



Australia's
Global
University

Faculty of Medicine
School of Medical Sciences

ANAT 2241

Histology: Basic and Systematic

COURSE OUTLINE

Term 2, 2019

CRICOS Provider Code 00098G

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Please read this outline in conjunction with the following pages on the

[School of Medical Sciences website:](#)

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

Student Policy/resource Information can be found on

<https://medicalsciences.med.unsw.edu.au/students/undergraduate/advice-students>

Special Consideration is centralised and can be found on:

<https://student.unsw.edu.au/special-consideration>

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UNITS OF CREDIT

ANAT2241 Histology: Basic and Systematic is a 6UOC course. It is offered in the Anatomy major in the BSc and BMedSc programs. As a pre-requisite to PATH2201 Processes in Disease, it provides a vital link to the study of disorders when examined microscopically. Students need to understand normal histological morphology of cells, tissues and organs before they can appreciate pathological conditions of tissues under the virtual microscope.

MODIFICATIONS TO THE COURSE IN 2019

We have recently extensively revised and updated how the course content will be best provided to students within the new 10 week UNSW term structure.

The course now includes a number of new online exercises and tutorials that students can complete in their own time. These have been developed in conjunction with educational experts and are also used in the Phase 1 Medicine course.

COURSE AIM AND LEARNING OUTCOMES

The aim of this course is to provide students with a thorough understanding of the microscopic appearance and function of normal structures in the human body. This allows students to integrate this information with other disciplines such as Gross Anatomy, Pathology, and Physiology.

1. Demonstrate the appropriate use of histological terminology and an understanding of the basic histological tissues.
2. Demonstrate an understanding of the microscopic structure and function of the basic tissues, namely epithelium, connective tissue, muscle and nervous tissue.

3. Demonstrate an understanding of the microscopic structure and function of the following human body systems and their components: cardiovascular, respiratory, integumentary, immune, gastro-intestinal, endocrine, urinary, and male and female reproductive systems and the eye.
4. Demonstrate an understanding of the interdependence of body systems from histological structural point of view.

HISTOLOGY BACKGROUND

Anatomy is the study of the structure of organs and tissues at the **MACROSCOPIC (or gross) level**. Histology is the study of organ and tissue structure at the **MICROSCOPIC** level - it can be considered as microanatomy. Histology provides an insight into how cellular components are structurally and functionally related. It draws its foundations in Biochemistry, Molecular Biology and Physiology as well as Gross Anatomy.

Histology provides valuable information on why tissues and organs are shaped as they are. Histology is one of the bases of biomedical sciences. Modern histological techniques allow us to explore and gain an understanding of biochemical and physiological processes and how these are changed when structure is changed, as occurs, for instance, in many disease processes. By the end of this course, students should have a thorough understanding of the tissues and systems of the body by microscopic examination and to apply their knowledge to functional states examined in Physiology and diseased states examined in Pathology.

TEXTBOOK

Combined Texts and Atlas

Junqueira's *Basic Histology* Text & Atlas 14th ed, McGraw-Hill by Mesher, A. (2016).

Websites

http://tiny.cc/Histology_Glossary

http://tiny.cc/Histology_Stains

http://tiny.cc/ANAT2241_Online_Support

ASSESSMENTS

1. Assessment Task (Week 5)

This mid-semester assessment task is worth **30%**. It comprises two components; a practical test (**10%**) and a multiple-choice quiz (**20%**). The practical test assesses knowledge learned during practical classes through examination of histology virtual slides and electron micrograph images. The multiple-choice quiz component is conducted online.

Feedback process: Feedback will be provided through Moodle aggregated summary.

This assessment task demonstrates the appropriate use of histological terminology and an understanding of the microscopic structure and function of the basic tissues, namely epithelium, connective tissue, muscle and nervous tissue.

2. Final Practical Test

This assessment task will be held during the formal examination period. The assessment task is a practical test worth **20%**. The practical test assesses knowledge learned during practical classes through examination of histology virtual slides and electron micrograph images.

Feedback process: Student performance feedback will be provided through Moodle aggregated outcomes and individual consultation if required.

This assessment task demonstrates the appropriate use of histological terminology and an understanding of the microscopic structure and function of the following human body systems and their components: cardiovascular, respiratory, integumentary, immune, gastro-intestinal, endocrine, urinary, and male and female reproductive systems.

3. Final 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 basic histological tissues and systems, as well as problem-solving capacity). The written exam will consist of multiple-choice questions and short answer questions testing knowledge integration from lectures, practical classes, and online modules. This exam is worth **50%**.

Feedback process: Student performance mark.

This exam demonstrates the appropriate use of histological terminology and an understanding of the basic histological tissues and an understanding of the microscopic structure and function of the following human body systems and their components: cardiovascular, respiratory, integumentary, immune, gastro-intestinal, endocrine, urinary, male and female reproductive systems and the eye.

It also demonstrates an understanding of the interdependence of body systems via histological structure.

STUDY AND REVISION FACILITIES

The histology laboratories in rooms G06 and G07 of the Ground Floor of the Wallace Wurth building are generally open from about 8 am to 5.30 pm Monday to Friday.

They may be used by students during these hours, provided the rooms are not required for other classes. The laboratories are closed on weekends and public holidays.

Laboratory coats are NOT required in the histology laboratories. Food and drinks are NOT permitted in the laboratories.

Lecture recordings can be accessed via UNSW Lecture Recordings+ at: <https://student.unsw.edu.au/lecture-recordings>

GENERAL ADVICE IN HISTOLOGY

In Histology, you are expected to study the features of histological preparations as virtual images, which were scanned from real stained tissue sections, which were then mounted on glass slides and listed in the Learning Activities. Histological sections are slices of tissue usually from 5-8µm thick (see Dimensions).

Low power sketches or notes made may help you to remember the main histological features of a section, e.g., which major tissue components are present. Note the 2-D shapes in the section and the major tissue components present and try to determine the approximate 3-D shape of the whole organ from which the section was taken. Is the section cut randomly through the organ? Is there an obvious lumen in the section?

Abbreviations:

XS – cross section

TS – transverse section

LS – longitudinal section

LM – light microscope or light micrograph

EM – electron microscope, or electron micrograph

Dimensions: 1mm = 10³ micrometres (µm) = 10⁶ nanometres (nm)

Note: A micrometre is often called a “micron” (µm); 1µm = 10⁻⁶m

Resolving Powers:

Unaided eye – approx. 0.1 mm = 100µm

Light microscope – approx. 0.1 µm = 100nm

Electron microscope – approx. 1 nm

Virtual Slides

The virtual histology slides for this and the subsequent practicals can be found on the ANAT2241 MOODLE site.

TIMETABLE

The course involves **5 hours per week** of instruction.

This involves 2 x 1-hour lectures followed by a 3-hour practical class where students under the guidance of demonstrators will employ a computer to examine virtual slides of microscopic material. Computers are shared between two to three students.

Lectures

Monday 4 pm – 5 pm, Rex Vowels Theatre

AND

Wednesday 1 pm– 2 pm, Rex Vowels Theatre

Laboratory Sessions

Group A

Thursday 2–5pm, Rooms G6 & G7, Wallace Wurth Building

Group B

Friday 9am–12pm, Rooms G6, & G7, Wallace Wurth Building

Group B is repeated material, which was delivered in Group A.

NOTE: You must remain in your allocated Laboratory timeslots.

Histology of Basic Tissues and Systems		
Week	Lecture Dates	Lecture and Laboratory Class Topics
1 A	3/6	Epithelium
1 B	5/6	Glands
2 A	10/6	CT: Components (Due to the Queen's Birthday, this lecture can be viewed on line via Lecture Recording+)
2 B	12/6	Connective tissue I: Types
3 A	17/6	Bone, Bone Formation and Joints
3 B	19/6	Muscle
4 A	24/6	Nervous Tissue (PNS)
4 B	26/6	Nervous Tissue (CNS)
Week 5		Blood (Online Lecture)
5 A	1/7	Eye
Week 5		Lectures are conducted as normal in week 5, but no practicals due to the Mid-Term Assessment NOTE: The Mid-Term Assessment will run on Thursday, 4th July 2019. Students will be advised via Moodle.
6 A	3/7	Cardiovascular System
6 B	8/7	Respiratory System
7 A	10/7	Integumentary System
7 B	15/7	Immune System
8 A	17/7	GIT I
8 B	22/7	GIT II
9 A	24/7	Endocrine System
9 B	29/7	Urinary System
10 A	31/7	Female Reproductive System
10 B	5/8	Male Reproductive System