



ANSC*3040 Animal Reproduction

Winter 2023

Section(s): C01

Department of Animal Biosciences

Credit Weight: 0.50

Version 1.00 - January 06, 2023

1 Course Details

1.1 Calendar Description

This course takes a multi-species approach to understanding the basic principles of animal reproduction. Both the anatomy and the physiology of reproductive systems are explored in agricultural, companion and wildlife species with an emphasis on animals under human management. In addition, the development and application of assisted reproductive technologies (ART) for animal management are introduced.

Pre-Requisites: ANSC*3080

1.2 Course Description

This course takes a multi-species approach to understanding the basic principles of reproduction in domestic animals. The developmental biology, the anatomy and the physiology of reproductive systems in ruminants, swine, equine, canine, feline, and birds are explored. In addition, the development and application of reproductive technologies for animal management are discussed.

1.3 Timetable

All lectures and laboratories will be delivered in person and will not be recorded.

Lectures: Mondays, Wednesdays, Fridays, 11:30 a.m. - 12:20 p.m., Room ROZH101.

Laboratories: Tuesdays or Thursdays, Room ANNU110 according to the following schedule:

- Section 0101: Tuesdays 10:00 a.m. - 11:30 a.m.
- Section 0102: Tuesdays 11:30 a.m. - 1:00 p.m.
- Section 0103: Tuesdays 1:00 p.m. - 2:30 p.m.
- Section 0104: Tuesdays 2:30 p.m. - 4:00 p.m.
- Section 0105: Tuesdays 4:00 p.m. - 5:30 p.m.
- Section 0106: Thursdays 10:00 a.m. - 11:30 a.m.
- Section 0107: Thursdays 11:30 a.m. - 1:00 p.m.
- Section 0108: Thursdays 1:00 p.m. - 2:30 p.m.
- Section 0109: Thursdays 2:30 p.m. - 4:00 p.m.
- Section 0110: Thursdays 4:00 p.m. - 5:30 p.m.

Office hours: Thursdays 4:30 p.m to 6:30 p.m., Room ANNU 137.

1.4 Final Exam

Friday April 15th, 2:30pm to 4:30pm, Location: TBA

Date and time are subject to change. Please see WebAdvisor for the latest information.

2 Instructional Support

2.1 Instructional Support Team

Instructor: Eduardo De Souza Ribeiro
Email: eribeiro@uoguelph.ca
Telephone: +1-519-824-4120 x56516
Office: ANNU 137

Lab Co-ordinator: Robert Jones
Email: rjones12@uoguelph.ca
Telephone: +1-519-824-4120 x56891
Office: ANNU 255
Office Hours: TBA

2.2 Teaching Assistants

Teaching Assistant (GTA): Reem Sabry
Email: rsabry@uoguelph.ca

Teaching Assistant (GTA): Nicholas Werry
Email: nwerry@uoguelph.ca

Teaching Assistant (GTA): Matheus Santos

Email:	matheus@uoguelph.ca
Teaching Assistant (GTA):	Vanessa Zak
Email:	vzak@uoguelph.ca
Teaching Assistant (GTA):	Marangaby Mahamat
Email:	mmahamat@uoguelph.ca
Teaching Assistant (GTA):	Wenjing Lesperance
Email:	wlespera@uoguelph.ca

2.3 Communicating with Your Instructor

During the semester, your course instructor will interact with you using the following ways of communication:

1. **Announcements in Courselink:** The instructor will use the Announcements tool on the Course Home page to provide you with course reminders and updates. Please check this webpage regularly.
2. **Office Hours:** office hours will be held weekly on Thursdays from 4:30 p.m. to 6:30 p.m. in Room ANNU 137.
3. **Before and after classes:** students can ask questions to the instructor in the minutes preceding and following classes.
4. **Email:** communications through email will be used only if the items above were not possible or effective. In these situations only, the instructor will attempt to respond to your email within 24 hours.
5. **Private meetings:** private meeting can be scheduled for resolution of complex questions or concerns.

3 Learning Resources

3.1 Required Resources

Required Textbook (Textbook)

Pathways to Pregnancy and Parturition, 3rd Edition, Phillip L. Senger, Current Conceptions, Inc.

Available at University Bookstore; 519-824-4120 Ext. 56692.

3.2 Recommended Resources

Recommended Texts (Textbook)

Additional recommended texts will be posted in the Courselink webpage of the course.

3.3 Additional Resources

Lab Manual (Lab Manual)

Recommended texts for laboratory classes will be provided via Courselink.

Other Resources (Other)

Any additional resources for the course will be provided via Courselink.

Field Trips (Other)

No field trips are planned for this course.

3.4 Course Technology and Technical Support

System and Software Requirements

To help ensure you have the best learning experience possible, please review the list of system and software requirements.

<https://opened.uoguelph.ca/student-resources/system-and-software-requirements>

CourseLink System Requirements

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. (Results will be displayed in a new browser window).

<http://spaces.uoguelph.ca/ed/system-requirements/>
<https://courselink.uoguelph.ca/d2l/systemCheck>

CourseLink

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/>

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

3.4 Technical Skills

As part of your learning experience, you are expected to use a variety of technologies for lectures, labs, quizzes, and exams. 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);
- Be comfortable uploading and downloading saved files;
- Navigate the CourseLink learning environment and use the essential tools, such as Dropbox, Quizzes, Content, Discussions, and Grades;

3.4 Library Access

As a student, you have access to the University of Guelph's library collection, including both physical and electronic materials. For information on checking out or couriering physical library items, accessing electronic journals and returning items to the library, visit the library's website.

If you are studying off campus and would like to access the library's electronic resources, use the Off Campus Login and login using your Single Sign On credentials or using your last name and library barcode.

<https://www.lib.uoguelph.ca/>

<https://www.lib.uoguelph.ca/campus-login>

4 Learning Outcomes

By the end of this program, successful students will be able to:

4.1 Course Learning Outcomes

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

1. Identify the main hormones regulating reproduction in domestic species and recall their

- biochemical classification, source of production, target tissues, and primary actions.
2. Illustrate and execute immunoassays for quantification of hormones in biological samples.
 3. Explain the mechanism of sexual differentiation in developing embryos and the organogenesis of the reproductive tract in females and males of domestic species.
 4. Recognize and explain the organization and function of the reproductive system in females and males of domestic species.
 5. Explain the process of gametogenesis in females and males of domestic species.
 6. Explain the physiology of puberty in females and males of domestic species.
 7. Explain methods of breeding soundness examination of sires and recognize the equipment and material required.
 8. Describe the reproductive cycles in females of domestic species and explain how they are coordinated by the reproductive hormones.
 9. Explain fertilization, early embryogenesis and maternal recognition of pregnancy.
 10. Explain main events in placentation, endocrinology of pregnancy and parturition, and main events in puerperium and lactation.
 11. Recognize different stages of embryonic/fetal development and describe the main methods of pregnancy diagnosis in domestic species.
 12. Describe and compare reproductive technologies used in reproductive management of domestic species, and recognize the materials required for each technique.
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5 Teaching and Learning Activities

5.1 Lecture Schedule

The schedule below is tentative in regards to the dates certain topics will be covered. This schedule can change at the instructor discretion.

Lecture #	Date	Lecture topic
Lecture 1	9-Jan	Introduction
Lecture 2	11-Jan	Embryogenesis and sexual differentiation
Lecture 3	13-Jan	Embryogenesis and sexual differentiation

Lecture #	Date	Lecture topic
Lecture 4	16-Jan	Functional anatomy of the male reproductive tract
Lecture 5	18-Jan	Functional anatomy of the male reproductive tract
Lecture 6 *	20-Jan	Puberty and endocrinology of the male
Lecture 7	23-Jan	Puberty and endocrinology of the male
Lecture 8	25-Jan	Spermatogenesis
Lecture 9	27-Jan	Sexual behaviour of the male
Lecture 10	30-Jan	Sire fertility
Lecture 11	1-Feb	Functional anatomy of the female reproductive system
Lecture 12 *	3-Feb	Functional anatomy of the female reproductive system
Lecture 13	6-Feb	Puberty and endocrinology of the female
Lecture 14	8-Feb	Puberty and endocrinology of the female
Lecture 15	10-Feb	Folliculogenesis and the estrous cycle
Lecture 16	13-Feb	Folliculogenesis and the estrous cycle
Lecture 17	15-Feb	Oogenesis
Lecture 18 *	17-Feb	Fertilization
---	21-Feb	Winter break – no lecture
---	23-Feb	Winter break – no lecture
---	25-Feb	Winter break – no lecture

Lecture #	Date	Lecture topic
Lecture 19	27-Feb	Early embryo development and maternal recognition of pregnancy
Lecture 20	1-Mar	Developmental biology
Lecture 21	3-Mar	Placentation
Midterm exam	4-Mar	Mid-term exam from 9:00 a.m. to 11:00 a.m. in Room MACN 105
Lecture 22	6-Mar	Endocrinology of pregnancy and parturition
Lecture 23	8-Mar	Puerperium and lactation
Lecture 24 *	10-Mar	Puerperium and lactation
Lecture 25	13-Mar	Applied reproductive physiology and technologies in ruminants
Lecture 26	15-Mar	Applied reproductive physiology and technologies in ruminants
Lecture 27	17-Mar	Applied reproductive physiology and technologies in ruminants
Lecture 28	20-Mar	Applied reproductive physiology and technologies in ruminants
Lecture 29	22-Mar	Applied reproductive physiology and technologies in ruminants
Lecture 30 *	24-Mar	Applied reproductive physiology and technologies in ruminants
Lecture 31	27-Mar	Applied reproductive physiology and technologies in ruminants
Lecture 32	29-Mar	Applied reproductive physiology and technologies in swine
Lecture 33	31-Mar	Applied reproductive physiology and technologies in equine
Lecture 34	3-Apr	Reproduction of birds

Lecture #	Date	Lecture topic
Lecture 35	5-Apr	Reproduction of birds
---	7-Apr	Holiday – no lecture
Lecture 36 *	10-Apr	Reproduction of birds
Final exam	15-Apr	Final exam from 2:30 p.m. to 4:30 p.m. – Room TBA

* **Represents a day of Quiz in the classroom.**

5.2 Laboratory Classes

The schedule below is tentative in regards to the dates certain topics will be covered. This schedule can change at the instructor discretion.

Lab #	Date	Lab topic
---	<i>Jan 10 & 12</i>	<i>No laboratory class – time to watch the review lecture</i>
Lab 1	Jan 17 & 19	Hormones and immunoassays
Lab 2	Jan 24 & 26	Anatomy and histology of the male reproductive tract
Lab 3	Jan 31 & Feb 2	Breeding soundness exam of sires
Lab 4	Feb 7 & 9	Anatomy and histology of the female reproductive tract
Lab 5	Feb 14 & 16	Ovaries, follicle aspiration, oocyte search, and introduction to IVF
---	Feb 21 & 23	Winter break – no laboratory class
---	<i>Feb 28 & Mar 2</i>	<i>No laboratory class – time to study for the midterm</i>
Lab 6	Mar 7 & 9	Anatomy of pregnant uteri and pregnancy diagnosis methods

Lab #	Date	Lab topic
Lab 7	Mar 14 & 16	Estrous detection, synchronization programs, artificial insemination
Lab 8	Mar 21 & 23	Practicing artificial insemination
Lab 9	Mar 28 & 30	Embryology, embryo flushing and embryo transfer procedures
Lab 10	Apr 4 & 6	Birds reproduction

6 Assessments

6.1 Assessment Details

Course Assignments and Tests (0%)

Course Assignments and Tests:

Assignment or Test	Date	Contribution to Final Mark (%)	Learning Outcomes Assessed
Quiz 1	20-Jan	5.0*	1 – 4
Quiz 2	3- Feb	5.0*	5 – 7
Quiz 3	17-Feb	5.0*	5, 8
Mid-term exam	4-Mar	37.5	1 – 9
Quiz 4	10-Mar	5.0*	9 – 11
Quiz 5	24-Mar	5.0*	10, 12
Quiz 6	10-Apr	5.0*	12
Final exam	15-Apr	37.5	1 – 12

Assignment or Test	Date	Contribution to Final Mark (%)	Learning Outcomes Assessed

Additional notes:

*The quiz with the lowest grade will be dropped for the calculation of the final grade for quizzes. Thus, only the best five of six quizzes count towards the final grade.

Final examination date and time:

April 15, 2023 from 2:30 p.m. to 4:30 p.m.

Final exam weighting:

37.5%

All quizzes and exam will be in person.

7 Course Statements

7.1 Grading Policies:

The final grade is divided in five parts:

- **25.0% Quizzes (100 points):** A quiz of short answer and multiple-choice questions will

be given at the start of the class when scheduled (Jan-20, Feb-3, Feb-17, Mar-10, Mar-24, Apr-10). The Courselink platform will be used, and students must bring a laptop or tablet with internet connection to access the platform. Cellphones will not be accepted. Questions will be designed based on the content of the last 6 lectures and the last 2 laboratories, including online material posted on Courselink. No make-up quizzes will be granted. A missed lecture quiz results in a 0% score. The lowest score, or one missed quiz, will be dropped from the calculation of the final score for Quizzes. Each quiz worth 20 points. Students who missed two or more quizzes because of medical conditions must present official documentation for justification of absence and transfer of assigned points from a missed quiz to the midterm or final exam.

- **37.5% Midterm Exam (150 points):** Comprehensive exam with short answer and multiple-choice questions scheduled for Mar 4th, 9:00 a.m. to 11:00 a.m., Room MACN 105. Questions will be designed based on the content of lectures and laboratories given before the Winter break. No make-up exam will be granted. Students who missed the midterm exam because of a medical condition must present official documentation for justification of absence and transfer of assigned points from the missed midterm exam to the final exam. A missed exam without justification results in a 0% score.
- **37.5% Final Exam (150 points):** Comprehensive exam with short answer and multiple-choice questions scheduled for April 15th from 2:30 p.m. to 4:30 p.m. Location will be informed in Courselink. Questions will be designed based on the content of all lectures and laboratories with emphasis on topics covered after the Winter break. No make-up exam unless approved prior to the exam, depending on instructor approval. A missed exam results in a 0% score.

7.2 Course Policy Regarding Group Work

No group work is planned for this course.

7.3 Course policy regarding course material and use of electronic devices for recording of lectures and laboratories

All course materials made available through Courselink are restricted to personal use of students and teaching assistants registered in ANSC*3040 Animal Reproduction in Winter 2023. Students and teaching assistants are prohibited to share, copy, reproduce, distribute, posted online, transmitted to others, or cite any course materials (e.g. slides, lab worksheets, recorded lectures, recorded labs, recommended texts, etc...) without the written permission from Dr. Eduardo Ribeiro.

Electronic recording of classes is expressly forbidden without consent of the instructor. When recordings are permitted they are solely for the use of the authorized student and may not be reproduced, or transmitted to others, without the express written consent of the instructor.

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.
