



Australia's  
Global  
University

Faculty of Medicine  
School of Medical Sciences

# ANAT 2241

## Histology: Basic and Systematic

COURSE OUTLINE

Term 2, 2020

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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://medicallsciences.med.unsw.edu.au/students/undergraduate/advice-students>

Special Consideration is centralised and can be found on: <https://student.unsw.edu.au/special-consideration>

## **STAFF**

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### **COURSE ACADEMIC TEAM:**

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## **UNITS OF CREDIT**

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ANAT2241 Histology: Basic and Systematic is a 6UOC course. It is offered in the Anatomy major in the BSc and BMedSci programs. As a pre-requisite to PATH2201 Processes in Disease, it provides a dynamic 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 FROM 2019**

In 2019, the course was revised to a 10-week term format by Mr Patrick de Permentier and Dr Mark Hill. In 2020, the course has been revised for fully online delivery by the course academic team.

The course includes online learning activities, and a weekly video conference live session led by the academic team.

## **COURSE AIM AND LEARNING OUTCOMES**

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The aim of this course is to provide students with a comprehensive understanding of the microscopic structure (appearance) and function of normal organs and tissues in the human body. The knowledge of microscopic structures attained in this course can be integrated by students with other subdisciplines of anatomy (macroscopic or gross anatomy, and embryology) and the related biomedical science disciplines such as Pathology and Physiology. The main aims of the course are to:

1. Develop well-developed skills in using appropriate histological terminology
2. Demonstrate an understanding of the microscopic structure and function of the four basic tissues: epithelium, connective tissue, muscle and nervous tissue.
3. Demonstrate an understanding of the microscopic structure and function of the human body systems and their components: cardiovascular, respiratory, integumentary, immune, gastro-intestinal, endocrine, urinary, and reproductive systems.
4. Demonstrate an understanding of the interdependence of body systems

## **HISTOLOGY BACKGROUND**

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Anatomy is the study of the structure of human body. Macroscopic (gross) anatomy examines the relations of body systems and organs topographically and relative to each other. In **histology**, the organs and tissues that constitute these organs are examined at a microscopic level - it can therefore 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 is one of the fundamental biomedical sciences. Histology provides valuable information on why tissues and organs are shaped as they are. Modern histological techniques allow us to explore and gain an understanding of biochemical and physiological processes and how these are changed when structure is altered, as occurs, for instance, in many disease processes, and ageing.

## **RESOURCES**

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**RECOMMENDED TEXTS** *One of these books will be indispensable to your learning!*

Pawlina W. 2018. Histology: A Text and Atlas. 8<sup>th</sup> edition. Wolters Kluwer

Mescher AL. 2018. Junqueira's *Basic Histology: Text & Atlas* 15<sup>th</sup> ed, McGraw-Hill

## **WEBSITES**

Virtual Microscopy Database (VMD): <http://virtualmicroscopydatabase.org/>

Histology Guide (Brelje and Sorenson): <http://www.histologyguide.com/index.html>

## **UNSW Virtual Slides**

Link in the Course Moodle page

## **ASSESSMENTS**

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### **1. Continuous Assessment**

These are regular short quizzes based on images and on theoretical content of a topic, taken remotely, and is worth **30%**. It provides students with regular feedback on their mastery of each topic. The assessment is conducted online.

Feedback process: Feedback will be provided through Moodle.

### **2. Assessment Task (mid-term)**

This mid-term assessment task is worth **20%**. It integrates practical knowledge of tissues (identifying structures on microscopy images) and theoretical knowledge. The assessment is conducted online.

Feedback process: Feedback will be provided through Moodle.

### **3. Assessment Task (end-term)**

The end-term assessment task is worth **20%**. It integrates practical knowledge of tissues (identifying structures on microscopy images) and theoretical knowledge. The assessment is conducted online.

Feedback process: Feedback will be provided through Moodle.

### **4. Final Theory Exam**

A single final course exam will be held during the formal examination period. This assesses student's mastery of the course content and ability to apply this knowledge to functional and clinical contexts through problem-solving. This exam is worth **30%**.

Final exam period for **Term 2, 2020 is 14 August to 27 August 2020.**

Supplementary exam period for **Term 2, 2020 is 7 September to 11 September 2020.**

## **STUDENT RESOURCES AND REVISION FACILITIES**

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**Equitable Learning Services** <https://student.unsw.edu.au/els>

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

**Transitioning to Online Learning** <https://www.covid19studyonline.unsw.edu.au/>

**Guide to Online Study** <https://student.unsw.edu.au/online-study>

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

## **GENERAL ADVICE IN HISTOLOGY**

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In Histology, you are expected to study the features of histological preparations as virtual images, which were scanned from real stained tissue sections and then mounted on glass slides. Histological sections are slices of tissue usually from 5-8 $\mu$ m thick (see Dimensions). Our histological collection is made available to you digitally. Histology is a visually beautiful sub-discipline of anatomy!

A useful study technique for learning histology is to draw schematic illustrations of the histological slides presented to you, and to annotate these. Note the 2D 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?

### **Some useful things to remember when studying histology:**

- **Abbreviations:**

- XS – cross section
- TS – transverse section
- LS – longitudinal section
- LM – light microscope or light micrograph
- EM – electron microscope, or electron micrograph

- **scale:**

- $1\text{mm} = 10^3$  micrometres ( $\mu\text{m}$ ) =  $10^6$  nanometres (nm)
- A micrometre is often called a “micron” ( $\mu\text{m}$ );  $1\mu\text{m} = 10^{-6}\text{m}$
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- **Resolving Powers:**

- Unaided eye – approx. 0.1 mm = 100 $\mu$ m
- Light microscope – approx. 0.1  $\mu$ m = 100nm
- Electron microscope – approx. 1 nm

## **TIMETABLE**

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In 2020, the course will be delivered fully online. It will also include a weekly video conference practical/tutorial session. We have mapped the time that you should allocate to go through the course material on a weekly schedule available on Moodle.

The course is broken into 15 short modules that are delivered over 10 weeks.

### **Course Modules**

**Module 1:** Introduction to Histology and Virtual Microscopy

**Module 2:** Epithelial Tissue

**Module 3:** Connective Tissue and Blood

**Module 4:** Cartilage and Bone

**Module 5:** Nerve Tissue

**Module 6:** Muscle Tissue

**Module 7:** Skin and Integument

**Module 8:** Cardiovascular System

**Module 9:** Respiratory System

**Module 10:** Lymphatic System

**Module 11:** Gastrointestinal System

**Module 12:** Endocrine System

**Module 13:** Urinary System

**Module 14:** Reproductive System

**Module 15:** Nervous System