



EQN*3060 Equine Reproduction

Winter 2023

Section(s): C01

Department of Animal Biosciences

Credit Weight: 0.50

Version 1.00 - January 11, 2023

1 Course Details

1.1 Calendar Description

Students will develop a solid foundation in reproductive endocrinology and physiology in the stallion and the mare, emphasis on physiology, breeding management and recognition of common reproductive problems in stallion, mare or foal. Practical experience includes dissection of reproductive tracts, semen collection and evaluation.

Pre-Requisites: BIOL*1090, EQN*2040

Restrictions: Registration in BBRM.EQM.

1.2 Course Description

Students will develop a solid foundation in reproductive endocrinology and physiology in the stallion and the mare, emphasis on physiology, breeding management and recognition of common reproductive problems in stallion, mare or foal.

1.3 Timetable

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

Lectures T,Th 10am - 1120am: ANNU204

Lab: M 230pm- 520pm; ANNU110

1.4 Final Exam

Monday April 24, 2023; 8:30am -1030am

Location TBA

2 Instructional Support

2.1 Instructional Support Team

Instructor: Robert Fera
Email: rfera@uoguelph.ca
Office Hours: By appointment

2.2 Teaching Assistants

Teaching Assistant (GTA): Clayton McWilliams
Email: mcwillic@uoguelph.ca
Office Hours: by appointment

3 Learning Resources

3.1 Required Resources

Required Texts (Textbook)

<http://www.sciencedirect.com/science/book/9780323064828>

Brinsko, S.P., Blanchard, T.L., Varner, D.D., et al (2011) Manual of Equine Reproduction 3rd ed, St Louis: Mosby/Elsevier

Available in electronic format

<http://www.sciencedirect.com/science/book/9780323064828>

3.2 Recommended Resources

Recommended Textbooks (Textbook)

1. Morel, M.C.G. (2015). Equine reproductive physiology, breeding and stud management. 4th edition. CABI, Boston, MA, U.S.A. 428pp
2. Kainer, R.A., McCracken, T.O. (1998) Horse Anatomy Coloring Atlas 2nd ed .Loveland: Alpine Pub.
3. Reigel, R.J., Hakola, S.E. (1996) Illustrated Atlas of Clinical Equine Anatomy, Vol. 2 . Marysville: Equistar Pub.
4. Squires, E.L. (2003). Understanding the Stallion: your Guide to Horse Health Care and Management. Lexington: The Blood Horse Inc.
5. Schwiezer, C.M. (1998). Understanding the Broodmare: your guide to horse health care and management. Lexington: The Blood Horse Inc.
6. Schwiezer, C.M., Hillman, R.B. (1999). Understanding Breeding Management: your guide to horse health care and management. Lexington: The Blood Horse Inc.
7. Cable, C.S. (1998) Understanding the Foal: your guide to horse health care and management . Lexington: The Blood Horse Inc.
8. Giffin, J.M., Darling, K. (2004) Veterinary Guide to Horse Breeding. New York: Howell Book House.

3.3 Other Resources

All course material is available on CourseLink.

Consult Library Course Guide for additional resources <https://guides.lib.uoguelph.ca/eqn3060>

3.3 Course Technology and Technical Support

CourseLink System Requirements:

This course is being offered using CourseLink (powered by D2L's Brightspace), the University of Guelph's online learning management system (LMS). By using this service, you agree to comply with the University of Guelph's Access and Privacy Guidelines. Please visit the D2L website to review the Brightspace privacy statement and Brightspace Learning Environment web accessibility standards.

<http://www.uoguelph.ca/web/privacy/>

<https://www.d2l.com/legal/privacy/>

<https://www.d2l.com/accessibility/standards/>

You are responsible for ensuring that your computer system meets the necessary system requirements. Use the browser check tool to ensure your browser settings are compatible and up to date.

<http://spaces.uoguelph.ca/ed/system-requirements/>

<https://courselink.uoguelph.ca/d2l/systemCheck>

Course Technologies:

This course will use a variety of technologies including;

- CourseLink (main classroom)
- Zoom (lecture meeting space as needed - links on Courselink)

Technical Support:

If you need any assistance with the software tools or the CourseLink website, contact CourseLink Support.

Email: courselink@uoguelph.ca

Tel: 519-824-4120 ext. 56939 Toll-Free (CAN/USA): 1-866-275-1478

Support Hours (Eastern Time):

Monday thru Friday: 8:30 am–8:30 pm

Saturday: 10:00 am–4:00 pm

Sunday: 12:00 pm–6:00 pm

3.3 Dropbox Submissions

Assignments should be submitted electronically via the online Dropbox tool on Courselink. When submitting your assignments using the Dropbox tool, do not leave the page until your assignment has successfully uploaded. To verify that your submission was complete, you can view the submission history immediately after the upload to see which files uploaded successfully. The system will also email you a receipt. Save this email receipt as proof of submission.

Be sure to keep a back-up copy of all your assignments in the event that they are lost in transition. To avoid any last-minute computer problems, your instructor strongly recommends you save your assignments to a cloud-based file storage (e.g., OneDrive), or send to your email account, so that should something happen to your computer, the assignment could still be submitted on time or re-submitted.

It is your responsibility to submit your assignments on time as specified on the Schedule. Be sure to check the technical requirements and make sure you have the proper computer, that you have a supported browser, and that you have reliable Internet access. Remember that

technical difficulty is not an excuse not to turn in your assignment on time. Don't wait until the last minute as you may get behind in your work.

If, for some reason, you have a technical difficulty when submitting your assignment electronically, please contact your instructor or CourseLink Support.

<http://spaces.uoguelph.ca/ed/contact-us/>

4 Learning Outcomes

4.1 Course Learning Outcomes

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

1. Identify the anatomical structure of both stallion and mare reproductive tract
2. Explain the effects and mode of action of reproductive hormones in the stallion and mare
3. Describe the life cycle of spermatozoa and oocytes
4. Interpret behavioral signs associated with reproduction and foaling and recommend possible action
5. Describe how to handle both stallion and mare in breeding situations
6. Identify the key features required to manage a breeding farm compared to a non-breeding stable

5 Teaching and Learning Activities

5.1 Lecture

Week 1

- Topics:**
- 1-1: Introduction to the course. Feral reproductive behaviour
 - 1-2: Breeding Farm virtual tour

Week 2

- Topics:**
- 2-1: Gametogenesis. Mare reproductive structure and

function

2-2: Endocrine regulation of the estrous cycle

References: Chp 1, 2, 5

Week 3

Topics: 3-1: Estrous cycle manipulation

3-2: Breeding behaviour

References: Chp 3

Week 4

Topics: 4-1: Stallion reproductive structure and function

4-2: Endocrine regulation in the stallion

References: Chp 13

Week 5

Topics: 5-1: Stallion semen collection and evaluation

5-2: Processing and storage of fresh and frozen semen

References: Chp 12, 13, 14

Week 6

Topics: 6-1: Artificial insemination, Reproductive problems of the stallion and castration.

6-2: Mid-term exam (in class)

References: Chp 12, 13, 16, 17

Week 7

Topics: 7-1: Fertilization and early embryonic development

7-2: Pregnancy detection

References: Chp 5, 7

Week 8

Topics: 8-1: Pregnancy – endocrinology

8-2: Placentation

References: Chp 7

Week 9

Topics: 9-1: Gestation. Fetal development

9-2: Parturition

References: Chp 9

Week 10

Topics: 10-1: Postpartum

10-2: Foaling problems

References: Chp 9, 10, 11

Week 11

Topics: 11-1: Reproductive problems in the mare

11-2: Breeding soundness exams

References: Chp 4, 6, 8, 13, 15, 18

Week 12

Topics: 12-1: Breeding farm management

12-2: Review

References: Chp 9, 18

5.2 Lab

Week 2

Topics: Mare reproductive tract dissection

Week 4

Topics: Stallion reproductive tract dissection

Week 7

Topics: Semen analysis

Week 9

Topics: Pregnant tract and placenta dissection

6 Assessments

6.1 Marking Schemes & Distributions

Grading Policies

The assignment of grades is based on the clearly defined standards published in the Undergraduate Calendar as follows:

- **80 - 100 (A) Excellent.** An outstanding performance in which the student demonstrates a superior grasp of the subject matter, and an ability to go beyond the given material in a critical and constructive manner. The student demonstrates a high degree of creative and/or logical thinking, a superior ability to organize, to analyze, and to integrate ideas,

and a thorough familiarity with the appropriate literature and techniques.

- **70 - 79 (B) Good.** A more than adequate performance in which the student demonstrates a thorough grasp of the subject matter, and an ability to organize and examine the material in a critical and constructive manner. The student demonstrates a good understanding of the relevant issues and a familiarity with the appropriate literature and techniques.
- **60 - 69 (C) Acceptable.** An adequate performance in which the student demonstrates a generally adequate grasp of the subject matter and a moderate ability to examine the material in a critical and constructive manner. The student displays an adequate understanding of the relevant issues, and a general familiarity with the appropriate literature and techniques.
- **50 - 59 (D) Minimally Acceptable.** A barely adequate performance in which the student demonstrates a familiarity with the subject matter, but whose attempts to examine the material in a critical and constructive manner are only partially successful. The student displays some understanding of the relevant issues, and some familiarity with the appropriate literature and techniques.
- **0 - 49 (F) Fail.** An inadequate performance

Evaluation criteria used gives a measure quality of performance and not merely activity, including consideration of the student's ability to use correctly and effectively the language appropriate to the assignment. Lab assignments must be submitted in paper form at the end of lab. Due dates are explicitly stated in the assignment information.

Name	Scheme A (%)
Critique of a scientific article	10
midterm test	12
Cornell lecture notes	24
Lab assignments	24
Final Exam	30
Total	100

6.2 Assessment Details

Critique of a scientific article (10%)

Date: Fri, Feb 10, 12:00 PM

Learning Outcome: 1, 2, 3, 4, 5, 6

Choose one of the original research articles listed below.

1. Canisso, I. F., Segabinazzi, L. G. T. M., & Fedorka, C. E. (2020). Persistent Breeding-Induced Endometritis in Mares-A Multifaceted Challenge: From Clinical Aspects to Immunopathogenesis and Pathobiology. *International Journal of Molecular Sciences*, 21(4), 1432–. <https://doi.org/10.3390/ijms21041432>
2. Whitesell et al. 2020. Evaluation of the effect of laboratory methods on semen analysis and breeding soundness examination (BSE) classification in stallions. https://journals-scholarsportal-info.subzero.lib.uoguelph.ca/details/0093691x/v142icomplete/67_eoteolbsecis.xml
3. Auclair-Ronzaud et al. 2020. No-contact microchip measurements of body temperature and behavioural changes prior to foaling. https://journals-scholarsportal-info.subzero.lib.uoguelph.ca/details/0093691x/v157icomplete/399_nmmobtabcptf.xml

Use the libguide to critically analyze the article. Focus on the sections “*Identify how and why the research was carried out*”, and “*Evaluating the research*”.
<https://guides.lib.uoguelph.ca/WriteCriticalReview>

Using **Approach 2**, write your critique. Follow the example posted on Courselink (urine in semen). It is fine to use bullet points.

Upload your critique in Word format to Courselink by **midnight February 11**. *Ensure that there is no identifying information on your submitted document (no name, ID, etc).*

midterm test (12%)

Date: Thu, Feb 16

Learning Outcome: 1, 2, 3, 4, 5, 6

Midterm exam covering content up to Feb 14.

Written exam, in class

Cornell lecture notes (24%)

Date: First one due no later than Feb 4. Remaining ones due on the Friday of the weeks you select

Learning Outcome: 1, 2, 3, 4, 5, 6

Good notes will help you remember concepts, develop meaningful learning skills, and gain a better understanding of a topic. Each student will complete Cornell notes for any four weeks of your choosing from the course to summarize (with the exception of the first and last weeks). Do not include labs in your lecture notes. Follow the information presented in this video to learn how to format Cornell notes, and refer to the rubric on Courselink. Be sure to write your own notes and do not copy and paste from the lecture slides or textbook. Including diagrams is fine but do not copy more than two diagrams from the lecture notes. https://www.youtube.com/watch?v=ogHlyREqLd4&feature=emb_logo (Ms Caramagno advanced notes 11:41). **Be sure that your summary section includes some relationship of the lecture material to management of a breeding farm.**

Lecture notes are due in the dropbox on **Courselink** by **Friday midnight** of the respective week. First submissions must be made no later than **Feb 4** (ie. wk 2,3 or 4). If you wish, you can use the Cornell Notes Template available on Courselink (or create your own).

Lab assignments (24%)

Date: Weeks 2, 4, 7, 9

Learning Outcome: 1, 2, 3

Labs will support and confirm information learned in lectures. There will be four wet labs in this course:

1. January 16 - Mare reproductive tract
2. January 30 - Stallion reproductive tract
3. Feb 27 - Semen evaluation
4. March 13 - Pregnant mare tract dissection

Students must attend lab to obtain marks for the lab assignment.

Lab assignments may be completed in groups and must be handed in at the end of the lab period. Each lab is worth 6%.

Final Exam (30%)

Date: Mon, Apr 24, 8:30 AM - 10:30 AM, TBD, see Webadvisor for latest information

Learning Outcome: 1, 2, 3, 4, 5, 6

Written

In Class, in person

7 Course Statements

7.1 Grading Policies

Missed Assessments & Classes:

Alternate assessments will be offered only to students with documented medical, psychological, or compassionate reasons for missing a scheduled assessment [see Academic Consideration]. It is the student's responsibility to obtain notes/ learning materials from a missed class. Late assignments without the aforementioned documentation will be accepted with a **penalty of 20% per day, up to a maximum of three days late**. Assignments submitted later than three days will not be accepted and will result in a zero grade. Note that failing to show up for a scheduled practical skill test without any of the aforementioned documentation will result in a 0 for that skill test without the possibility of a make-up.

7.2 Course Policy on Group Work

Assignments are expected to be individual work unless otherwise noted, and are graded as such.

7.3 Netiquette expectations

The course website is considered the classroom and the same protections, expectations, guidelines, and regulations used in face-to-face settings apply. Inappropriate behaviour will not be tolerated. Examples of inappropriate online behaviour include:

- Posting inflammatory messages about your instructor or fellow students;
- Using offensive language;
- 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;
- 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; and
- Sharing your username and password.

7.4 Technical Skills

As part of your learning experience, you are expected to use a variety of technologies for assignments, lectures, teamwork, and meetings. In order to be successful in this course you will need to have the following technical skills:

- Manage files and folders on your computer (e.g., save, name, copy, backup, rename, delete, and check properties);
- Install software, security, and virus protection;
- Use office applications (e.g., Word, PowerPoint, Excel, or similar) to create documents;
- Be comfortable uploading and downloading saved files;
- Communicate using email (e.g., create, receive, reply, print, send, download, and open attachments);
- Navigate the CourseLink learning environment and use the essential tools, such as Dropbox, Quizzes, Discussions, and Grades (the instructions for this are given in your course);
- Access, navigate, and search the Internet using a web browser (e.g., Firefox, Internet Explorer); and
- Perform online research using various search engines (e.g., Google) and library databases.

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 make a booking at least 14 days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.

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, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. 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

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g.. final exam or major assignment).

8.11 Covid-19 Safety Protocols

For information on current safety protocols, follow these links:

- <https://news.uoguelph.ca/return-to-campus/how-u-of-g-is-preparing-for-your-safe-return/>
- <https://news.uoguelph.ca/return-to-campus/spaces/#ClassroomSpaces>

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.
