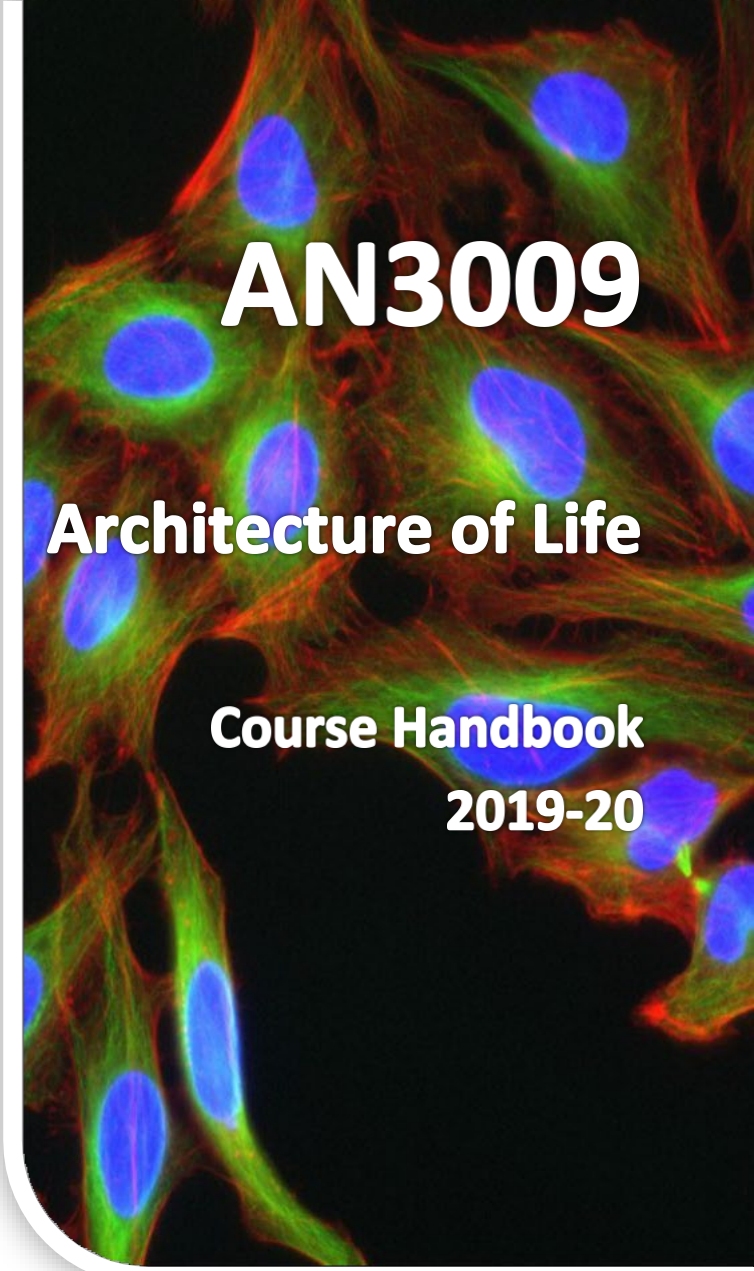
School of Medicine, Medical Sciences & Nutrition



AN3009

Architecture of Life

Course Handbook
2019-20

1495 UNIVERSITY OF ABERDEEN

Contents

Cover image:
Confocal micrograph of fluorescently labelled HeLa cells.
Nuclei are labelled in blue, tubulin in green and actin fibres in red.

Courtesy of:
Kevin Mackenzie
Microscopy and Histology Core Facility
Institute of Medical Sciences
University of Aberdeen
http://www.abdn.ac.uk/ims/microscopy-histology

Course Summary

This is a 15 credit Level 3 course which is provided in Semester 1 Weeks 7-11.

It has been designed to support the degree programme in BSc Biomedical Sciences (Anatomy) for which it is compulsory. However, students on other degree programmes in the Biological Sciences and Medical Sciences may take this course.

This course involves the study of the relationship between structure and function in the organisation of body tissues. Using the gastrointestinal tract as an initial overall template the 4 primary tissues will be described, leading to the study of the anatomical organisation of other body structures, e.g. respiratory and cardiovascular, and the pathological changes which can occur.

Course Aims & Learning Outcomes

Aims
To study the relationship between structure and function in the organisation of body tissues

Learning Outcomes
Students should have an understanding of tissue organisation in a variety of body locations and how these relate to function. They should be able to:

- explain how cellular and extracellular components combine to form a cohesive structurally and functionally organised tissue.
- describe and discuss a variety of tissue structural formats within the human body.
- explain how variations to the structural formats of body surfaces, tubes and musculoskeletal structural components are modified from a basic format and the functional effects of such structural variations in normal and disease situations.
- use the skills necessary to interpret microscopic slides, anatomical specimens and models and other imaging procedures.
- use the skills necessary to interpret histological and pathological images and use their findings to solve problems.
- use the skills necessary to relate structural information and functional activity.

Course Teaching Staff

Course Co-ordinator

Mr David Chorn (DC), **d.j.chorn@abdn.ac.uk**

Other Staff

Dr Asha Venkatesh (AV), **a.venkatesh@abdn.ac.uk**
Dr Flora Gröning (FG), **f.groening@abdn.ac.uk**
Dr Shahida Shahana (SS), **s.shahana@abdn.ac.uk**
Dr David McClelland (DMC), **davidmcclelland@nhs.net**

Students are expected to attend all lectures, laboratory classes, demonstrations and tutorials, and to complete all assignments by stated deadlines. The minimum acceptable performance is attendance at 75% of the practical classes, and presentation of all set course work, written and oral.

Assessments & Examinations

Examination

1st attempt: Continuous assessment 30%; 90-minute written examination 70%
Resit: Continuous assessment 30%; 90-minute written examination 70%

The degree examination is held in December with the re-sit examination in July.

In-course assessments will contribute 30% of the marks towards the final course grade. This will consist of:

- A short note description/comparison of different tissues in a histological slide (10%)
- An essay on a specific tissue or organ (10%)
- A poster demonstration on an aspect of abnormal tissue organisation (10%)

Details of the above will be provided at appropriate stages in the course.

Key submission dates for in-course work will be communicated during the course.

The end of course exam will contribute 70% of the marks towards the final course grade. This exam will be of 90 minutes duration. This will comprise of one tissue recognition and labelling question using an image of a class slide, one essay question (from a choice of two), and three short note questions (from a choice of five). From 2010/11 class certificates will be valid for two years and permit a total of three attempts at the required examination within that two-year period i.e. the first attempt plus up to two resits.

The resit examination is held in July. **The continuous assessment mark will also be included at a student's resit and subsequent diets of examination.** It is therefore imperative that students apply the same effort to their continuous assessment exercises as their exam preparation. Failure to submit this work without due cause can severely hamper the overall mark for the course.

Class Representatives

We value students' opinions in regard to enhancing the quality of teaching and its delivery; therefore, in conjunction with the Students' Association we support the Class Representative system.

In the School of Medicine, Medical Sciences and Nutrition we operate a system of course representatives, who are elected from within each course. Any student registered within a course that wishes to represent a given group of students can stand for election as a class representative. You will be informed when the elections for class representative will take place.

What will it involve?

It will involve speaking to your fellow students about the course you represent. This can include any comments that they may have. You will attend a Staff-Student Liaison Committee and you should represent the views and concerns of the students within this meeting. As a representative you will also be able to contribute to the agenda. You will then feedback to the students after this meeting with any actions that are being taken.

Training

Training for class representatives will be run by the Students Association. Training will take place within each half-session. For more information about the Class representative system visit **www.ausa.org.uk** or email the VP Education & Employability **vped@abdn.ac.uk**. Class representatives are also eligible to undertake the STAR (Students Taking Active Roles) Award with further information about this co-curricular award being available at: **www.abdn.ac.uk/careers**.

Problems with Coursework

If students have difficulties with any part of the course that they cannot cope with alone they should notify the course coordinator immediately. If the problem relates to the subject matter general advice would be to contact the member of staff who is teaching that part of the course. Students with registered disabilities should contact Mrs Jenna Reynolds (**medsci@abdn.ac.uk**) in the Medical Sciences Office (based in the Polwarth Building, Foresterhill), or Mrs Sheila Jones (**s.jones@abdn.ac.uk**) in the Old Aberdeen office associated with the teaching laboratories, to ensure that the appropriate facilities have been made available.

Otherwise, you are strongly encouraged to contact any of the following as you see appropriate:

- Course student representatives
- Course co-ordinator
- Convenor of the Medical Sciences Staff/Student Liaison Committee (Professor Gordon McEwan)
- Personal Tutor
- Medical Sciences Disabilities Co-ordinator (Dr Derryck Shewan)

All teaching staff are based at Foresterhill and we strongly encourage the use of email or telephone the Medical Sciences Office. You may have a wasted journey travelling to Foresterhill only to find staff unavailable.

If a course has been completed and students are no longer on campus (i.e. work from second semester during the summer vacation), coursework will be kept until the end of Welcome Week, during the new academic year. After that point, unclaimed student work will be securely destroyed.

Course Reading List

The recommended text for this course is:

Histology at a Glance, by Michelle Peckham. Publisher Wiley-Blackwell
ISBN 9781444333329

Or, any other quality Histology text (or online, e.g., www.histology.leeds.ac.uk)

In addition, you will be expected to read around the subject matter presented in lecture and tutorials using the range of textbooks available in the Sir Duncan Rice Library at King's College or the Medical library in the Polwarth Building at Foresterhill.

Additionally, specific references may be provided by individual members of the teaching staff.

Lecture Synopsis

1. **Course Introduction, Cells, Tissues and Organs - Mr David Chorn**
   Course administration, plan of course, how body is divided into tissues, Primary Tissues

2. **Pink and Purple - Mr David Chorn**
   How dyes enhance tissue contrast and visualisation under the microscope and assist tissue components in yielding up their secrets

3. **Tissue Types - Mr David Chorn**
   Overview of the 4 primary tissue types found in the body, including their distinguishing features and how these can be recognised under a microscope

4. **Architecture of GIT, Oesophagus – Dr Asha Venkatesh**
   This lecture will help students reflect and build on Practical 1. You will build upon your knowledge of the oesophagus from the practical session using it as an example of general GIT tissue arrangement

5. **Epithelium and Glands of the GIT - Dr Asha Venkatesh**

The important tissue-lining cells at the interface between the tissue and its immediate surrounds. The relationship between epithelial structure and function is particularly emphasised in regard to substance secretion, location, architecture, arrangement, modes of secretion, locus of secretion. The smaller secretory glands residing within GIT walls are described and contrasted structurally and functionally with the specialised large GIT glands lying outside its walls

6. **Stomach - Mr David Chorn**

This lecture will help students reflect and build on Practical 2: How the tissues and cells of the stomach are specifically structured and arranged to enable it to fulfil its primary function – digestion

7. **Connective Tissue - Mr David Chorn**

Classification, characterisation and distinguishing features of general connective tissue types seen in the GIT and in other structures

8. **Muscle - Prof Simon Parson**

General features and properties of skeletal, cardiac and smooth muscles. Types, muscular patterns, functions of the skeletal muscles. Motor unit & neuromuscular spindle. Other contractile cells

9. **Small intestine - Mr David Chorn**

This lecture will help students reflect and build on Practical 2. How the tissues and cells of the different parts of the small intestine are specifically structured and arranged to enable it to fulfil its primary function – absorption

10. **Histopathology of upper GI: Barrett's oesophagus, CA stomach - Dr David McClelland**

Basic understanding of pathological changes occurring in the oesophagus and stomach in these conditions

11&12. **Specialised Connective Tissue - Bone and Cartilage - Dr Flora Gröning**

Architecture and types of bone and cartilage

13. **Liver and gall bladder - Prof Simon Parson**

This lecture will build on practical 3 and look at the architecture of these structures.

14. **Histopathology of the liver and large intestine - Dr David McClelland**

Histopathological conditions such as cirrhosis of the liver and inflammatory bowel disease will be studied.

15. **Cardiovascular system - heart and blood vessels - Dr Asha Venkatesh**

A brief overview of the cardiovascular system including the heart and the different types of blood vessels will be given.

16. **Histopathology of the cardiovascular system - Dr Asha Venkatesh**
    Common histopathological conditions of the cardiovascular system will be studied using a case-based approach.

17. **Respiratory System Histology - Dr Shahida Shahana**
    Tissue organisation and arrangement in the respiratory system

18. **Respiratory System Histopathology - Dr Shahida Shahana**
    Disruption to the normal arrangement of cells and tissues in the respiratory system will be studied using a case-based approach

Practical/Lab/Tutorial Work

Plans for tutorials

Tutorial 1 - 11-09-2018, 14.00 – Mr David Chorn

Introduction to Systems Histology CAL package and other resources
Distribution of Poster topic and instructions
Thinking in 3D

Tutorial 2 - 14-09-2018, 16.00 – Mr David Chorn

How to write essays and short notes
What your teachers look for when they mark your reports/ essays/ short notes
Discussion of practical report writing (1st in-course assessment)
Distribution of essay topic with instructions

Tutorial 3 - 02-10-2018, 14.00 – Mr David Chorn

Question writing session – you will work in pairs and write ONE essay and short note answer plan each. BRING YOUR LECTURE NOTES WITH YOU. The produced questions and answer plans will be put up online as a formative resource to help you prepare for your exams.

Tutorial 4 - 05-10-2018, 2pm – Mr David Chorn
Course evaluation, Exam preparation, and Feedback.

Laboratory Work

Laboratory work will take place in the College Teaching Laboratories in the Zoology Building, Old Aberdeen. See timetable for details.

Plans for Practical classes: Practical classes form the core element of this course. You will be supplied with a workbook for all practical classes during the introductory session of the course. The workbook as well as a compendium of labelled class (or similar) slides will also be posted to the course site on MyAberdeen.

Tuesdays 10am – 1pm:

Week 7 – Part I - Microscopy, looking at slides, Primary Tissues; Part II - Oesophagus
Week 8 – Stomach, Duodenum, Pancreas, Jejunum and Ileum
Week 9 – Large Intestine, Liver and Gall bladder
Week 10 – Bone, Cartilage, Lung, Nerves, Blood vessels

The practical work required in this course may present difficulties to students with special educational needs. For such students, alternative arrangements will be made. Any student with special needs should make these known to the Course Co-ordinator when registering for the class and should then also discuss their needs with the School Disabilities Co-ordinator, to ensure that they have the best possible outcome.

Poster Session - Week 11: Monday 7th October 2019.

Venue: Rooms 213/14, 2nd Floor, The Suttie Centre, Foresterhill
Setting up and Display of posters: 14:00-14.30
Presentation, Discussion/Questions around posters: 14.30-17.00

University Policies

Students are asked to make themselves familiar with the information on key institutional policies which been made available within MyAberdeen (https://abdn.blackboard.com/bbcswebdav/institution/Policies). These policies are relevant to all students and will be useful to you throughout your studies. They contain important information and address issues such as what to do if you are absent, how to raise an appeal or a complaint and indicate how seriously the University takes your feedback.

These institutional policies should be read in conjunction with this programme and/or course handbook, in which School and College specific policies are detailed. Further information can be found on the University[1]'s Infohub webpage or by visiting the Infohub.

The information included in the institutional area for 2019/20 includes the following:

- Absence
- Appeals & Complaints
- Student Discipline
- Class Certificates
- MyAberdeen
- Originality Checking
- Feedback
- Communication
- Graduate Attributes
- The Co-Curriculum

Medical Sciences Common Grading Scale

Grade	Grade Point	Category	Honours Class	Description
A1	22	Excellent	First	• Outstanding ability and critical thought • Evidence of extensive reading • Superior understanding • The best performance that can be expected from a student at this level
A2	21			
A3	20			
A4	19			
A5	18			
B1	17	Very Good	Upper Second	• Able to argue logically and organise answers well • Shows a thorough grasp of concepts • Good use of examples to illustrate points and justify arguments • Evidence of reading and wide appreciation of subject
B2	16			
B3	15			
C1	14	Good	Lower Second	• Repetition of lecture notes without evidence of further appreciation of subject • Lacking illustrative examples and originality • Basic level of understanding
C2	13			
C3	12			
D1	11	Pass	Third	• Limited ability to argue logically and organise answers • Failure to develop or illustrate points • The minimum level of performance required for a student to be awarded a pass
D2	10			
D3	9			
E1	8	Fail	Fail	• Weak presentation • Tendency to irrelevance • Some attempt at an answer but seriously lacking in content and/or ability to organise thoughts
E2	7			
E3	6			
F1	5	Clear Fail	Not used for Honours	• Contains major errors or misconceptions • Poor presentation
F2	4			
F3	3			
G1	2	Clear Fail/ Abysmal	-	• Token or no submission
G2	1			
G3	0			

Course Timetable AN3009: 2019-20

Date	Time	Place	Subject	Session	Staff
WEEK 7					
Mon 9 Sep	14:00-15.00	D2 WORKSHOP	Course Introduction, Cells/Tissues/Organs	Lecture	**DC**
	15:00-16:00	D2 WORKSHOP	Pink and Purple	Lecture	**DC**
Tue 10 Sep	10:00-13:00	ZB14	I - Microscopy / II - Slides / III - Oesophagus	Practical	**DC**
	14:00-15:00	210/11 SC	Tutorial 1	Tutorial	**DC**
	15:00-16:00	210/11 SC	Tissue Types	Lecture	**DC**
	16:00-17:00	210/11 SC	Poster instruction	Tutorial	**DC**
Wed 11 Sep					
Thu 12 Sep					
Fri 13 Sep	15:00-16:00	210/11 SC	Architecture of GIT, Oesophagus	Lecture	**AV**
	16:00-17:00	210/11 SC	Tutorial 2	Tutorial	**DC**
WEEK 8					
Mon 16 Sep	14:00-15:00	D2 WORKSHOP	Epithelium and Glands of the GIT	Lecture	**AV**
	15:00-16:00	D2 WORKSHOP	Stomach	Lecture	**AV**
Tue 17 Sep	10:00-13:00	ZB14	IV - Stomach / V - Duodenum / VI - Pancreas / VII - Jejunum, Ileum	Practical	**DC**
	14:00-15.00	210/211 SC	Connective Tissue	Lecture	**DC**
	15:00-16:00	210/211 SC	Muscle	Lecture	**DC**
	16:00-17:00	OA	Self-study/ Poster preparation	Study	
Wed 18 Sep					
Thu 19 Sep					
Fri 20 Sep	14:00-15:00	1:039/40 POL	Small intestine	Lecture	**DC**
	15:00-16:00	1:039/40 POL	Histopathology: Barrett's oesophagus, Carcinoma of stomach	Lecture	**DMC**
WEEK 9					
Mon 23 Sep	14:00-15:00	D2 WORKSHOP	Specialised Connective Tissue 1 – Bone	Lecture	**FG**
	15:00-16:00	D2 WORKSHOP	Specialised Connective Tissue 2 – Cartilage	Lecture	**FG**
Tue 24 Sep	10:00-13:00	ZB14	I - Large intestine / II - Liver / III - Gall Bladder	Practical	**DC**
	14:00-15:00	210/11 SC	Liver & Gall bladder	Lecture	**SS**
	15:00-16:00	210/11 SC	Histopathology – Cirrhosis of liver, Inflammatory Bowel Disease	Lecture	**DMC**
	16:00-17:00	OA	Self-study/ Poster preparation	Study	
Wed 25 Sep					
Thu 26 Sep					
Fri 27 Sep	14:00-15:30	1:039/40 POL	Cardiovascular System - Histology of heart & blood vessels	Lecture	**AV**
	15:30-17.00	1:039/040 POL	Cardiovascular system - Histopathology	Lecture	**AV**
WEEK 10					
Mon 30 Sep	14:00-16:00	D2 WORKSHOP	Respiratory System - Histology	Lecture	**SS**
	16.00-17:00	D2 WORKSHOP	Respiratory System – Histopathology	Lecture	**SS**
Tue 1 Oct	10:00-13:00	ZB14	I - Bone, cartilage / II - Lung / III - Nerves / IV - Blood vessels	Practical	**DC**
	14:00-16:00	1:143/44 POL	Tutorial 3	Tutorial	**DC**
	16:00-17:00	OA	Self-study/ Poster preparation	Study	

Wed 2 Oct					
Thu 3 Oct					
Fri 4 Oct	14:00-15:00	1:147 POL	Tutorial 4 - Exam preparation, Feedback	Lecture	**DC**
	15:00-17:00		Self-study/Poster preparation	Study	
WEEK 11					
Mon 7 Oct	14:00-17:00	213 SC	**Poster Presentation**	Present-ation	**DC**
Tue 8 Oct	14:00-17:00	OA	Self-study	Study	
Wed 9 Oct					
Thu 10 Oct					
Fri 11 Oct	14:00-17:00	OA	Self-study	Study	

Venues:

D2 WORKSHOP: Room D2 WORKSHOP, Medical Physics Building, Foresterhill

SC: The Suttie Centre, Foresterhill

POL: Polwarth Building, Foresterhill

ZB14: Basement Laboratory ZB14, Zoology Building, King's College

OA: Outside Activity

Staff:

Mr David Chorn (DC) (Course Coordinator) (Anatomy)

Dr Asha Venkatesh (AV) (Anatomy)

Dr Shahida Shahana (SS) (Anatomy)

Dr David McClelland (DMC) (Pathology)

Mrs Hazel Fyfe (Technical support, Zoology)

Mrs Sheila Jones (Technical support, Zoology)