



UNSW
AUSTRALIA

Medical Sciences
Medicine

ANAT1521

Anatomy for Medical Science



Session 2 - 2015

Course Outline

CRICOS Provider Code 00098G

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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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Course Details

Units of Credit

This course is worth six units of credit (6 UOC).

Hours per week

Five hours per week (5 HPW) comprising two hours of lectures and three hours of laboratory time.

What is anatomy?

Anatomy literally means to break apart or separate the human body into its parts; to dissect the body. The earliest recorded anatomy teachers, Herophilus and Erasistratus, lived in Ancient Alexandria and taught anatomy between 300 BC and the second century AD. However, the roots of anatomy go back much further – perhaps 4,000 years ago – with the mummification practices of the Ancient Egyptians and with the Ancient Greek physicians. The most famous anatomist is the Ancient Roman Galen, whose work remained the standard for almost 1,300 years until the European Renaissance. During and after the Renaissance, anatomy developed into a modern scientific discipline. Therefore, anatomy is one of the oldest scientific fields and one that has always and continues to underpin medicine. It is also a well-established scientific discipline in its own right.

Anatomy is a dynamic and diverse science that considers the structures of the body from the cellular level through to the body's external surface and beyond. Anatomy examines the cells and tissues of the body (cell biology and histology), the systems of the body (integumentary, skeletal, muscular, nervous, cardiovascular, lymphatic, respiratory, alimentary, urinary, genital and lymphoid systems), the joints, movements and biomechanics of the human body, human comparative and evolutionary anatomy (anthropology), the development of the embryo and postnatal growth of the infant and child, as well as clinical and radiographic anatomy. Anatomy at UNSW teaches and researches across most of these areas. Note that the term *gross anatomy* refers to the study of the structures of the body that are observable without the aid of microscopes (i.e. the naked eye) and which can be palpated (touched), while *microanatomy* is sometimes used to refer to the microscopic structures of the body (e.g. tissues; the subject of histology).

Course aim

The aim of this course is to:

Provide students with a solid foundation in the gross anatomy of the whole human body.

Student learning outcomes

At the end of the course students will have gained:

1. *Practical laboratory skills in anatomy and an understanding of the ethics of working with human remains.*
2. *An understanding of the basic plan of the human body; its major tissue types, body planes, spatial relations and movements.*
3. *An awareness of the role and importance of each of the body systems and the names and functions of its major components.*
4. *The capacity to apply knowledge and to think critically within the anatomical sciences.*

The University of NSW has developed a list of attributes which its graduates should possess upon graduation (the 'graduate attributes'). The curriculum and assessment of this course have 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.

For Science, the UNSW Faculty of Science graduate attributes are as follows:

1. *Research, inquiry and analytical thinking abilities.* Technical competence and discipline specific knowledge. Ability to construct new concepts or create new understanding through the process of enquiry, critical analysis, problem solving, research and inquiry.
2. *Capability and motivation for intellectual development.* Capacity for creativity, critical evaluation and entrepreneurship. Ability to take responsibility for and demonstrate commitment to their own learning, motivated by curiosity and an appreciation of the value of learning.
3. *Ethical, Social and Professional Understanding.* Ability to critically reflect upon broad ethical principles and codes of conduct in order to behave consistently with a personal respect and commitment to ethical practice and social responsibility. Understanding of responsibility to contribute to the community. Respect and value social, multicultural, cultural and personal diversity.
4. *Communication.* Effective and appropriate communication in both professional (intra and inter disciplinary) and social (local and international) contexts.
5. *Teamwork, collaborative and management skills.* Ability to recognise opportunities and contribute positively to collaborative scientific research, and to perceive the potential value of ideas towards practical applications. Demonstrate a capacity for self management, teamwork, leadership and decision making based on open-mindedness, objectivity and reasoned analysis in order to achieve common goals and further the learning of themselves and others.
6. *Information literacy.* Ability to make appropriate and effective use of information and information technology relevant to their discipline.

Course relationships

Anatomy for Medical Science is the foundation course for all advanced (Level III) gross anatomy courses at UNSW: *Visceral Anatomy* (ANAT3121), *Functional Anatomy 1* (ANAT3131), *Functional Anatomy 2* (ANAT3141) and *Neuroanatomy* (ANAT3411). A number of other courses offered by anatomy compliment these gross anatomy offerings: *Histology: Basic and Systematic* (ANAT2241) and *Embryology: Early and Systematic Development* (ANAT2341). Moreover, those students with an interest in microanatomy and development will find the Level III course *Cell Biology* (ANAT3231) of interest. More generally, anatomy courses compliment the subjects offered by other areas within the School of Medical Science (i.e. Physiology, Pharmacology, Pathology and Health and Exercise Science) as well as courses taught in biological science, biomolecular science and genetics, psychology, biomechanics, vision science, food science and nutrition, medical microbiology and immunology, and engineering.

Teaching rationale

While in many ways this course is quite conventional, especially in terms of teaching strategies, students are strongly encouraged to engage with the ideas and materials covered. The role of the teacher (lecturer/tutor) is to impart knowledge, but also to help students navigate their way through the vast subject that is anatomy. Students should feel free to question and think critically, even about basic knowledge covered; things that might be considered unwavering 'facts'. With this in mind, students are strongly encouraged, and will be supported to be enquiring, to ask questions, make pertinent observations, and to share experiences and knowledge with the lecturer/tutors and classmates. The philosophy of the course is also fundamentally about helping students to develop an enthusiasm for learning, especially about their own body and biology. This course also aims to exploit the teaching-research nexus, by feeding research findings and developments, as well as knowledge and skills of the teachers, into teaching and learning.

Teaching Strategies

Teaching and learning are a mixture of traditional style lectures and laboratories, as well as videos, where relevant. This course comprises one two hour lecture, and one three hour laboratory, per week (total of five hours per week).

Lecture	Laboratory/practical
Thursday: 2 – 3 p.m. Mathews B	Mon: 10 a.m. - 1 p.m. OR Mon: 2 – 5 p.m.: OR Wed: 10 a.m. - 1 p.m. OR Wed: 2 - 5 p.m.
Friday: 2 – 3 p.m. Mathews B	Venue: Dissecting Room (Wallace Wurth101)

Lecture recordings

Digital recording of all lectures will be made via the University's *Echo360* system. Lecture PowerPoint presentations will also be available for the student to view whilst listening to these recordings (within a couple of days of the lecture being given). Lectures will also be downloadable as podcasts. Note that hardcopies of the lecture will not be provided. Lectures and accompanying materials will be available on the *Blackboard* course homepage.

Diagrams for Lectures

When diagrams are required for students to complete during lectures they will be uploaded to be the Blackboard course website on the day before each lecture. If you wish to use these, please print them and bring them to the lectures with you.

Resources for students

Recommended Text

Marieb, Mallat & Wilhelm (2008). *Human Anatomy: International Edition*. 5th ed., Pearson Benjamin Cummings.

Other books that are very useful and may be used instead as texts. (available in the Library):

- Snell, R. (2006). *Clinical Anatomy by Systems*. Lippincott, Williams and Wilkins. (About \$100 at UNSW Bookshop)
- Drake, R. (2005). *Grays Anatomy for Students*. Churchill Livingstone. (About \$110 at UNSW Bookshop)
- *Moore, K. & Dalley, A. (2010). *Clinically Oriented Anatomy*, 6th ed. Lippincott, Williams and Wilkins. (About \$110 at UNSW Bookshop). Very detailed.
- 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. (About \$130 at UNSW Bookshop)

*Recommended Text for level 3 Anatomy courses.

Continual course improvement

In this course evaluative feedback on this course is gathered at the completion of the course, using among other means, UNSW's Course and Teaching Evaluation and Improvement (CATEI) Process. Student feedback is taken seriously, and continual improvements are made to the course based in part on such feedback. Based on feedback from 2014, the amount of material covered in some practical classes has been modified slightly. No other changes have been made.

Course Schedule, Semester 2, 2015

Week	Date	Time	Venue	Activity
1 28Jul - 1 Aug	Mon, 27 Jul	08-9 am 9-10 am	CLB 8	Lecture - What is Anatomy? Lecture : Skeletal System 1
	Mon, 27 Jul Wed, 29 Jul	10-1pm/2-5pm 10-1pm/2-5pm	WW, 101E	Lab 1: Introduction & Skeletal System 1
	Thur 30 Jul Fri, 31 Jul	2-3pm	Mathews B Mathews B	Lecture: Skeletal System 2 Lecture: Articular System
	Mon, 3 Aug Wed, 5 Aug	10-1pm/2-5pm 10-1pm/2-5pm	WW, 101E	Lab 2: Skeletal System 2 & Articular System
2 4 - 8 Aug	Thur, 6 Aug	2-3pm	Mathews B	Lecture: Muscular System 1 (Axial)
	Fri, 7 Aug	2-3pm	Mathews B	Lecture: Muscular System 2 (UL)
	Mon, 10 Aug Wed, 12 Aug	10-1pm/2-5pm 10-1pm/2-5pm	WW, 101E	Lab 3: Muscular System 1
3 11 - 15 Aug	Thur, 13 Aug	2-3pm	Mathews B	Lecture: Muscular System 3 (LL)
	Fri, 14 Aug	2-3pm	Mathews B	Lecture: Nervous System 1 (Sp Cord)
	Mon, 17 Aug Wed, 19 Aug	10-1pm/2-5pm 10-1pm/2-5pm	WW, 101E	Lab 4: Muscular System 2 & Spinal Cord
4 18 - 22 Aug	Thur, 20 Aug	2-3pm	Mathews B	Lecture: Nervous System 2 (Spinal Nerves)
	Fri, 21 Aug	2-3pm	Mathews B	Lecture: Nervous System 3 (ANS)
	Mon, 24 Aug Wed, 26 Aug	10-1pm/2-5pm 10-1pm/2-5pm	WW, 101E	Lab 5: Spinal Nerves & ANS
5 25 - 29 Aug	Thur, 27 Aug	2-3pm	Mathews B	No lecture
	Fri, 28 Aug	2-3pm	Mathews B	No lecture
	Mon, 31 Aug Wed, 2 Sept	10-1pm/2-5pm 10-1pm/2-5pm	WW, 101E	Revision/ Spot Test 1
6 1 - 5 Sept	Thurs, 3 Sept	2-3pm	Mathews B	*Lecture: Nervous System 4 (Brain)
	Fri, 4 Sept	2-3pm	Mathews B	*Lecture: Nervous System 5 (Cranial Nerves)
	Mon, 7 Sept Wed, 9 Sept	10-1pm/2-5pm 10-1pm/2-5pm	WW, 101E	Lab 6: Brain & Cranial Nerves
7 8 - 12 Sept	Thurs, 10 Sept	2-3pm	Mathews B	Lecture: Nervous System 6 (Eye)
	Fri, 11 Sept	2-3pm	Mathews B	Lecture: Nervous System 7 (Ear)

8 15 - 19 Sep	Mon, 14 Sept Wed, 16 Sept	10-1pm/2-5pm 10-1pm/2-5pm	WW, 101E	Lab 7: Eye & Ear
	Thur, 17 Sep	2-3pm	Mathews B	Lecture: Cardiovascular System 1 (Heart)
	Fri, 18Sept	2-3pm	Mathews B	Lecture: Cardiovascular System 2 (Peripheral Vessels)
9 22 - 26 Sep	Mon, 21 Sept Wed, 23 Sept	10-1pm/2-5pm 10-1pm/2-5pm	WW, 101E	Lab 8: Cardiovascular System
	Thur, 24 Sep	2-3pm	Mathews B	No lecture
	Fri, 25 Sep	2-3pm	Mathews B	No lecture
28 Sep – 2 Oct: MID-SESSION BREAK				
10 6 – 10 Oct	Mon, 5 Oct Wed, 7 Oct	10-1pm/2-5pm 10-1pm/2-5pm	WW, 101E	No practical class PUBLIC HOLIDAY (Labour Day)
	Thur, 8 Oct	2-3pm	Mathews B	Lecture: Respiratory System 1
	Fri, 9 Oct	2-3pm	Mathews B	Lecture: Respiratory System 2
11 13 – 17 Oct	Mon, 12 Oct Wed, 14 Oct	10-1pm/2-5pm 10-1pm/2-5pm	WW, 101E	Lab 9: Respiratory System
	Thur, 15 Oct	2-3pm	Mathews B	Lecture: Digestive System 1
	Fri, 16 Oct	2-3pm	Mathews B	Lecture: Digestive System 2
12 20 – 24 Oct	Mon, 19 Oct Wed, 21 Oct	10-1pm/2-5pm 10-1pm/2-5pm	WW, 101E	Lab 10: Digestive System
	Thurs 22 Oct	2-3pm	Mathews B	Lecture: Urinary & Male Reproductive
	Fri, 23 Oct	2-3pm	Mathews B	Lecture: Female Reproductive Sys
13 27- 31 Oct	Mon, 26 Oct Wed, 28 Oct	10-1pm/2-5pm 10-1pm/2-5pm	WW, 101E	Lab 11: Urinary & Reproductive Systems
	Thurs, 29 Oct	2-3pm	Mathews B	NO LECTURE
	Fri, 30 Oct	2-3pm	Mathews B	NO LECTURE
EXAMINATION PERIOD				

*** These lectures may need to be moved to the previous week, depending on the timing of the Spot Test (Practical Exam), which will be determined in Week 1 or Week 2.**

Assessment

1. Spot Test 1	25%
2. Spot Test 2	25%
3. Theory Exam	50%

Spot Tests

Spot tests are held to assess student knowledge of course content and to assess deeper learning. Spot tests will cover knowledge learned and skills obtained during laboratory classes. *Format:* students will have approximately 3 minutes at each of 10 stations (plus some rest spots) to answer questions relating to models/specimens. At some stations there may be theory questions relating to the structures examined as well. This assessment contributes to the development of graduate attributes 1-4 (see above).

Spot Test 1:

Covers lectures and laboratories up to and including 'Spinal Nerves and the ANS'

To be held Week 7. Details to be announced.

Spot Test 2:

Covers lectures and laboratories from the 'Brain and Cranial Nerves' onwards

To be held during the examination period

Theory Exam

A single 2 hour written exam will be held during the formal examination period to assess student knowledge of course content and to assess deeper learning (such as the ability to make connections between ideas or to assess capacity for problem solving). The written exam will comprise 40 multiple choice questions and 6 short written questions, and will test knowledge obtained from lectures and laboratories.

Failure to complete an assessment

Failure to sit a test or exam without lodgement of an application for Special Consideration with Student Central 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

Ethical behaviour and human remains

In this course, you will be required to study human anatomical (prosected = professionally dissected) specimens. Each year, people donate their bodies to UNSW so that you and your colleagues can learn about the human body directly from their remains. These are precious materials 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).

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.

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.

All students should read and sign the form on the next page prior to or during the first practical class. Please DO NOT DETACH this form from your prac book, even after it has been signed

Medicine Teaching Laboratory
Student Risk Assessment



UNSW
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Gross Anatomy Practical Classes for Medical and Science Students

DOC:PHSL-SRA-S&H-01rev1.1

Hazards	Risks	Controls
Physical Cold temperature (16°C) Sharp bone/plastic Biological Fungi, bacteria (tetanus), hepatitis B and C Chemical Formaldehyde Methanol 2-phenoxyethanol	Cold Penetrating wound of foot Infection Corrosive/Flammable Irritant/toxic Irritant	<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 Dissecting Room 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 (HREC09372).

Declaration

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

Signature: Date:
Student number: