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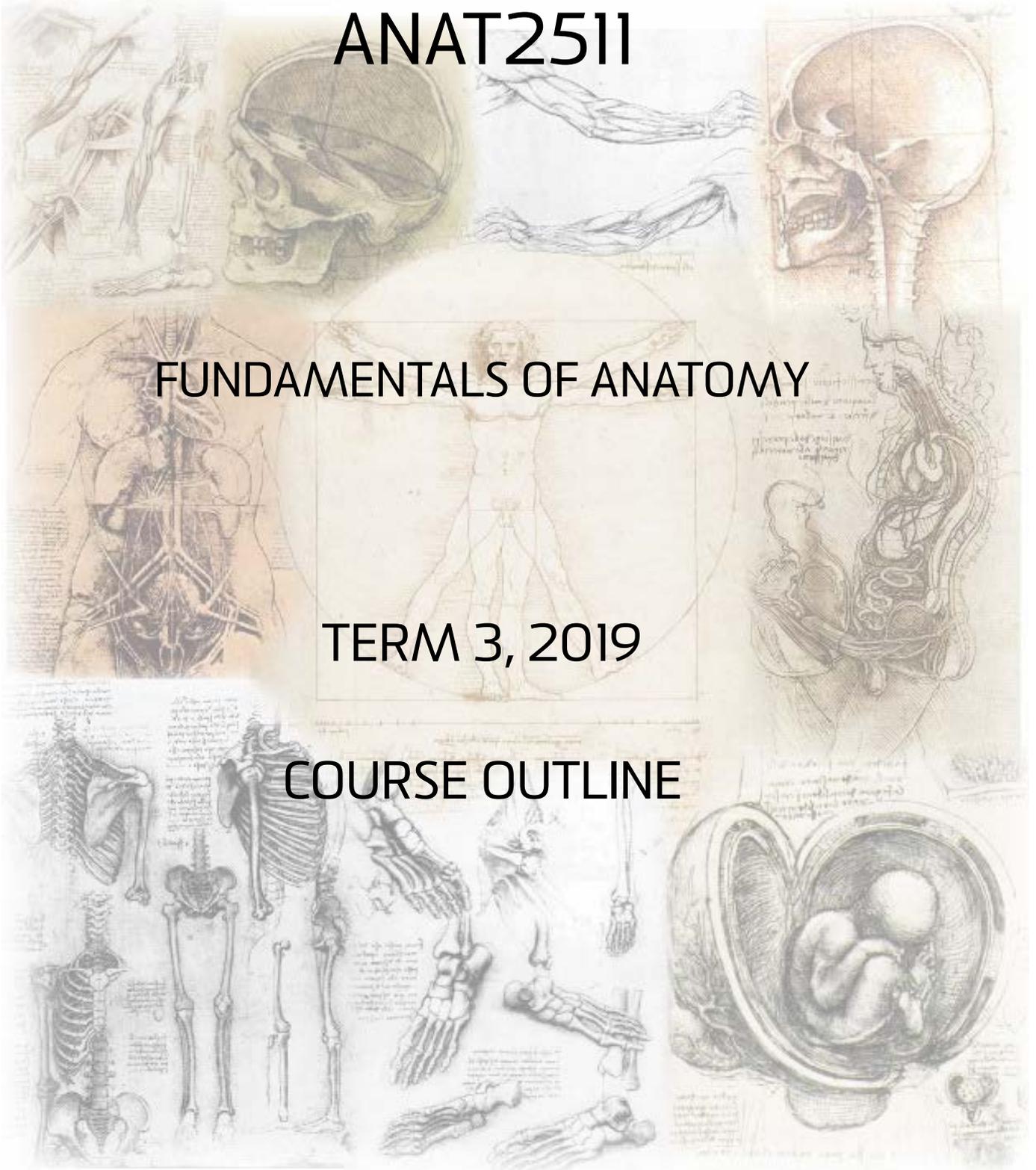
Faculty of Medicine
School of Medical Sciences

ANAT2511

FUNDAMENTALS OF ANATOMY

TERM 3, 2019

COURSE OUTLINE



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Please read this manual/outline in conjunction with the following pages on the [School of Medical Sciences website](#):

- [Advice for Students](#)
- [Learning Resources](#)

(or see "STUDENTS" tab at medicallsciences.med.unsw.edu.au)

Course Staff

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Appointments with any of the above academics should be arranged **via email**.

Please email from your **official UNSW student account**, include your **student number, course code** and state the **subject** clearly. Content questions preferably should be posted in the Moodle Forum.

Course Details

Course aims

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.

Students are provided the opportunity to appreciate and value the medical sciences especially anatomy and at the end of the course, to leave with an increased sense of awareness and value of the human body and improved capacity to make informed decisions regarding health.

Student learning outcomes

The course focuses on the most important 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 the organ functioning. Recent advances in medical and biomedical engineering research related to anatomy will also be discussed.

Student engagement particularly through the gross anatomy practicals will equip them to be able to identify the anatomical features of each of these systems on dissected human specimens, bones and models, as well as applying these to discussion of functional and applied aspects of the body system. Histology practicals focus on the identification of cells and tissues, viewed by virtual microscopy images of real tissue, again with consideration of their functions.

Through the team based learning activities, students will also develop written and oral skills in scientific communication, and the ability to peer-review and evaluate scientific writing and presentations.

Course Structure

It is strongly recommended that students attend all face-to-face seminars, lectures and practical laboratories. The workflow of a typical week includes the following activities:

1. **Preparatory activities** – activities available via Moodle (video lectures, readings etc.) should be completed prior to attending face-to-face activities in each week. Please note that there are online activities that need to be completed **before** the lecture and seminar in Week 1.
2. **Face-to-face histology seminars (all students)** - Monday (Ritchie Theatre LG02): 9-10am.
3. **Histology laboratory practical sessions (all students)** – Monday (Wallace Wurth G06/07): 10am-12pm.
4. **Face-to-face gross anatomy seminars (all students)** – Wednesday (Colombo Theatre C): 9-10am.
5. **Gross anatomy laboratory practical sessions (all students)** – Wednesday (Anatomy Teaching Lab 7): 10am-1pm.
6. **Online independent activities** (Moodle, weekly folders) - available via Moodle and include adaptive tutorials, trial quizzes, labelling practical activities.

Attendance

Your attendance at seminars, laboratories and tutorials is **IMPORTANT**, including Week 1, in which key information such the course structure and assessments, laboratory safety, ethical considerations and procedures will be discussed. Attendance in all activities is highly recommended and our expectation is that **all** practical sessions will be attended.

Please note that should you be unable to attend your practical class for any reason, you will not be able to do “make-up” labs. **In case if you miss any part of your assessment** due to misadventure or illness, an application for **Special Consideration** should be lodged **online** via myUNSW before the assessment is due. See <https://student.unsw.edu.au/special-consideration>

Resources for students

Prescribed Text:

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

Atlas:

Nielsen, M., and Miller, S.D. (2011). Atlas of Human Anatomy, John Wiley and Sons Inc.

Other additional useful texts:

- Young, B., et al. Wheater’s Functional Histology: A Text and Colour Atlas, 5th ed.
- 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 Livingstone (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.

See also [Learning Resources](#).

Continual course improvement

For course evaluation, feedback has been gathered at the completion of the course, using among other means, UNSW's Course and Teaching Evaluation and Improvement Process and myExperience. Student feedback is taken seriously, and continual improvements are made to the course based, in part, on such feedback.

This course has been a part of the UNSW 2025 Strategy Inspired Learning Initiative and has been significantly redesigned based on not only student feedback but also on best practices in learning and teaching using an interactive, flipped classroom approach. The changes to the course included:

- We have significantly reviewed and streamlined the course delivery.
 - Didactic lectures have been replaced with online interactive mini-lectures, incorporating animations, and PowerPoint voiceovers. This will enable students to engage more easily with content that is delivered and allow students flexibility to pause to make effective notes and to review content as they encounter difficulty.
 - Face-to-face seminars have been introduced with interactive workshop-type activities aiming on grasping the major concepts of the weekly content prior to attending the laboratory sessions.
 - 3 hour anatomy laboratory practicals have been introduced instead of 2h labs as follow-up from the anatomy seminar. These practicals will allow students to explore the structure and location of the components of each system on human cadaveric specimens. An additional hour will enable students to engage in team-based learning aiming on trouble-shooting, problem-solving and developing deep understanding of the content. This also will allow students to clarify any issues/misunderstanding directly interacting with peers, tutors and academics.
 - The online 'trial' quiz questions associated with weekly content will help students to independently assess and reinforce their understanding of key concepts.
 - The online components of the course are presented in a weekly format on Moodle and include a variety of activities that students can use to assess and receive immediate feedback on their learning. These include quizzes, videos, adaptive tutorials and self-guided museum visits. This choice of review activities will enable students to select the ones that suit their learning style. These consolidating activities supplement self-directed studies in preparation to spot tests and quizzes as well as a formative type of self-assessment.
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ANAT2511- course schedule – T3- 2019

Week	Dates	Pre-class Work	Histology Seminar Mon 9-10am Ritchie Theatre LG02	Histology Practical Mon 10am-12pm WW G6/G7	Gross Anatomy Seminar Wed 9-10am Colombo Theatre C	Gross Anatomy Practical Wed 10am-1pm Anatomy Teaching Lab 7	Rescheduled Seminar/Tests Wed 5-6pm	Tutorial online self- directed studies adaptive tutorials, labelling activities, trial quizzes (see Moodle)	
0		Online Lectures Textbook Ch 1	Students are required to complete online tasks available in 'Week 0' folder on Moodle: 'Working with human tissue' module and video lectures.						
1	16/09- 22/09	Online Lectures Textbook Ch 4, 7	Histology S1: Basic Tissues	Histology P1: Basic Tissues	Gross Anatomy S1: Skeletal System 1	Gross Anatomy P1: Skeletal system 1		Online tutorial 1: Skeletal System 1, Museum Visit	
2	23/09- 29/09	Online Lectures Textbook Ch 6, 8, 9	Histology S2: Bone & Joints	Histology P2: Bone & Joints	Gross Anatomy S2: Skeletal 2, Articular Systems	Gross Anatomy P2: Skeletal 2, Articular Systems		Online tutorial 2: Skeletal 2, Articular Systems	
3	30/09- 06/10	Online Lectures Textbook Ch 10-11	Histology S3: Muscle Tissue	Histology P3: Muscle Tissue	Gross Anatomy S3: Muscular System	Gross Anatomy P3: Muscular System		Online tutorial 3: Muscular System	
4	07/10- 13/10	Video lectures Textbook Ch 14	Public Holiday*	Public Holiday*	Gross Anatomy S4: NS, Brain, Cranial Nerves	Gross Anatomy P4: NS, Brain, Cranial nerves		Online tutorial 4: NS, Brain, Cranial nerves	
5	14/10- 20/10	Online Lectures Textbook Ch 12-13	Histology S4: Nervous Tissue	Histology P4: Nervous Tissue	Gross Anatomy S5: PNS, Spinal Cord, Spinal Nerves	Gross Anatomy P5: Spinal Cord, Spinal Nerves		Online tutorial 5: PNS, Sp Cord, Sp nerves	
6	21/10- 27/10	Online Lectures Textbook Ch 5, 17	Histology S5: Integumentary System	Histology P5: Integumentary System	Gross Anatomy S6: Ear, Eye	Gross Anatomy P6: Ear, Eye	TEST 1 Weeks 1-5	Online tutorial 6: Ear, Eye	
7	28/10- 03/11	Online Lectures Textbook Ch 19-21, 23	Histology S6: Cardiovascular, Respiratory Systems	Histology P6: Cardiovascular, Respiratory Systems	Gross Anatomy S7: Cardiovascular, Respiratory Systems	Gross Anatomy P7: Cardiovascular, Respiratory Systems		Online tutorial 7: Cardiovascular, Respiratory Systems	
8	04/11- 10/11	Online Lectures Textbook Ch 24	Histology S7: Digestive System	Histology P7: Digestive System	Gross Anatomy S8: Digestive System	Gross Anatomy P8: Digestive System	TBL: PROJECT	Online tutorial 8: Digestive System	
9	11/11- 17/11	Video lectures Textbook Ch 26, 28	Histology S8: Urinary System	Histology P8: Urinary System	Gross Anatomy S9: Urinary, Reproductive Systems	Gross Anatomy P9: Urinary, Reproductive Systems		Online tutorial 9: Urinary, Reproductive Systems	
10	18/11- 24/11	TEST 2 Weeks 6-9							
11	25/11- 28/11	STUDY PERIOD							
	29/11- 16/12	EXAM PERIOD							

*Public Holiday: Week 4 Monday 7th October, Labour Day.

Assessment

1. Continuous assessment	20%
2. Spot Test 1	20%
3. Spot Test 2	20%
4. Theory exam	40%

Continuous assessment: Overview

Continuous assessment consists of team based quizzes (10%) and a team based assignment (10%). During the first week of the course you will be divided into 5 practical groups and each group will be further subdivided into teams of 4-5 students each. Each team will have a mixture of abilities and backgrounds. These teams will work together on team based quizzes and the team based assignment.

Continuous assessment: Team based quizzes

The use of team based learning is designed to improve your learning experience using individual and team quizzes and peer-teaching in an interactive discussion facilitated by a tutor. Students will work in teams for each practical session. These quizzes will be based on pre-readings, lectures and practical sessions. You should therefore make every attempt to engage in all the learning situations provided in the course. The quizzes will be distributed at the beginning of selected practical sessions. These quizzes will be attempted individually and the answers submitted to your tutor. The same quiz questions will then be attempted in teams, with each team submitting their consensus answers. The tutor will then facilitate an interactive discussion of each question and provide clarifications on the challenging questions and concepts. The practical session will then continue with the tasks outlined in your course manual and will usually cover the same scope as the quiz.

You will receive a maximum of **2.5%** towards your final course mark for each tutorial quiz, comprising **1.5%** for your individual performance and **1%** for your group's performance. Over the duration of the semester, four of these quizzes will contribute to **10%** of your final mark.

Continuous assessment: Team based assignment

To complete the team based assignment, teams will be assigned a topic in week 2 and should:

- Research the topic and understand the topic well.
- Understand the underlying anatomy, and its functional and clinical relevance.
- Produce an **anatomy web page** that explains the topic and the underlying anatomy concisely. **Due dates for the assignment will be provided on the Moodle site.**
- In Week 10, teams will submit a review of two assigned team submissions (a peer review rubric will be provided to assist with this process), and peer-review of individual team member contributions.
- Marking criteria for this assignment is available on the course Moodle site.
- **Marks will be deducted for submissions after the deadline.**

Spot Tests

Spot Tests 1 and 2 are each worth 20%. The spot tests assess knowledge learned and skills obtained during anatomy and histology practicals. **Spot Test 1** covers the content of the first half of the term while **Spot Test 2** focuses on the second half of the term. **Spot Test 1** will be held on Wednesday 23 October from 5-6pm. **Spot Test 2** will be held on Monday 18 November from 9am–12pm. The spot tests are conducted online in designated computer labs. The format and location of the Spot Tests will be posted on Moodle.

Theory Exam

A single 2-hour written exam worth 40% will held during the formal examination period. It assesses student knowledge of 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 multiple choice questions

and short answer questions and will test knowledge obtained from anatomy and histology seminars and practicals.

Access to previous exam papers

Past exam papers are not available to students. Sample questions are provided during seminars, revision activities and are published via Moodle.

Failure to complete an assessment

If you miss any part of an 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 lodgement 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>

The supplementary examination dates for T3 are: 13/01/20 – 17/01/20.

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.

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

The Use and Handling of Specimens (i.e. human remains) in the dissecting room

Prior to attending the practical classes you should read the section below on the handling and use of anatomical specimens.

1. In this and other courses, you will be required to study human anatomical (prosected/professionally

dissected) specimens. By law, responsibility to the donor and their living family members, and as a matter of good ethical practice, you must treat all human remains with great care, showing them the respect you would afford a living person. Any inappropriate handling will result in exclusion from the class and possible suspension from the course.

2. Moreover, you must at all times show respect for your tutor and colleagues. Some people react differently to human remains; certain parts of the body may be culturally sensitive or even offensive; some students find working with human heads to be disturbing.
3. Students **must** bring and wear a laboratory coat for all laboratory classes and **must** wear closed toe shoes. Moreover, you **must** wear disposable gloves when handling wet specimens, and at no times are you allowed to eat or drink in the dissecting room. **Failure to comply with these rules will result in you being asked to leave the dissection room.** These are occupational health and safety requirements of the School of Medical Sciences. First aid kits are also provided in the dissection room in the event of an injury during a laboratory class.
4. The solution that most of the human remains are stored in is a mild disinfectant and poses no danger to students when handled correctly. Thus, the floral smell is the disinfectant, and has nothing to do with decomposition of the bodies: they are preserved in formalin and do not decompose under laboratory conditions. They can, however, dry out/discolour through regular use and exposure to air.
5. Due to the delicate nature of the human brain, these specimens are stored in formalin. This chemical emits a strong odour; harmless, unless ingested or exposed to in high concentrations over long periods of time. Please do not spend too long handling such specimens as you might find the fumes cause discomfort. If they do, simply excuse yourself from the class (inform your tutor) and quietly leave the cubicle or laboratory for some fresh air.
6. Some students feel uncomfortable, even physically sick the first time (or few times) they study prosected human remains. This is a common reaction among students and is nothing to be ashamed about. If you feel discomfort when handling remains, simply stand back and observe and communicate with other students in your group while they handle remains. If you feel sick, simply excuse yourself from the class (inform your tutor) and quietly leave the cubicle or laboratory for some fresh air.
7. When handling these materials please be very careful. Always wear gloves, use instruments such as forceps and probes to touch structures, and keep handling to a minimum. Do not move remains from one bench to another. If they need to be moved, ask your tutor to do it.
8. When you have been handling wet specimens always remove your gloves before handling models. Moreover, always wash your hands with soap at the basins in the dissection room when a class has finished (i.e. before leaving the dissection room). Make a habit of practicing good hygiene to look after yourself and others (classmates, other students and your family).
9. Anatomical models must also be treated with great care. Proper handling is essential: do not pick up a cranium by placing your fingers in the orbits, as this will lead to breakage of delicate bones. Instead, pick it up by placing one hand across the braincase, just behind the orbits, and the other hand beneath its base.

Anatomical terms

One of the largest challenges for new students in anatomy is learning anatomical terms. In many ways the process is like learning a new language. All scientific disciplines have a set of terms and across the whole of science they are derived mostly from Latin and Ancient Greek words. Why Latin and Ancient Greek? Latin, in particular, is a 'dead' language, meaning that no one alive today uses it as the 'mother' tongue. Thus, it is not subject to fashions and constant change, like most living languages, especially English. Moreover, the spelling of Latin and Ancient Greek words has been agreed to for a long time.

In Australia and other English-speaking countries, anatomical terms are Anglicised (translated to English). This means that in many cases the terms we teach are the English equivalent of the Latin or Greek word (e.g. Latin = *Corpus ossis ilii*; English = Body of the ilium). There are, however, still plenty of Latin and Greek terms used. Their pronunciation, however, is an entirely different matter. It varies greatly across English speaking countries; even at UNSW you will find lecturers employing different pronunciations,

partly as a result of where they learned their anatomy! What matters is that we all know which structure we are referring to when we use a particular term; there are no points for correct pronunciation as most of the variants are equally correct!

An international organisation called the *Federative Committee on Anatomical Terminology* with representatives from many countries has published the standard (agreed) set of anatomical terms that anatomists follow. It is called *Terminologia Anatomica* and the last edition was published in 1998. Most internationally oriented textbooks (such as *Gray's Anatomy*) apply *Terminologia Anatomica*. In this course, we strive also to use this standard set of anatomical terms as much as possible as we believe that it represents best international practise as well, as making it easier for you to learn. The terms that you need to know in laboratory classes are given in **bold**. You should, however, endeavour to understand all of the information given in laboratories in order to do well in the course.



Hazards	Risks	Controls
<p>Physical Cold temperature (16°C) Sharp bone/plastic</p> <p>Biological Fungi, bacteria (tetanus), hepatitis B and C</p> <p>Chemical Formaldehyde Methanol 2-phenoxyethanol</p>	<p>Cold Penetrating wound of foot</p> <p>Infection</p> <p>Corrosive/Flammable Irritant/toxic Irritant</p>	<ul style="list-style-type: none"> • Wear laboratory coat over appropriate warm clothing • Wear enclosed shoes with full coverage of the dorsum of the foot • Have appropriate immunisation • Do not eat, drink or smoke in the Gross Anatomy Lab • Do not place anything (e.g. pens, pencils) into your mouth • Use disposable gloves when handling wet specimens and do not cross-contaminate models or bones with wet specimens • Always wash hands with liquid soap and dry thoroughly with disposable paper towel before leaving • Low concentrations of chemicals used • Chemicals used in well ventilated area • Safety Data Sheets for chemicals available in the laboratory

Personal Protective Equipment required

 Closed in Footwear	 Lab. Coat	 Gloves	
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Emergency Procedures

In the event of an alarm sounding, stop the practical class and wait for confirmation to evacuate from demonstrators. Then wash your hands and pack up your bags.
Follow the instructions of the demonstrators regarding exits and assembly points.

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, because this allows fluid to drip onto the floor. Fluids on the floor are a major safety hazard and should be reported to staff immediately.
- Replace stools under the tables in your cubicle.
- Remove your gloves and dispose in the biowaste bins provided.
- Wash your hands and instruments thoroughly with the soap provided and dry your hands with the paper towel.
- Remove your laboratory coat when you leave the dissecting 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:

Science Teaching Laboratory



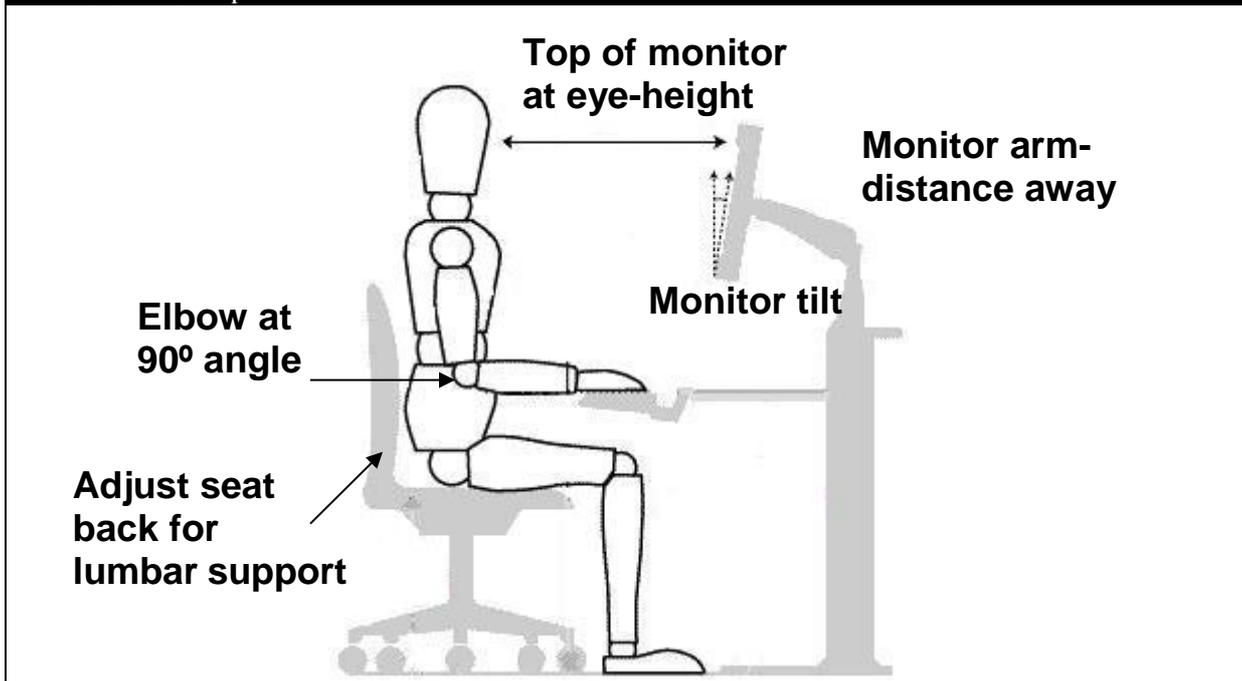
UNSW SYDNEY

ANAT2511 in G6/G7 Wallace
 Wurth building
 Histology practicals from weeks 1
 to 10 in Term 3, 2019

Student Risk Assessment

Hazards	Risks	Controls
Ergonomics	Musculoskeletal pain.	Correct workstation set-up.
Electrical	Electrical shock/fire.	Check electrical equipment is in good condition before use. All portable electrical equipment tested and tagged.

Workstation set-up



Personal Protective Equipment

Not necessary in these practicals.

Emergency Procedures

In the event of an alarm, follow the instructions of the demonstrator. The initial sound is advising you to prepare for evacuation and during this time start packing up your things. The second sound gives instruction to leave. The Wallace Wurth assembly point is on the lawn in front of the Chancellery. In the event of an injury inform the demonstrator. First aiders and contact details are on display by the lifts. There is a wall mounted First Aid Kit located at the end of the G6 laboratory.

Clean up and waste disposal

No apparatus or chemicals used in these practicals.

Declaration

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

Signature:.....Date:.....
 Student Number:.....