

## Syllabus

- Light Microscopy - Image Formation, Aberrations, Phase, Dark Field, Fluorescence, Polarising, Measurement
- Microtechniques
- Confocal Microscopy
- Digital Micrography
- Digital Imaging
- Transmission Electron Microscopy
- Scanning Electron Microscopy
- Image Analysis
- Histochemistry

## Recommended Reading

Textbook: Kiernan, JA. Histological and Histochemical Methods (3rd edn), Butterworth, 1999.

Author: Robin Arnold , November 2007

For more information

### **Anatomy & Histology**

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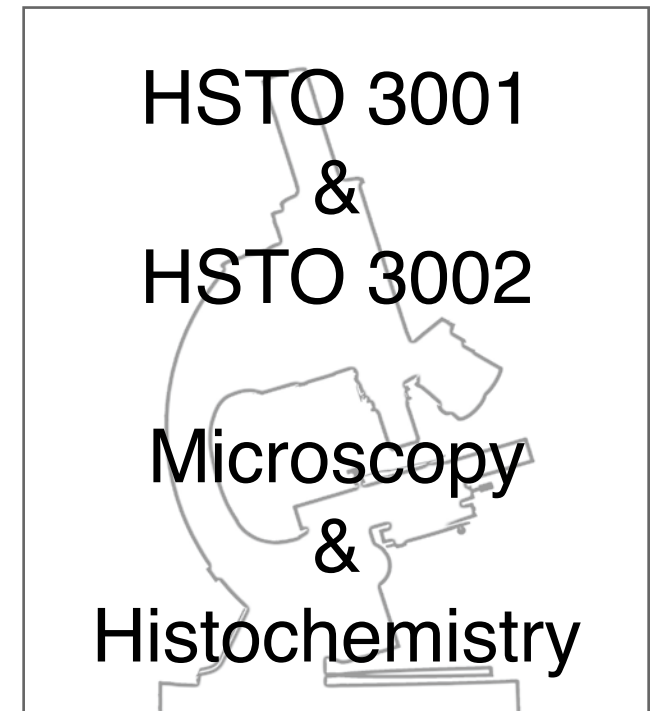
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### **Course Coordinator**

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Anatomy & Histology



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## Unit Of Study

**HSTO3001 Theory:** The aims of this unit of study are to provide a theoretical understanding of why biological tissues need to be specifically prepared for microscopic examination, how differing methods yield different types of morphological information; to allow students to study the theory of different types & modalities of microscopes, how they function & the differing information they provide; to develop an understanding of the theory of why biological material needs to be stained for microscopic examination; to allow students to understand how biological material becomes stained; to develop an understanding of the chemical information provided by biological staining - dyes, enzymes & antibodies.

**HSTO3002 Practical:** The aims of this unit of study are to provide an practical understanding of why biological tissues need to be specifically prepared for microscopic examination, to apply different

methods to gain different types of morphological information; to allow students to learn to use the different types & modalities of microscopes: to gain first hand experience of how they function & see for themselves the differing information they provide; to learn to stain biological material for microscopic examination; applying their theoretical knowledge & to allow students to develop practical skills in diverse histochemical staining procedures - dyes, enzymes & antibodies.

## Prerequisites

ANAT2008. HSTO3001 must be done in conjunction with HSTO3002

## Learning Goals & Outcomes

### Learning Goals:

This unit aims to develop an understanding of biological organisms at the cellular and tissue levels with a particular emphasis on the structural aspects of life and how these structures are studied. The structural orientation is a central one in biology in that it offers an integrating influence on the genetic, molecular, and biochemical approaches that tend to see organisms as isolated parts.

The course also aims to provide participants with a sound and usefully comprehensive command of histological and histochemical techniques. The course covers all the major methods presently in use and foreshadows new developments now underway. The course will provide an adequate theoretical background to appreciate why histological methods are used and why they work and will develop practical skills used in hospital, public service, private pathology and research laboratories.

### Learning Outcomes:

At the conclusion of this course participants will be able to/will have:

- an understanding of why biological tissues need to be specially prepared for microscopic examination

- an understanding of how differing processing methods can yield different types of morphological information
- developed skills in preparation of tissues for microscopy - dissection, fixation, embedding, sectioning
- understand different types and modalities of microscopes, how they function and the differing information they can provide
- developed an understanding of the chemical information provided by biological staining methods
- developed skills in diverse histochemical staining procedures - dyes, enzymes and antibodies
- an understanding of digital imaging
- capture high quality micrographs and prepare them for publishing and presentation

## Timetable

N.B. - Please check online timetable for latest details as times & locations may vary

### Wednesday:

11am-1 pm: [L]  
2-4 pm: [P]

### Thursday:

9-11am: [L]  
11 am-1 pm: [P]  
2-4 pm: [P]

Lectures = [L] / Practicals = [P]

## Class Location

- Please check online timetable for lecture locations
- Teaching 6: room S205, Anderson Stuart Bldg., Eastern avenue, Camperdown Campus [P]
- Other locations: include the Electron Microscope Unit, Madsen bldg., Fisher road [L/P]