on the major organ systems (musculoskeletal, respiratory, cardiovascular, nervous, digestive, reproductive, and sensory organs). At the end of the course, the student will be able to appreciate the structure of the above systems and how this structure optimises organ function.

Recent advances in medical and biomedical engineering research related to anatomy will also be discussed.

2.3 Course learning outcomes (CLO)

At the end of the course, students will be able to:

1. Demonstrate an understanding of the ethical considerations, and good practice of, working with cadaveric tissue.
2. Demonstrate the appropriate use of the anatomical terminology of body planes, relations, movement, and cavities.
3. Demonstrate an understanding of the topographical and histological anatomy of each of the components of body systems.
4. Demonstrate an application of anatomical concepts to biomedical engineering applications.
5. Demonstrate skills in working in teams and the process of teamwork.

The University of NSW has developed a list of attributes which its graduates should possess upon graduation (the 'graduate attributes'). This course has been designed to help students to develop these capabilities. Students completing the course will have gained knowledge and skills that contribute to directly to them acquiring these attributes during their study at UNSW. One way this has occurred is through curriculum mapping of this course.

See medicalsciences.med.unsw.edu.au/students/undergraduate/advice-students#graduate

2.4 Relationship between course learning outcomes and assessments

Course Learning Outcome (CLO)	LO Statement	Related Tasks & Assessment
CLO 1	Demonstrate an understanding of the ethical considerations, and good practice of, working with cadaveric tissue.	Continuous Group Assessment Mid-term Spot Test End-term Spot Test

CLO 2	Demonstrate the appropriate use of the anatomical terminology of body planes, relations, movement, and cavities.	Continuous Group Assessment Mid-term Spot Test End-term Spot Test Final Theory Exam
CLO 3	Demonstrate an understanding of the topographical and histological anatomy of each of the components of body systems.	Continuous Group Assessment Mid-term Spot Test End-term Spot Test Final Theory Exam
CLO 4	Demonstrate an application of anatomical concepts to biomedical engineering applications.	Continuous Group Assessment Mid-term Spot Test End-term Spot Test Final Theory Exam
CLO5	Demonstrate skills in working in teams and the process of teamwork.	Continuous Group Assessment

3. Strategies and approaches to learning

3.1 Learning and teaching activities

Lecture - Students are required to attend the lecture via Teams. Watching the lecture is critical to prepare for the weekly lab. The lectures aim to present essential concepts and theoretical details on specific topics throughout the course.

Laboratory practicals - The purpose of weekly practical sessions is to give students first-hand experience of the content covered. During these two two-hour weekly sessions, students will identify the gross anatomical structures and their features, practice anatomical terminology and discuss the concepts studied in preparation to the weekly topic. The anatomy laboratory is the best resource to learn anatomy and is a wonderful place of privilege, discovery and discussion. The gross anatomy laboratory sessions are small group sessions that allow students to explore prosected (professionally dissected) specimens of the human cadaveric material. Histology practicals focus of the identification of cells and tissues, viewed by virtual microscopy images of real tissue, again with consideration of their functions. Although, the tutor is present to guide you through the activities in these sessions, these sessions are meant to be led by students. Working in small teams, you will be consolidating content and apply problem-solving approach. It is also a good opportunity to discuss with peers and teaching staff difficult topics and receive informal feedback.

Question forums - Each week there will be a question forum for students to ask any topic related questions (any questions containing personal information please email the convenors directly). These forums are a place for students to submit questions and interact with other students by answering questions. These forums will be monitored by academic staff, but it is expected that students answer most questions posted.

Self-directed learning activities - The purpose of these weekly activities is to help students interact with the content covered. During these activities students will identify the gross anatomical structures and their features. These revision activities allow you to informally check your understanding of the content as well as to independently assess your performance. These activities aim to assist with learning terminology and grasping difficult concepts.

Formative Activities – These non-graded assessments are a good way to check your understanding of a topic. They feature a series of interactive questions based on applying the content covered in lectures and laboratory sessions and are a useful resource in consolidating and revised course content. Sessions are structured to encourage student participation in these activities and to enhance your learning. You will benefit most if you undertake these activities consistently.

Independent study - There is insufficient time in the lectures and practicals for you to develop a deep understanding of the concepts covered in this course. In order for you to achieve the learning outcomes that will be assessed, you will need to revise the material presented in the course regularly. You will probably also need to do additional reading beyond the lecture materials to learn effectively. Relevant additional resources, including textbook chapters, will be cited in lecture and practical sessions.

3.2 Expectations of students

Students are reminded that UNSW recommends that a 6 units-of-credit course should involve about 120 hours of study and learning activities. The formal learning activities total approximately 60 hours throughout the term. This is a blended learning course (i.e., has both face-to-face and online learning activities) consisting of 6 hours per week of formal scheduled learning activities:

- One 2-hour lecture
- 5 hours of lab practical classes
- 2 hours of self-directed revision activities – short videos, readings, and online activities

Your attendance at lectures and labs, reviewing of videos and online activities, and completion of assessments is important. It is expected that you complete all these activities. There will be no “make-up” sessions for any missed activities.

Before starting this course, students **MUST** complete the online modules listed as compulsory in Week 0 of the course Moodle site.

4. Course schedule and structure

The workflow of a typical week includes the following activities:

1. **Lecture** – Monday 12 noon -2 pm – students will attend via Teams. A recording of the lecture will also be made available for re-watching
2. **Laboratory practicals** – students will attend:
    a) in-person gross anatomy lab in biological sciences North, Floor 1 Thursday 9pm-12 noon K-D26-103 - AnatLab8A
    b) online (via Teams) synchronised histology Lab Friday 1pm-3am
3. **Online self-directed learning activities** – available via Moodle and include additional videos and labelling activities.
4. **Question forums** – At any time during the week students should post and/or answer questions in weekly topic forums on Moodle.
5. **Continuous Group Assessment** – Each week, a group assessment must be completed by students. Students have one attempt at this assessment, which is open every week during the Gross Anatomy practical session.

		Synchronised online lecture - Anatomy	Lab 1 - Gross Anatomy	Online Lab 2 - Histology	Self-Directed Activities	Continuous Assessments	Term Exams
		Monday 12 – 2 pm	**Thursday 9am -12 noon**	**Friday 1 - 3pm**	**Course recommended readings, recorded lectures, for the week**	**Thursday 11 am-12 noon**	**Monday 3- 5 pm**
W0	05-September-2022	**Students are REQUIRED TO COMPLETE online task available in "week 0" folder on Moodle BEFORE WEEK 1**					
W1	12-September-2022	1.1 Skeletal Anatomy 1.2 Epithelial and Connective Tissue histology	1.1 Skeletal Anatomy	1.2 Epithelial and Connective Tissue histology	Skeletal Anatomy and Epithelial & Connective Tissues	continuous Group assessment quiz – **Formative**	
W2	19-September-2022	2.1 Muscular system Anatomy 2.2 Bones, cartilage and muscle Histology	2.1 Muscular System Anatomy	2.2 Bones, cartilage and muscle Histology	Muscular Anatomy and Bones, cartilage and muscle Histology	continuous Group assessment quiz	
W3	26-September-2022	3.1 Central Nervous System Anatomy 3.2 Nervous Tissue Histology	3.1 Central Nervous System Anatomy	3.2 Nervous Tissue Histology	Central Nervous System and Nervous tissue	continuous Group assessment quiz	
W4	03-October-2022	**Public holiday – no live lecture** 4.1 Peripheral nervous system 4.2 Special Senses Anatomy	4.1 Peripheral nervous system Anatomy	4.2 Special Senses Anatomy	Peripheral nervous system Anatomy and Special Senses	continuous Group assessment quiz	
W5	10-October-2022	5.1 Cardiovascular System Anatomy 5.2 Cardiovascular Histology	5.1 Cardiovascular System Anatomy	5.2 Cardiovascular Histology	Cardiovascular System and tissue	continuous Group assessment quiz	
W6	17-October-2022	Flexiweek – Study for Midterm Assessment & start on Week 7 Self-Directed Activities					
W7	24-October-2022	7.1 Respiratory systems anatomy 7.2 Respiratory Histology	7.1 Respiratory systems anatomy	7.2 Respiratory Histology	Respiratory Systems	continuous Group assessment quiz	**Mid-term Spot test**
W8	31-October-2022	8.1 Digestive System Anatomy 8.2 Digestive System Histology	8.1 Digestive System Anatomy	8.2 Digestive System Histology	Digestive System	continuous Group assessment quiz	
W9	07-November-2022	9.1 Urinary system Anatomy 9.2 Urinary system Histology	9.1 Urinary system Anatomy	9.2 Urinary system Histology	Urinary Systems	continuous Group assessment quiz	
W10	14-November-2022	10.1 Reproductive system Anatomy 10.2 reproductive system Histology	10.1 Reproductive system Anatomy	10.2 reproductive system Histology	Reproductive Systems	continuous Group assessment quiz	**End-term Spot test**
	21-November-2022	**STUDY PERIOD**					
	25-November-2022	**EXAM PERIOD**					
	09-January-2023	**SUPPLEMENTARY EXAM PERIOD**					

5. Assessment

5.1 Assessment tasks

Sr. No	Assessment Name	Weightage
1	Mid-Term Spot Test	20%
2	End-Term Spot Test	20%
3	Continuous Group Assessment	30%
4	Final Theory Exam	30%

Continuous Group Assessments

Working in teams, students will complete quizzes in each practical session, based on material from the lectures and practical classes. The quiz questions will be attempted by the team, with each team member submitting their consensus answers. Please note, only the 6 highest marks you score in these assessments will count for the final assessment mark.

75% of the total mark for this assessment will be based on the submitted group answers to the quiz and the remaining 25% will be based on a peer review of the individual's performance in the group.

Individualised feedback will be provided at the end of the assessment time. Cohort feedback will be provided at the next session led by an academic facilitator and misconceptions discussed. You will be able to access online resources to remediate any misconceptions or troublesome concepts.

Mid-Term Spot Test and End-Term Spot Test These are short assessments that cover content delivered in each half of the term. These assessments encompass both the identification of structures, histological structures as well as theoretical concepts.

Final Theory Exam

A single 2-hour written exam is worth 30%, and it will be held during the formal examination period. It assesses student knowledge of the course content and deeper understanding (such as the ability to make connections between ideas or to assess capacity for problem-solving). The written exam comprises of multiple-choice and short/long answer questions and will test knowledge obtained from and laboratories.

Please note:

Final exam period for Term 3, 2022 is 25th November to 8th December 2022.

Supplementary exam period for Term 3, 2022 is 9th 12th January - 2023.

Access to previous exam papers

Past exam papers are not available to students. Sample questions are published via Moodle.

Further information

UNSW grading system: https://student.unsw.edu.au/grades

UNSW assessment policy: https://student.unsw.edu.au/assessment

5.2 Submission of assessment tasks

Late Submission

UNSW has standard late submission penalties as outlined in the UNSW Assessment Implementation Procedure, with no permitted variation. All late assignments (unless extension or exemption previously agreed) will be penalised by 5% of the maximum mark per day (including Saturday, Sunday and public holidays). For example, if an assessment task is worth 30 marks, then 1.5 marks will be lost per day (5% of 30) for each day it is late. So, if the grade earnt is 24/30 and the task is two days late the student receives a grade of 24 – 3 marks = 21 marks.

Late submissions will be penalized at 5% per day capped at five days (120 hours). Students will not be permitted to submit their assessments after this date.

Special Consideration

If you experience a short-term event beyond your control (exceptional circumstances) that impacts your performance in a particular assessment task, you can apply for Special Considerations.

You must apply for Special Consideration **before** the start of your exam or due date for your assessment, except where your circumstances of illness or misadventure stop you from doing so.

If your circumstances stop you from applying before your exam or assessment due date, you must **apply within 3 working days** of the assessment, or the period covered by your supporting documentation.

Failure to complete an assessment

In case if you miss any part of your assessment due to misadventure or illness, an application for Special Consideration should be lodged online in myUNSW before the assessment is due.

Failure to sit a test or exam without lodgment of an application for **Special Consideration** will lead to automatic failure of the test. An absence from a test or exam must be supported by a medical certificate or other document that clearly indicates you were unable to be present. That certificate should be dated the same day as the examination. See https://student.unsw.edu.au/special-consideration

Should you require adjustments for a disability, please see the Equitable Learning Services: https://student.unsw.edu.au/els

5.3. Feedback on assessment

Feedback on Mid-term and End-term assessments will be provided shortly after the release of the grades.

6. Academic integrity, referencing and plagiarism

Referencing is a way of acknowledging the sources of information that you use to research your assignments. You need to provide a reference whenever you draw on someone else's words, ideas or research. Not referencing other people's work can constitute plagiarism.

Further information about referencing styles can be located at

https://student.unsw.edu.au/referencing

Academic integrity *is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits: honesty, trust, fairness, respect, responsibility and courage.*[1] *At UNSW, this means that your work must be your own, and others' ideas should be appropriately acknowledged. If you don't follow these rules, plagiarism may be detected in your work.*

Further information about academic integrity and ***plagiarism*** *can be located at:*

- *The Current Students site* https://student.unsw.edu.au/plagiarism*, and*
- *The ELISE training site* https://subjectguides.library.unsw.edu.au/elise

The Conduct and Integrity Unit provides further resources to assist you to understand your conduct obligations as a student: https://student.unsw.edu.au/conduct

7. Readings and resources

Prescribed Text:

- Tortora, G.J., et al. (2019). Principles of Anatomy & Physiology, 2nd Asia-Pacific Edition, John Wiley and Sons Inc.

Prescribed Atlas:

- Logan BM (2016). Logan's Illustrated Human Anatomy, 1st ed., CRC press.

Other useful texts:

- Marieb EN, Wilhelm PB & Mallat J (2020). Human Anatomy, 9th ed., Pearson.
- Young, B., et al. Wheater's Functional Histology: A Text and Colour Atlas, 5th ed.
- Nielsen, M., and Miller, S.D. (2011). Atlas of Human Anatomy, John Wiley and Sons Inc.
- Hull, Kerry, Colouring Atlas of the Human Body, Lippincott, Wilkins and Williams.
- Snell, R. (2012). Clinical Anatomy by Systems. 9th ed., Lippincott, Williams and Wilkins.
- Drake, R. et al. (2014). Gray's Anatomy for Students. 3rd ed., Churchill Livingston (available ONLINE).
- Moore, K. & Dalley, A. (2018). Clinically Oriented Anatomy, 8th ed. Wolters Kluwer.
- Rohen, J., Yokochi, C. & Lütjen-Drecoll, E. (2006). Color Atlas of Anatomy: A Photographic Study of the Human Body, 6th ed. Lippincott, Williams and Wilkins.

[1] International Center for Academic Integrity, 'The Fundamental Values of Academic Integrity', T. Fishman (ed), Clemson University, 2013.

Websites for histology study:

- Virtual Microscopy Database (VMD): http://virtualmicroscopydatabase.org/
- Histology Guide (Brelje & Sorenson): http://www.histologyguide.com/index.html

8. Administrative matters

Student enquiries should be submitted via student portal https://portal.insight.unsw.edu.au/web-forms/

9. Additional support for students

- The Current Students Gateway: https://student.unsw.edu.au/
- Academic Skills and Support: https://student.unsw.edu.au/academic-skills
- *Student Wellbeing and Health* https://www.student.unsw.edu.au/wellbeing
- UNSW IT Service Centre: https://www.myit.unsw.edu.au/services/students
- *UNSW Student Life Hub:* https://student.unsw.edu.au/hub#main-content
- *Student Support and Development:* https://student.unsw.edu.au/support
- *IT, eLearning and Apps:* https://student.unsw.edu.au/elearning
- *Student Support and Success Advisors:* https://student.unsw.edu.au/advisors
- *Equitable Learning Services (Formerly Disability Support Unit):* https://student.unsw.edu.au/els
- *Transitioning to Online Learning* https://www.covid19studyonline.unsw.edu.au/
- *Guide to Online Study* https://student.unsw.edu.au/online-study

10. Ethical behaviour and human remains

In this course, you will be required to study human anatomical specimens. Each year, people donate their bodies to UNSW via a Bequeathal Program so that you and your colleagues can learn about the human body. The donations are provided through the extraordinary generosity of the public (our donors and their families). This is a special privilege afforded very few people. By law, responsibility to the donor and their family members, and as a matter of good ethical practice you must treat all human remains with great respect and care (see below). The University operates the Bequeathal Program under the Code of Practice noted below, which all students are required to adhere to.

Code of Practice:
The University recognises the magnitude of the contribution made by those who donate their bodies for the teaching of anatomy, and it is committed to treating the human remains entrusted to its care with the utmost respect and professionalism. In keeping with this commitment, the University requires its employees and students to uphold all legal, public health, and ethical standards associated with the handling of bodies and human tissue samples. Any activity which undermines its ability to meet UNSW's legislative obligations, or which devalues the contribution made by those who donate their bodies for the purposes of the teaching of anatomy to students will be in breach of this policy and subject to further action.

For those engaging in the online space (learning and teaching), the University considers that the Code of Practice remains relevant. The use of images of anatomical specimens should follow principles consistent with the Anatomy Act 1977 and/or Human Tissue Act 1983. When images are used online, these should never be identifiable, caricatured and shared for any purpose other than educational; and should not be published on social media platforms.

See medicalsciences.med.unsw.edu.au/students/undergraduate/advice-students#Practicals

Medicine and Science Teaching Laboratory **Student Risk Assessment**	UNSW SYDNEY	Anatomy Practical Classes for Medical and Science Students D26 Ian Jacobs Building Level 1 LAB07 & 08A

Hazards	Risks	Controls
Chemical Formaldehyde Methylated spirits 2-phenoxyethanol	Corrosive Flammable Irritant	• Low concentrations of chemicals used • Adequate air changes and ventilation are provided • Safety Data Sheets for chemicals available
Physical Cold temperature Heavy and sharp models (e.g. bone/plastic)	Cold Penetrating wound Foot injury	• Ensure appropriate immunisation is current • Always wear a laboratory coat • Always wear enclosed shoes with full coverage of the dorsum of the foot • Wear protective eyewear or glasses
Biological Fungi Bacteria (tetanus) Hepatitis B and C	Infection	• Wear a face mask (if required) • Wear disposable gloves when handling wet specimens and do not cross-contaminate models or bones with wet specimens • Do handle food or drinks • Do not place anything into your mouth • Use disinfectant provided for cleaning models and surfaces • Use the provided hand sanitisers regularly • Wash hands with soap and dry thoroughly before leaving

Personal Protective Equipment required

Emergency Procedures

In the event of an alarm, follow the instructions of the academic in charge. The initial sound (beep) is advising you to prepare for evacuation. During this time pack up your personal belongings. The second sound (whoop) gives instruction to leave. The assembly point is on the lawn in front of the Chancellery. In the event of an injury inform the academic in charge (and/or lab staff). First aider and fire warden contact details are on display by the lifts on the floor and in each room. There is a wall mounted First Aid Kit located at the end of the G06 or 08A Laboratory.

Clean up and waste disposal

- Cover wet specimens with the towels provided. Make sure that towels do not hang over the edge of the table as this may result in fluid dripping onto the floor. Fluids on the floor are a major safety hazard and should be reported to staff immediately.
- Replace stools under the tables (if applicable).
- Remove your gloves and dispose in the biowaste bins provided.
- Wash your hands thoroughly with the soap provided.
- Remove your laboratory coat as you leave the room.

Ethics Approval

This type of practical has been previously considered and approved by the UNSW Human Research Ethics Advisory Panel (HC180115).

Declaration

I have read and understand the safety requirements for this practical class, and I will observe these requirements.

Signature:…… **Date**:……
Student number: .....

ANAT-SRA-Med&SciStudent relates to RA-MED-06. Date for review: 01/02/2023

Medicine Teaching Laboratory **Student Risk Assessment**	UNSW SYDNEY	Surgical Skill Suite for Medical and Science Students Wallace Wurth LG 44

Hazards	Risks	Controls
Chemical Formaldehyde Methylated spirits 2-phenoxyethanol	Corrosive Flammable Irritant	▪ Low concentrations of chemicals used ▪ Adequate air changes and ventilation are provided ▪ Safety Data Sheets for chemicals available
Physical Cold temperature Heavy and sharp models (e.g. bone/plastic)	Cold Penetrating wound Foot injury	▪ Wear warm clothing as required ▪ Always wear a laboratory coat ▪ Wear long-sleeved surgical gown when working with fresh tissue and embalming ▪ Always wear enclosed shoes with full coverage of the dorsum of the foot ▪ Wear protective eyewear ▪ Use QlickSmart blade removal unit to remove scalpel blades
Biological Fungi Bacteria (tetanus) Hepatitis B and C	Infection	▪ Ensure appropriate immunisation is current ▪ Wear a face mask (if required) ▪ Wear disposable gloves when handling wet specimens and do not cross-contaminate models or bones with wet specimens ▪ Do bring in any food or drinks ▪ Do not place anything into your mouth (e.g. pen) ▪ Use disinfectant provided for cleaning models and surfaces ▪ Use the provided hand sanitisers regularly ▪ Wash hands with soap and dry thoroughly before leaving

Personal Protective Equipment required

Emergency Procedures

In the event of an alarm, follow the instructions of the academic in charge. The initial sound (beep) is advising you to prepare for evacuation. During this time pack up your personal belongings. The second sound (whoop) gives instruction to leave. Follow the instructions of the academic in charge and the fire warden regarding the assembly point. In the event of an injury inform the academic in charge (and/or lab staff). First aider and fire warden contact details are on display near the entrance/exit doors. There is a wall mounted First Aid Kit located near the entrance/exit doors.

Clean up and waste disposal

- Refer to SWP-MED-MED-00093: GASU - Dissecting embalmed cadaveric material and SWP-MED-MED-00094: GASU - Recording and tracking dissection and waste.
- Fluids on the floor are a major safety hazard and should be reported to staff immediately.
- Replace stools under the tables (if applicable).
- Remove your gloves and dispose in the biowaste bins provided.
- Wash your hands thoroughly with the soap and dry your hands with paper towel.
- Remove your lab gown when you leave the Mortuary.

Ethics Approval

This type of practical has been previously considered and approved by the UNSW Human Research Ethics Advisory Panel (HC180115).

Declaration
I have read and understand the safety requirements for this practical class, and I will observe these requirements. **Signature**:…… **Date**:…… **Student number**: .....

ANAT-SRA-Med&SciStudent relates to RA-MED-06. Date for review: 01/02/2023