1 Course Details

1.1 Calendar Description
This course provides the general principles, pharmacologic basis, and practical applications of general and local anaesthesia in small and large animals. Other topics covered include fluid and acid-base imbalance and the prevention and treatment of surgical shock.

Pre-Requisites: All Phase 1 courses.
Co-Requisites: All Phase 2 courses.

1.2 Course Description
This course presents the general principles, pharmacologic basis, and practical applications of general and local anesthesia in small and large animals. Other topics covered include the prevention and treatment of fluid and acid-base imbalance and surgical shock, as well as pharmacological aspects of drugs used in the treatment of infection, seizures, behavioral disorders and disorders of the blood.

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: Ron Johnson
Email: rjohns03@uoguelph.ca
3 Learning Resources

Course notes, video clips and other resources will be posted on the course website according to unit/topic. Individual instructors will do this in advance of their lectures or labs. Any supplemental information will be clearly noted.

Textbooks on veterinary anesthesiology and pharmacology may be purchased at the student’s discretion but are not required. Students should purchase a veterinary drug handbook of their choice (these will be briefly discussed in class).

4 Learning Outcomes

This course is divided into units with these specific goals that will be provided with each lecture.
Units:

Pharmacology (Pharmacokinetics/Pharmacodynamics, Autonomic Pharmacology, Neuromuscular Pharmacology, Sedatives, Opioids, Anti-inflammatories, Local Anesthetics, Antimicrobials, Behaviour Modifying Drugs, Anticonvulsants)

Analgesia

Local anesthetic techniques (Large Animals, Small Animals)

Anesthetic equipment (Equipment, Circuits and Flows)

General Anesthesia (Inhalants, Injectables, Techniques, Applied Kinetics, Records, Monitoring, Large Animals, Small Animals)

Fluids (Fluid Therapy, Acid-Base, Shock)

Euthanasia

Special Cases and Management

4.1 Course Learning Outcomes

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

1. ANESTHESIA

   1. Know the mechanism of action of sedatives, anesthetics, and analgesics
   2. Compare and contrast the actions, case applications, and adverse effects of drugs used for sedation, analgesia and general anesthesia in core healthy veterinary species by selecting the most appropriate anesthetic and analgesic protocols
   3. Describe the pathophysiological changes associated with general anesthesia and identify the approaches used to reduce the minor and major negative impacts of general anesthesia
   4. Describe the components of pain physiology, associated pain management
pharmacology, and technical methods for general surgery
5. Conduct the drug and fluid calculations in order to appropriately select and administer accordingly
6. Describe the components of acid base physiology and interpret basic derangements
7. Outline the components, list and assemble the parts of an inhalant anesthetic machine, rebreathing equipment, endotracheal intubation, and intravenous catheterization supplies
8. Conduct endotracheal intubation, intravenous catheterization, anesthetic monitoring, local anesthetic techniques, and safe anesthetic recovery

2. PHARMACOLOGY OF NON-ANESTHETIC DRUGS

1. Know the beneficial effects, mechanisms of action, and main adverse effects of selected major classes of anticonvulsants, antimicrobial agents, and drugs used to treat behavioural and blood disorders

5 Teaching and Learning Activities

2019-2020 Schedule for Anesthesia Pharmacology VETM 3470

FALL SEMESTER

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<td>1. Lecture 1 Hanna/Valverde</td>
<td>Introduction</td>
<td>Course Introduction</td>
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<td>2. Lecture 2</td>
<td>PK/PD</td>
<td>PK/PD1 Hanna</td>
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**THANKSGIVING AND STUDY BREAK**

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<tr>
<td>13.</td>
<td>Lecture 13</td>
<td>Autonomic Pharm</td>
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</table>
14. Lecture 14  
Johnson  
Autonomic Pharm  
Autonomic Pharm 3

15. Lecture 15  
Hanna  
Neuromusc Pharm  
NM blockers/relaxant

16. Lecture 16  
Hanna  
Anti-inflam  
Anti-inflam Pharm 1

17. Lecture 17  
Hanna  
Anti-inflam  
Anti-inflam Pharm 2

18. Lecture 18  
Hanna  
Sedation/Premed  
Sedatives

19. Lecture 19  
Hanna  
Sedation/Premed  
Sedatives 2

Quiz #1 Up to and including “Sedatives 2” (9%)

20. Lecture 20  
Hanna  
Sedation/Premed  
Opioids

21. Lecture 21  
Evaluation  Valverde  
Sedation/Premed  
Preop

22. Lecture 22  
1 Sinclair  
Sedation/Premed  
SA Premed
23. Lecture 23
   Sinclair

24. Lecture 24
   Sinclair

25. Lecture 25
   Valverde

26. Lecture 26
   Valverde

27. Lecture 27
   Hanna

1. Activity 1
   Sinclair

   Sedation/Premed CBL Session

   Sedation/Premed CBL Session

   Sedation/Premed CBL Session

   Sedation/Premed CBL Session
28. Lecture 28  Analgesia Local  Anesth Tech  Sanchez

28. Lecture 28  Analgesia Local  Anesth Tech  Sanchez

29. Lecture 29  Analgesia  Analgesia 3  Valverde

29. Lecture 29  Analgesia  Analgesia 3  Valverde

30. Lecture 30  General Anesthesia  IV Anesth Pharm  1  Hanna

30. Lecture 30  General Anesthesia  IV Anesth Pharm  1  Hanna

31. Lecture 31  Anesth Equipment  Anesth  Valverde

31. Lecture 31  Anesth Equipment  Anesth  Valverde

32. Lecture 32  General Anesthesia  IV Anesth Pharm  2  Hanna

32. Lecture 32  General Anesthesia  IV Anesth Pharm  2  Hanna

33. Lecture 33  General Anesthesia  General Anesthesia  1  Valverde

33. Lecture 33  General Anesthesia  General Anesthesia  1  Valverde

34. Lecture 34  General Anesthesia  General Anesthesia  2  Valverde

34. Lecture 34  General Anesthesia  General Anesthesia  2  Valverde

1. Laboratory 1  Analgesia Local  Local Block Lab  SA  Sanchez

1. Laboratory 1  Analgesia Local  Local Block Lab  SA  Sanchez

35. Lecture 35  General Anesthesia  General Anesthesia  3  Valverde

35. Lecture 35  General Anesthesia  General Anesthesia  3  Valverde
36. Lecture 36
Pharmacol Hanna
General Anesthesia Inhalant

2. Laboratory 2
Lab LA Sanchez
Analgesia Local Local Block

2. Laboratory 2
Lab LA Sanchez
Analgesia Local Local Block

37. Lecture 37
Valverde
Anesth Equipment Circuits and Flows

3. Laboratory 3
Machine/CircuitsLab Valverde
Anesth Equipment Anes

3. Laboratory 3
Machine/CircuitsLab Valverde
Anesth Equipment Anes

Quiz #2 From Preop Evaluation up to and including “Circuits and Flows” (9%)

3. Laboratory 3
Machine/CircuitsLab Valverde
Anesth Equipment Anes

3. Laboratory 3
Machine/CircuitsLab Valverde
Anesth Equipment Anes
## WINTER SEMESTER

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<td>Circuits/Cath/Intub/Mix</td>
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<td>38. Lecture 38</td>
<td>Gen Anesth</td>
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<td>4. Laboratory 4</td>
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<td>Circuits/Cath/Intub/Mix</td>
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<td>Monitors/Monitoring</td>
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<td>4. Laboratory 4</td>
<td>Anesth Equipment</td>
<td>Circuits/Cath/Intub/Mix</td>
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<td>Valverde</td>
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<td>40. Lecture 40</td>
<td>General Anesthesia SA</td>
<td>SA Anesth 1</td>
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<tr>
<td>41. Lecture 41</td>
<td>General Anesthesia SA</td>
<td>SA Anesth 2</td>
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<td>Sinclair</td>
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</table>
5. Laboratory 5  
Lab(C)  Valverde  
General Anesthesia  SA Sed/GA

42. Lecture 42  
Sinclair  
General Anesthesia LA  LA Anesth 1

5. Laboratory 5  
Lab(A)  Valverde  
General Anesthesia  SA Sed/GA

43. Lecture 43  
Sinclair  
General Anesthesia LA  LA Anesth 2

44. Lecture 44  
Hanna  
Antimicrobial Pharm  Antimicrobials 1

45. Lecture 45  
Hanna  
Antimicrobial Pharm  Antimicrobials 2

5. Laboratory 5  
Lab(B)  Valverde  
General Anesthesia  SA Sed/GA

46. Lecture 46  
Hanna  
Antimicrobial Pharm  Antimicrobials 3

47. Lecture 47  
Hanna  
Antimicrobial Pharm  Antimicrobials 4

48. Lecture 48  
Hanna  
Antimicrobial Pharm  Antimicrobials
49. Lecture 49  
Hanna  
Antimicrobial Pharm  
Antimicrobials 6

50. Lecture 50  
Antifungal  
Hanna  
Antimicrobial Pharm

5. Laboratory 5  
Lab(D)  
Valverde  
General Anesthesia  
SA Sed/GA

51. Lecture 51  
Johnson  
Hematologic Pharm  
Drugs re: Blood

52. Lecture 52  
Johnson  
Behaviour Mod Drug  
Behav Mod Drug 1

53. Lecture 53  
Johnson  
Behaviour Mod Drug  
Behav Mod Drug 2

54. Lecture 54  
Hanna  
Anticonvulsant Pharm  
Anticonvulsants 1

55. Lecture 55  
Hanna  
Anticonvulsant Pharm  
Anticonvulsants 2

**WINTER BREAK**

56. Lecture 56  
Valverde  
Fluids  
Fluids 1
57. Lecture 57
Valverde

58. Lecture 58
Valverde

59. Lecture 59
Valverde

60. Lecture 60
Bersenas

61. Lecture 61
Bersenas

62. Lecture 62
Sanchez

Quiz #3 From “Records/Monitoring” up to and including “Anticonvulsants 2” (9%)

6. Laboratory 6
Sedation/Locals
Valverde

6. Laboratory 6
Sedation/Locals
Valverde

59. Lecture 59
Valverde

60. Lecture 60
Bersenas

61. Lecture 61
Bersenas

6. Laboratory 6
Sedation/Locals
Valverde

62. Lecture 62
Sanchez

Acid-Base

Acid-Base

Acid-Base

Fluids

Fluids 2

Sedation/Analgesia

LA

Sedation/Analgesia

LA

Sedation/Analgesia

LA

Fluids

Shock Pathophys 1

Fluids

Shock Pathophys 2

Euthanasia

Euthanasia
63. Lecture 63  Special Cases  Respiratory
Sanchez

6. Laboratory 6  Sedation/Analgesia  LA
Sedation/Locals  Valverde

64. Lecture 64  Special Cases  Cardiovascular
Sanchez

65. Lecture 65  Special Cases  Other
Sanchez

2. Activity 2  GA/Fluids  CBL Session
2  Sinclair

66. Lecture 66  Debrief Clinical Qs, Cases
Valverde

Quiz #4 From “Fluids 1” up to and including “Special Cases- Other” (9%)
6 Assessments

Students must achieve an overall course grade (formative tests + CBL + final exam) of at least 50% in order to pass the course.

Attendance to all laboratories is MANDATORY

6.1 Assessment Details

Quizzes (30%)

4 Quizzes: 36% of the course grade (9% each)

Quiz # 1- From “Introduction” lecture, up to and including “Sedatives 2” lecture.

Quiz # 2- From “Preop Evaluation” lecture, up to and including “Circuits and flows” lecture

Quiz # 3- From “Records/Monitoring” lecture, up to and including “Anticonvulsants 2” lecture

Quiz # 4- From “Fluids 1” lecture, up to and including “Special Cases- Other” lecture

If at all necessary, only one (1) Quiz can be missed during the course. If Quizzes 1, 2 or 3 are missed (the student having been granted academic consideration), the next Quiz will count for both Quizzes (18% instead of 9%). If Quiz 4 is missed (the student having been granted academic consideration), the mark for the final exam will include the mark for the Quiz so that the final examination will count for 63% instead of 54% of the course grade.

Students who miss a Quiz for reasons not approved by the Dean’s Office will be assigned a grade of zero for that test.

2 CBL Sessions (10%)
2 CBL Sessions: 10% (5% each)

Final examination (54%)
Final examination: 54% of the course grade.

The final examination is 3 hours in duration and will be administered as scheduled in the Phase 2 timetable. A grade of at least 50% must be obtained on this exam to pass the course. A student who scores less than 50% on this examination, and whose overall grade for the course is less than 50%, will be deemed to have failed the course. A student who scores less than 50% on this examination, but whose overall course grade is 50% or higher, will be assigned a grade of incomplete (INC). The latter student will be required to undertake a conditional examination set by the course coordinator. The conditional exam will require further study of the subject during the summer semester. A student who achieves a grade of 50% or higher on this conditional examination will be deemed to have passed the course and will receive their original course grade. A student who achieves a grade of less than 50% on this conditional exam will be deemed to have failed the course and will be assigned a course grade of 49%.

Remedial work may be assigned if poor performance is observed in any area of the course (to be determined by instructors involved). All assigned work (activities assigned on the Courselink website, including Case Base Learning [CBL] and Laboratories), and any remedial work, must be completed and approved to pass this course. If any course requirements have not been met by the end of the final exam period the course grade will be recorded as “incomplete.” If any requirements remain unfulfilled as of July 1st, a maximum course grade of 49% will be assigned and the student will be deemed to have failed the course.

7 Course Statements

7.1 Administrative Information

For questions regarding academic consideration, continuation of study, academic misconduct, safety, confidentiality, and experiential learning involving use of animals, please refer to the appropriate Phase 2 web documents on the OVC website.

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-regregchg.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