



VETM*3070 Veterinary Anatomy

Fall 2020

Section(s): 01

Department of Biomedical Sciences

Credit Weight: 2.00

Version 1.00 - September 07, 2020

1 Course Details

1.1 Calendar Description

An introduction to comparative, topographical anatomy, primarily of 4 domestic mammals: cat, dog, horse and cow. Full dissections of these species are related to the living animal and to imaging, to form the basis for future studies in clinical morphology. Students are first introduced to the major anatomical systems and then to the regions in detail: thorax, abdomen, pelvis and perineum, limbs, and head and neck. Active learning, problem solving, communication skills and the integration of material across concurrent courses are fostered.

Co-Requisites: All Phase 1 courses.

1.2 Course Description

Information that has not changed from previous years: During this course you will achieve an understanding of the functional anatomy of the dog, cat, sheep, horse and cow, and will be able to integrate that knowledge between cadaver material, live animals, and images. You will also learn basic skills to be used later in surgery. All of the material can be used in concurrent and future courses in the basic sciences and clinical studies, and for comparative study of other mammals and vertebrates.

Information that has changed, or is new in the 2020-2021 academic year:

Important: Please consult the **Announcements** on Courselink at least every 48 hours. All information regarding how the course is conducted will be relayed to you in the Announcements section. Also, get used to using the **Discussion** tab to pose any questions you may have, and see the questions of others and answers to them. For online learning, the Discussion section is a powerful tool for the instructors and class to stay in touch as an alternative to face to face (F2F) communications. You can ask questions and read your classmates' questions (on anatomy, learning issues, stress relief, etc), and see the answers to them. The class of 2023 found this section to be of great use and support as they worked to

finish the end of their disrupted first year. Be sure to make use of it yourselves. An instructor will check it every 48 hours minimally.

Components of the Course: Your learning in this course is organized into 4 components, each of which is presented in a different way, and more-or-less concurrently: (1) Anatomy, (2) Live Animal, (3) Introduction to Imaging, and (4) Principles of Surgery (PoS). The presentation modes of (3) Imaging and (4) PoS are least affected by the circumstances of 2020. Imaging and Surgery lectures and some aspects of testing have moved online, but teaching and learning are otherwise similar to previous years. Presentation of (1) Anatomy and (2) Live Animal has been dramatically affected, so please read the following paragraphs carefully.

(1) Changes to the Anatomy Component. The component is generally organized by region of the body (forelimb, thorax, abdomen, head and neck, pelvis and perineum, and hindlimb), interspersed with overviews of the systems (skeleton, cardiovascular, peripheral nerves, endocrine organs, etc.). Each region has 3-8 lectures and accompanying labs. This used to be the Dissection Component, and the first major change is that the heavy emphasis on dissection as the primary learning tool in this component has been forcibly replaced. The sequence of learning events in the component is now:

- Preparation: Well before any lecture and lab on a given topic, please consult the lab manual. In addition to the now redundant dissection instructions, the manual also contains *information on body structure*, a list of *videos* to watch on the Courselink site, and sections of the *textbook* to consult for reference. Use these resources to introduce yourself to the topic du jour.
- Review and confirmation: Your next activity is to watch the online lecture on the topic: that should help confirm and reinforce what you learned while preparing, and explain any residual areas of confusion you may have. The labs should also help: they will have 10 stations of labelled, pre-dissected specimens (prosections), preserved specimens or models which illustrate the anatomy covered in the preparatory materials and lecture, so you can see structures *in situ*.
- Discussion, interpretation, and consolidation: After each lecture/lab pair, you will have the opportunity to review the material with your group online (in preset chat sessions), with every 3rd or 4th session also being attended by an instructor. You can also use the Discussion board in Courselink, as mentioned above, to get reinforcement or clarification of details.
- Additional support: We are assembling some dry specimens that you can sign out for 6 days, take home and study in detail, using existing teaching materials. These are mostly skeletal: bone boxes containing the whole skeletons of small animals and bags containing smaller parts of large animals (e.g., just the scapula and humerus, or the radius and ulna, or the foot). You can also sign out plastinated (preserved, dry) hearts for the same purpose. You will also be allocated your own personal preserved rat

towards the end of the Fall. Time will be allocated for you to dissect it on your own in lab. This will give you some hands-on experience at dissection, will let you see how a mammal is assembled in 3-D, and will also be a great review. A rat is the perfect choice for this exercise, because it is small enough to handle on your own, will require some manual dexterity to dissect well, and is a good model for the anatomy of the other, larger species.

- Feedback: After every region of the body, there will be a short online quiz that will give you feedback on your comprehension of that region, without contributing greatly to your final grade.

(2) Changes to the Live Animal Component. This component is important in helping you to transfer your knowledge of internal anatomy to be able to locate structures on the live animal.

- Preparation: A Live-animal Lab manual and instructional videos are available on Courserlink, following the same regions as the Lab manual.
- Review and confirmation: We are working on making this an F2F activity with social distancing (SD) with 1 instructor, 1 animal and 2-3 students at a time. You would have to prepare a small number of specific questions on material that you are not clear about to be covered in each short session.
- Feedback: After every region of the body, there will be a short online formative quiz that will give you feedback on your comprehension of that region, without contributing greatly to your final grade.

(3) Introduction to Imaging. This component is a series of illustrated lectures (now online) throughout the course, which will introduce you to the principles and physics of imaging modalities (primarily radiographs and CT). Then you'll be introduced to the appearance of structures on images as you learn them in the Anatomy component, so the two components reinforce each other. Four or five short online quizzes through the year will give you feedback on your progress in this component.

(4) Principles of Surgery. The aim of this component is to introduce you to basic skills (e.g. suturing) that you can rehearse well before you use them in the surgical courses in later Phases. The link with anatomy is in the dexterity needed for dissection and surgery. There are 2-3 lectures and the same number of labs, the SD format of which is still being devised.

Bon voyage from the Anatomy Team. We look forward to sharing your exciting journey.

1.3 Timetable

Timetable is subject to change. Please see WebAdvisor for the latest information.

1.4 Final Exam

Exam time and location is subject to change. Please see WebAdvisor for the latest information.

2 Instructional Support

2.1 Instructional Support Team

Instructor: Jeffrey Thomason PHD
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 Imaging Instructor

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 Coordinator and Instructor for the Principles of Surgery component.

Lab Co-ordinator: Roman Poterski PhD

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 Lab Coordinator, Instructor, Technician and Preparator.

Lab Co-ordinator: Sarah Donato MSc
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 Lab coordinator, Instructor, Technician and Preparator

2.2 Teaching Assistants

Teaching Assistant: Joshua Antunes MSc
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 Graduate Teaching Assistant leading the Live-animal component.

Teaching Assistant: Latasha Ludwig DVM
Email: lludwig@uoguelph.ca
 Graduate Teaching Assistant leading the Live Animal Component. (As of 01 Aug 2020, the appointment is still to be confirmed.)

2.3 CNS Instructor

To be Confirmed

3 Learning Resources

The 4 components of the course each have different resources:

Anatomy-component resources include:

- Laboratory manuals, available as PDFs on Courselink. These are your first port of call as you begin prepare a topic.
- Videos illustrating how the dissections are performed in lab, and identifying anatomical structures uncovered, accessible via Microsoft Stream
- Lecture notes for each Region and most Systems, which are on Courselink.
- The course Textbook, electronic version available through the bookstore.

Live-Animal resources include:

- A typed manual, available as a PDF file on Courselink.
- Instructional videos, available on Courselink or Stream, or both.

Imaging

- All notes and images relevant to this course will be posted on Courselink

Principles of Surgery

- An instruction manual is available on Courselink.

3.1 Required Resources

Lecture Power points, on Courselink. (Notes)

All instructors post their lectures for 3 segments of the course: Anatomy, Imaging, Principles of Surgery.

Live Animal is mostly self directed, using the manual and videos, so there are no lecture notes for that segment.

Anatomy Lab Manual (Lab Manual)

The illustrated dissection manual gives you

- the objectives for each dissection lab,
- a list of the videos that accompany the lab and show how to find and identify relevant structures
- a list of sections of the textbook that describe the structures seen in the lab
- a list of structures to be seen in each lab, and
- instructions on how to perform the dissections on each of the species available.

It is usually the primary resource for answering the question, "What are we supposed to learn from each lab?"

In 2020-2021, it has the primary function of guiding your preparation to study each region and topic.

Anatomy Lab. Instructional Videos (Other)

Several short (3-8 minute) videos are available via Microsoft Stream for each lecture+lab, and are identified in the lab manuals. Watch them before the lecture and lab on each topic.

ANATOMY: Dyce, Sack, and Wensing's Textbook of Veterinary Anatomy. Singh, B. 5th

**Edition. (Textbook)
Required.**

There are hard-copy and electronic versions: you can obtain either. The electronic version is available through the Textbook store (more details will be put under Announcements as they become available). You could also buy used versions of the 3rd and 4th editions, which have 90% of the same material as the 5th. The electronic version will be easy to search, because of its electronic search capacity, versus the printed index of the hard copies.

This book has considerable value to you if you learn to use it well:

1. It presents anatomy both from the perspective of **systems** (e.g., nervous, cardiovascular, musculoskeletal, respiratory, etc.) and by **regions** (e.g., all of the structures in the thorax, abdomen, pelvis, etc.). In this way, the book enables you to consolidate all of the details that you will be presented with in class.
2. Along with the videos, it will be a useful tool for preparing before the lectures and labs.
3. It is a reference for clarifying 99.9% of the questions you have after a lecture or lab.: e.g., "Which is the first artery to branch from the aorta? I did not write that down in my notes." or "What is the mediastinum? It is not clear to me."
4. Some of the test and exam questions may be based on information in the book as well as from the labs and lectures.
5. Once you get used to finding answers to questions in the book, it will be a useful tool for refreshing your memory in Phases 3 and 4, when the details of Phase 1 Anatomy are either a little fuzzy or totally forgotten.

Live Animal Lab Manual. (Lab Manual)

Instructions for the self-directed live animal component.

Posted on Courselink.

Live Animal Videos. (Website)

To accompany the manual and to prepare you for conducting your own live animal palpations.

Posted on Courselink and/or on Stream.

IMAGING Resources (Other)

All imaging resources (e.g., images) will be delivered online: retrieval instructions will be given.

Principles of Surgery instruction manual. (Lab Manual)

Posted on Courselink.

3.2 Recommended Resources

Anatomy of the Domestic Animals. Pasquini, Spurgeon, & Pasquini. 7th edition. SUDZ Publishing. (Textbook)

Recommended Atlas. Available in the textbook store.

Many students find the line diagrams in this atlas a useful way to visualize the anatomy.

Other resources (Other)

- There are there are many other types of resource available to you – too many to list, with new ones appearing every day. They show up on the web, in notes generated by classmates, or in new books.
- Within your group, get in to the Library or search online to see what you can find. Many other veterinary colleges post useful materials that may augment those provided in this course. There are also commercial offerings, such as the Glass Horse.
- If you find something useful, share it with your group or the whole class.
- Be aware that other resources may not use the same system of anatomical names that we do.

There are many systems for naming anatomical structures. The unequivocal system is the Nomina Anatomica Veterinaria, which is in a version of Latin (and is appended to the course site, only for those of you who are interested). The system used in the textbook and the course is an anglicized version, which is a little more accessible.

4 Learning Outcomes

Primary Goals

During this course you will achieve a detailed understanding of the functional anatomy of a carnivore (dog and/or cat), a ruminant (sheep and/or cow), and a hind-gut fermenter (horse and/or rabbit), and will that be able to integrate that knowledge between cadaver material, live animals, and images. You will also learn basic skills to be used later in surgery. All of the material can be used in concurrent and future courses in the basic sciences and clinical studies, and for comparative study of other mammals and vertebrates.

4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1. Anatomy Component: You will be able to identify a selection of grossly visible

anatomical structures (which are named in the course notes and manuals) in five domestic animals: horse, cow, sheep, dog and cat.

2. Anatomy Component: You will be able to describe the gross appearance and distribution of each anatomical **System**—nervous, musculoskeletal, alimentary, cardiovascular and lymphatic, genitourinary, and respiratory—and of the endocrine organs and skin and its derivatives (hair, horns, hooves, and claws).
3. Anatomy Component: You will be able to identify and describe the detailed anatomy of each **Region** of the body—thorax, abdomen, head and neck, pelvis and perineum and limbs—and the components of each System that are found within them.
4. Anatomy Component: You will be able to describe the relationship between structure and function of the alimentary, respiratory, cardiovascular and musculoskeletal organs.
5. Anatomy Component: You will be able to use the correct anatomical terminology for directions, planes of the body, and the structures that you have seen.
6. Live-Animal Component: You will be able to describe and identify on a living animal the topographical relationships among organs in the body cavities and the normal changes in these relationships during life.
7. Live-Animal Component: You will be able to identify visible and palpable landmarks on the live animal of each species, and indicate their relevance to the physical exam.
8. Imaging Component: You will be able to identify various anatomic structures on radiographs and explain the basic principles behind the radiographic appearance of different tissues.
9. Imaging Component: Explain the safe use of x-rays in veterinary practice.
10. Imaging Component: You will be able to describe the principles of use for advanced imaging modalities including ultrasound, CT, MRI and nuclear scintigraphy.
11. Principles of Surgery (POS) Component: You will be able to demonstrate instrument handling and basic suture techniques in preparation for Phase 2 and 3 surgical lectures and training laboratories.

5 Teaching and Learning Activities

A summary of the Content is presented under the Course Description, and is not necessary here. Re-read it if you are not sure what was described for Content.

6 Assessments

During the course, you will be assessed using a number of formative midterms, which give you immediate feedback on your knowledge of a small section of the total material

presented, with only a small part of your final mark ascribed to it.

At the end of the course, the Final exam will consist of parts that test your knowledge of Anatomy, Imaging, Live Animal and Principles of Surgery, largely using online exams delivered via the Respondus+Lockdown software. The finals will be summative, which means they test how much you have learned through the course, and are collectively more heavily weighted than the formative midterms.

6.1 Marking Schemes & Distributions

Described above.

6.2 Assessment Details

Midterms (FORMATIVE) (42%)

Dates and times of all formative online midterms are visible under the Quizzes tab on CourseLink.

There will be short online quizzes for each subsection of the Anatomy component: Labs 1-3 (not including forelimb), Forelimb, Thorax, Abdomen, head and neck (parts 1 and 2), Pelvis and Perineum, and Hindlimb. Each of these is worth from 3 to 5 marks, totalling 32. [Note: These quizzes replace both the *viva voce* tests and the in-lab, specimen-based bellringer midterm of previous years.]

There will be 5 short online Imaging quizzes, worth 1 mark each, and 5 short live animal quizzes, also worth 1 mark each (total 10).

Finals (SUMMATIVE) (58%)

The Final exam will have these online components, using Respondus+Lockdown software. (Marks are in parentheses. They total 58).

- Final Anatomy Lab Exam, using electronic images of dissections, skeletons or models, as appropriate. (20) [Note: This exam replaces the in-lab, specimen-based bellringer exam of previous years.]
- Final Anatomy Written Exam, surveying general information and concepts presented during the year (20)
- Imaging exam (10)
- Live Animal (5)
- Principles of Surgery--this may be online or involve a hands-on practical aspect. The format will be confirmed in January. (3)

6.3 What if I miss a Midterm or part of the Final exam?

For Academic Consideration, please contact the Associate Dean, Students and Academic (ovc.dvmacademics@uoguelph.ca).

In the event that an assignment is missed for a reason that is recognized as valid by the University and the College, one of the following options will be exercised:

1. **Missing a Midterm.** if you miss 1 or 2, your other midterm grades will be prorated. If you miss more than that then make-up midterms will be offered, either in the original format OR as an online interview with an Instructor (as the instructor's discretion).
 2. **Final exams.** If any component of the final exams is missed, the matter will be referred to academic review.
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7 Course Statements

7.1 Required Safety Training

It is the responsibility of each student to fully review the COVID-19 safety plan on CourseLink for each in-person course activity in this course, and to adhere to all safety protocols that have been prescribed. As well, students **must** follow the steps below before coming to campus:

1. Complete the COVID-19 Infection Prevention and Control Awareness Training course via CourseLink.
2. **For every day that you have an in-person course activity**, before you come to campus, complete U of G's COVID-19 Screening Form. **Do not come to campus if the form indicates you should stay home.**

7.2 Statement on Session Recordings:

By enrolling in a course, unless explicitly stated and brought forward to their instructor, it is assumed that students agree to the possibility of being recorded during lecture, seminar or other "live" course activities, whether delivery is in-class or online/remote.

If a student prefers not to be distinguishable during a recording, they may:

1. turn off their camera
2. mute their microphone
3. edit their name (e.g., initials only) upon entry to each session
4. use the chat function to pose questions

Students who express to their instructor that they, or a reference to their name or person, do not wish to be recorded may discuss possible alternatives or accommodations with their instructor.

7.3 Netiquette Statement Regarding Online Behaviour:

Inappropriate online behaviour will not be tolerated. Examples of inappropriate online behaviour include:

- Posting inflammatory messages about your instructor or fellow students
- Using obscene or offensive language online
- Copying or presenting someone else's work as your own
- Adapting information from the Internet without using proper citations or references
- Buying or selling term papers or assignments
- Posting or selling course materials to course notes websites
- Having someone else complete your quiz or completing a quiz for/with another student
- Stating false claims about lost quiz answers or other assignment submissions
- Threatening or harassing a student or instructor online
- Discriminating against fellow students, instructors and/or TAs
- Using the course website to promote profit-driven products or services
- Attempting to compromise the security or functionality of the learning management system
- Sharing your user name and password
- Recording lectures without the permission of the instructor

7.4 Update on Email communication

Personal communication to a specific Instructor that is not specifically on course material must be by email.

All communications about the course and the material therein will be found under Announcements or in the Discussion areas on Courselink. This supersedes the University Announcement below about the use of Email Communication.

8 University Statements

8.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

8.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions

<https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml>

8.3 Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml>

Associate Diploma Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml>

8.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

8.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance and not later than the 40th Class Day.

For Guelph students, information can be found on the SAS website
<https://www.uoguelph.ca/sas>

For Ridgetown students, information can be found on the Ridgetown SAS website
<https://www.ridgetownc.com/services/accessibilityservices.cfm>

8.6 Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity, and it is the responsibility of all members of the University community—faculty, staff, and students—to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff, and students have the responsibility of supporting an environment that encourages academic integrity. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Undergraduate Calendar - Academic Misconduct
<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Graduate Calendar - Academic Misconduct
<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

8.7 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

8.8 Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars

<https://www.uoguelph.ca/academics/calendars>

8.9 Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings and academic schedules. Any such changes will be announced via CourseLink and/or class email. All University-wide decisions will be posted on the COVID-19 website (<https://news.uoguelph.ca/2019-novel-coronavirus-information/>) and circulated by email.

8.10 Illness

The University will not normally require verification of illness (doctor's notes) for fall 2020 or winter 2021 semester courses. However, requests for Academic Consideration may still require medical documentation as appropriate.
