



VETM*4540 Surgical Exercises

Fall 2019

Section(s): C01

Department of Clinical Studies

Credit Weight: 1.75

Version 1.00 - August 26, 2019

1 Course Details

1.1 Calendar Description

Veterinary students receive training in preoperative planning, anaesthesia and surgical techniques, operative room decision making and post-operative care in this laboratory course. Students begin by practicing technical skills on inanimate models. They progress to performing a series of supervised operations designed to parallel the most commonly performed surgeries in private practice. A once weekly rounds period allows discussion of issues arising from the previous anaesthesia and surgery, and planning for the upcoming laboratory. Though some didactic material is presented, the course is mainly experiential. The evaluation outcome of the course is outstanding, pass or fail.

Pre-Requisites:	All Phase 2 courses.
Co-Requisites:	All Phase 3 courses.
Restrictions:	Registration in the D.V.M. Program

1.2 Timetable

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

1.3 Final Exam

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

2 Instructional Support

For questions regarding academic consideration, continuation of study, academic misconduct, safety, confidentiality, and experiential learning involving the use of animals, please refer to the Program Information section on the Phase 3 Information and Schedule web site.

Instructors' Responsibilities

The course instructors will point out important aspects of the laboratories and will clarify information from prelaboratory reading and audiovisual material. Although instructors will always be available to provide assistance with anesthesia or the surgical procedure, they are not present to compensate for inadequate prelaboratory preparation. The instructors will review and comment on the medical records. They will also assist students in assessment and treatment of animals during the pre and post laboratory periods.

2.1 Instructional Support Team

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3 Learning Resources

4 Learning Outcomes

Veterinary practice requires a level of theoretical and technical expertise in anesthesia and surgery. Laboratories utilizing surgical models, cadavers, and live animals are an effective means of initiating anesthesia and surgical training prior to clinical exposure. All of the laboratories in this course illustrate various principles of anesthesia and/or surgery. Most of the procedures performed are also commonly encountered in clinical practice. The use of live animals offers great potential for teaching anesthesia and surgery, but it also requires responsibility from both students and instructors. **The conscientious and humane care of animals used in this course is a priority at all times.**

Students will be responsible for recognizing and recording any problems associated with the anesthesia or surgical procedure. Direction and support from the anesthesia and surgical instructors (AHTs, DVSCs and faculty) will be an integral part of the learning process in this course, however, students gain confidence in taking a primary case care role. Strict adherence to the principles of anesthesia, aseptic technique, and proper tissue handling are a necessity, not an academic ideal. The results of poor preparation or execution and technique will be quickly apparent and may result in excusal from the laboratory.

The Surgical-Exercises course will provide several opportunities for students to gain insight into the pathophysiological principles of anesthesia and surgery, and to practice the technical aspects of anesthesia and surgery as a basis for their Phase 4 externship and clinical rotations. The objectives described below will be met as you progress from the initial orientation/introductory laboratories through the final humane society neuters.

Anesthesia skill lists will be available for each student to ensure they have accomplished the necessary skills throughout each semester.

4.1 Course Learning Outcomes

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

1. Efficiently perform a pre-anesthetic and preoperative assessment and preparation of a patient (Anesthesia and Anesthetic Procedures).
2. Efficiently select, prepare, evaluate and use anesthetic equipment and accessories including commonly used monitors (Anesthesia and Anesthetic Procedures).
3. Efficiently perform a general anesthetic on a healthy dog or cat (Anesthesia and Anesthetic Procedures).
4. Select appropriate sedation and injectable drugs, and drug doses for use in a healthy elective case of various size, age and potentially pre-existing condition (Anesthesia and Anesthetic Procedures).
5. Calculate drug volumes of administration for anesthesia as well as primary emergency drugs (Anesthesia and Anesthetic Procedures).
6. Calculate and appropriately prepare crystalloid fluid bags and administration drip sets

- (Anesthesia and Anesthetic Procedures).
7. Safely and humanely restraining a dog or cat throughout the anesthesia period (Anesthesia and Anesthetic Procedures).
 8. Safely administer an IM injection and assess sedation level (Anesthesia and Anesthetic Procedures).
 9. Place and secure an IV catheter (Anesthesia and Anesthetic Procedures).
 10. Induce general anesthesia using injectable anesthetics (Anesthesia and Anesthetic Procedures).
 11. Perform efficient and atraumatic orotracheal intubation (Anesthesia and Anesthetic Procedures).
 12. Connect a patient to an anesthetic machine and efficiently initiate delivery of inhalant anesthesia (Anesthesia and Anesthetic Procedures).
 13. Deliver a general anesthetic including appropriate adjustment of drug delivery to ensure an adequate but not excessive depth of anesthesia for various stages of surgery (Anesthesia and Anesthetic Procedures).
 14. Recognize and describe the expected physiologic effects and side-effects of the drugs and supportive agents used during the anesthetic period (Anesthesia and Anesthetic Procedures).
 15. Manually monitor anesthetic depth during induction anesthesia and recovery (Anesthesia and Anesthetic Procedures).
 16. Monitor and assess the status of a patient's physiologic variables including HR, Doppler arterial blood pressure, respiratory rate, and temperature (Anesthesia and Anesthetic Procedures).
 17. Become familiar with oscillometric, ECG, pulse-oximetry and end-tidal CO₂ monitoring (Anesthesia and Anesthetic Procedures).
 18. Recognize and assess the significance of clinical/physical signs and measured physiologic variables outside of normal expected ranges (Anesthesia and Anesthetic Procedures).
 19. Manage common complications that occur in the pre, intra and post anesthetic period (Anesthesia and Anesthetic Procedures).
 20. Discuss the rationale behind various strategies used to manage complications (Anesthesia and Anesthetic Procedures).
 21. Extubate a patient at an appropriate time during recovery from anesthesia (Anesthesia and Anesthetic Procedures).
 22. Completely and appropriately fill out an anesthetic record and anesthetic recovery record (Anesthesia and Anesthetic Procedures).

23. Manage a canine or feline patient in the post-anesthetic and post-operative period including the delivery of appropriate analgesic therapy (Anesthesia and Anesthetic Procedures).
24. Perform commonly employed local anesthetic blocks in cats and dogs and explain each procedure's indication, contraindication and consequences depending on the drugs chosen to perform the procedure (Anesthesia and Anesthetic Procedures).
25. Discuss the rationale; risks and benefits associated with anesthesia and common anesthesia related procedures (Anesthesia and Anesthetic Procedures).
26. Properly perform a pre- and post-operative patient assessment of a patient for routine spay and neuter procedure (Surgery/ Ophthalmology / Medical procedures).
27. Understand and apply the principles of surgical asepsis and antisepsis for routine surgical procedures (Surgery/ Ophthalmology / Medical procedures).
28. Prepare a patient for aseptic surgery (Surgery/ Ophthalmology / Medical procedures).
29. Prepare, set-up and take down the surgical table and equipment using appropriate aseptic technique (Surgery/ Ophthalmology / Medical procedures).
30. Perform appropriate surgeon preparation and antisepsis for routine surgical procedure (Surgery/ Ophthalmology / Medical procedures).
31. Maintain asepsis throughout surgery. Know and avoid the common pitfalls that result in a break in aseptic technique (Surgery/ Ophthalmology / Medical procedures).
32. Recognize and appropriately correct any break in aseptic technique (Surgery/ Ophthalmology / Medical procedures).
33. Recognize and appropriately correct any break in aseptic technique (Surgery/ Ophthalmology / Medical procedures).
34. Perform adequate and secure knots and suture lines using appropriate technique and perform safe surgical closure (Surgery/ Ophthalmology / Medical procedures).
35. Practice appropriate and gentle tissue handling while demonstrating good handling and proper use of instruments (Surgery/ Ophthalmology / Medical procedures).
36. Know, avoid and resolve the most commonly encountered surgical complications associated with the most common surgical procedures performed in private practice (Surgery/ Ophthalmology / Medical procedures).
37. Maintain a non-sterile field during aseptic surgery (Surgery/ Ophthalmology / Medical procedures).
38. Apply routine bandages and be able to list the most common complications with each and determine avoidance or remedial strategies (Surgery/ Ophthalmology / Medical procedures).
39. Complete appropriate surgical records and discharge statements for spay and neuter

- surgeries (Surgery/ Ophthalmology / Medical procedures).
40. Know the indications, complications, technique and perform several routine medical procedures commonly used in small animal practice (Surgery/ Ophthalmology / Medical procedures).
 41. Know the indications, complications, technique and perform several routine ophthalmologic surgical procedures (Surgery/ Ophthalmology / Medical procedures).
 42. Recognize the pathophysiology and the most frequent causes of cardiopulmonary arrest and know how to avoid or correct them if possible (CPCR).
 43. Know the signs and recognize cardiopulmonary arrest in a patient and perform basic CPCR on a dummy (CPCR).
 44. Interpret ECG, Clinical signs and laboratory values and appropriately interpret the results to determine the most appropriate course of action (CPCR).
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5 Teaching and Learning Activities

Lectures, rounds and independent laboratory preparations

Two lectures will be provided prior to the CPCR laboratory. Several anesthesia and surgery rounds will be provided during the year to introduce the student to the laboratory or to reinforce previously learned concepts. The rounds are opportunities to ask questions and delve further into appropriate anesthetic and surgical case management.

All students must complete the assigned reading, audiovisual material prior to the rounds session or the laboratory (see Resources below); and be prepared to participate in a group discussion of this material.

5.1 Lab

Topics: Lab 1: Aseptic Technique, OR, Patient & Surgeon preparation, IV Catheterization and Anesthetic Machine Review

Patient preparation: Clipping, scrubbing, final surgical preparation and draping.

Surgeons' preparation: Scrubbing, gowning, gloving.

Surgical instruments, opening the table and maintaining asepsis.

IV Catheterization: Model use of catheterization and taping technique.

Anesthetic Machine Review: Assembly and leak test of Circle and Bain systems

Topics: Lab 2: Abdominal surrogate model
 Perform simulated abdominal surgery on a DASIE model with a low fidelity uterus. Students are expected to scrub, glove, gown, drape as if it was a live animal surgery. Perform an abdominal exploration, ligate pedicles, remove uterus and close abdomen in 3 layers using appropriate suture patterns.

Topics: Lab 3: Anesthesia Equipment and Skills Laboratory
 In this laboratory, there will be an opportunity for additional review of anesthetic machine assembly, and IV catheterization (Lab 1), as well as practice monitoring equipment assembly, orotracheal intubation, and fluid administration set-up with models. Basic laboratory techniques (performing PCV, TP and BUN) will also be performed. The procedures and protocols for the spay/neuter laboratories will be reviewed.

Topics: Lab 4: Cadaver surgery
 Perform an exploratory laparotomy and surgical procedures on a cadaver. Students are expected to scrub, glove, gown, drape as if it was a live animal surgical procedure.

Care must be taken during the surgical approach to identify the various layer of the body wall. Following exploration of the abdomen, a gastrotomy will be performed while maintaining asepsis; a splenectomy will be performed by ligating the splenic hilar vessels using a variety of techniques. If additional time is available, liver biopsy can be performed using a guillotine technique. Proper closure of the ventral midline incision including the linea alba, subcutaneous tissues and skin will be conducted with careful attention paid to ensure appropriate layer closure and knot tying.

Topics: Lab 5: CPR
 Learn and practice the principles of cardio pulmonary cerebral resuscitation and associated care on a simulator.

Topics: Lab 6: Advanced Suturing Techniques
 In this lab, the students will have the opportunity to practice and perfect their suturing skills on ex-vivo animal tissues. The focus of this lab will be on proper instrument handling, knotting tying technique and buried sutures and intradermal patterns.

Topics: Lab 7: Intestinal surgery
 This lab will be dedicated to atraumatic tissue handling, the handling of instruments and proper suturing of ex-vivo small animal intestine. Proper tissue handling, proper recognition of the holding layers and performance of a leak-proof intestinal anastomosis will be the focus of this lab. The concept of dirty and sterile surgical field will be discussed.

Topics: Lab 8: Medical procedures
 In this lab, the student will have the opportunity to practice several diagnostic and therapeutic procedures such as abdomino-centesis and thoraco-centesis, joint taps and bone marrow aspirates.

Topics: Lab 9: Ophthalmologic procedures
Spay and neuter Laboratories (1 to 5):

These laboratories will use live animals from various humane societies. All surgical and anesthetic principles will be practiced and reinforced. Attendance is mandatory.

6 Assessments

1. Attendance is required at all Requests for consideration of absence for medical, compassionate reasons must be made to the Associate Dean Students. Consideration of absence for any other reason must be made directly to the course coordinator(s). Students will not switch lab sections or surgical teams without prior authorization by the course coordinator(s) and the anesthesia or surgery faculty instructing each section. A student with an unexcused absence will fail the laboratory.
2. Laboratory Grades
 - A. Assessments will be provided following each laboratory.
 - B. A grade of **Outstanding, Pass, Incomplete or Fail** will be given to each student after every laboratory on the basis of **preparation, background knowledge, efficiency and technical performance** during that laboratory. The grade will be given after consultation among instructors (AHTs, interns, DVSc students, instructors, and faculty) supervising the laboratory and ALL aspects of the laboratory will be considered in the assignment of the grade.
 - C. If the student is marginal or unsatisfactory in any of the above categories, he/she will receive an Incomplete for that laboratory. The instructor will discuss her/his evaluation with the student and make suggestions for improvement. This Incomplete will later be converted to a Pass or a Fail, based on either:
 - a. Evaluation of the student in subsequent laboratories, in which he/she is in a similar role (i.e. anesthetist, assistant surgeon or surgeon)
 - b. The student's performance on a supplemental assignment or condition (more likely if an Incomplete is received during the latter part of the winter Semester or if a laboratory is no longer offered).
 - D. Animal care and medical records will be evaluated by the AHTs and the instructor(s). Evaluation of the team's performance will be based on patient care, use of the problem oriented medical record approach, completeness and legibility. The entire surgical team is responsible for animal care and for the overall quality and organization of patient records. Failure to maintain adequate care of your animal will result in **failure** of that

laboratory for the entire team.

3. Final Course Grade: Outstanding, Pass or Fail

A. **Outstanding** - The student must:

- a. Receive at least a Pass grade in all labs, and
- b. Receive an Outstanding grade in at least 2 labs, and
- c. Have a total numerical examination score $\geq 80\%$

B. **Pass** - The student must:

- A. Receive at least a Pass grade in all labs, and
- B. Have a total numerical examination score $\geq 50\%$

C. **Incomplete** - If the student:

- A. Has total examination score $> 50\%$, but
- B. Has an Incomplete grade in one or more labs, or
- C. Missed 3 or more labs with appropriate consideration (excused absences)

D. **Fail** - If the student:

- A. Has a total examination score $< 50\%$, or
- B. Has a Fail grade in one or more labs, or
- C. Missed one or more labs without appropriate consideration (unexcused absence)

PLEASE NOTE – A numerical grade is NOT provided for this course, only an Outstanding, Pass, Incomplete or Fail, based on the above criteria. Therefore, this course will not be a part of DVM program average calculation. Failure to pass this course will result in failure of phase 3.

6.1 Assessment Details

Entry Examination (0%)

The purpose of the examination is to ensure adequate basic competency in anesthesia and surgery related skills prior to live animal laboratories. Review of VETM*3470 and VETM*3510 learning outcomes is essential prior to the examination.

Students must pass this examination to be able to participate in live animal laboratories. If a student fails this examination, remediation plans will be developed with one of the course coordinators and the individual student. The competencies tested in the examination will have to be mastered prior to participating in the live animal laboratories.

Midterm exam (40%)

Covers all material from September through November

Anything relevant to the principles and procedures of anesthesia, surgery (including suture materials, relevant anatomy, relevant pathophysiology, complications), aseptic technique, and associated patient care that were covered in labs, rounds, reading material or audiovisual material.

Following the mid-term examination, there will be a three-week period in which the examination can be reviewed. There will not be an opportunity to review the examination outside of this period. To arrange a time to review the examination, please contact the Administrative Assistant to the Faculty and Chair in the Department of Clinical Studies, Linda Wing (lwing@uoguelph.ca).

Final exam (60%)

Summative evaluation - comprehensive over the entire course

Anything relevant to the principles and procedures of anesthesia, surgery (including suture materials, relevant anatomy, relevant pathophysiology, complications), aseptic technique, and associated patient care that were covered in labs, rounds, reading material or audiovisual material. A student must pass both the surgery and anesthesia component of the examination to pass the course.

7 Course Statements

7.1 Photography, Video and Confidentiality

Taking photographs or videos of the animals, facilities and personnel, before, during or after the laboratories is NOT permitted. Any information regarding the animals is confidential and is not to be circulated in any shape or form unless specifically required for the course.

Failure to abide by those rules will result in expulsion from the laboratory and failure of the course.

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>

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.

More information can be found on the SAS website
<https://www.uoguelph.ca/sas>

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>