



ANSC*6550 Systematic Review and Meta-Analysis for Animal Biosciences

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

Major topics and methods in the systematic review of the scientific literature, meta-analysis, and empirical modeling for animal sciences will be covered. Students learn via hands-on 'doing' with reflection on their work via the execution of a meta-analysis in their topic area and preparation of a meta-analysis manuscript.

Pre-Requisites: Take UNIV*6020 or ANSC*6050.

1.2 Course Description

Major topics and methods in the systematic review of the scientific literature, meta-analysis and empirical modelling for animal sciences will be covered. Topics include strategies for systematically locating and extracting data from the literature, database development and management, model development and statistical analysis, model evaluation and scientific paper writing. This is an **experiential learning**-based course where students, in partnership with their advisor, identify a topic for which the student will conduct a meta-analysis and draft a scientific paper during the course.

1.3 Timetable

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

LEC Mon 10:00 am - 11:20 am - ANNU 101

LEC Wed 10:00 am - 11:20 am - ANNU 101

1.4 Final Exam

There is no final exam in this course.

2 Instructional Support

As much as possible, this course will be delivered in person. Copies of the lectures will be provided as PDFs or as recordings (available within 1 week after the lecture), via CourseLink. Netiquette expectations for this course are provided in the 'Course Statements' section.

weekly 1on1 support will be made available to all registered students to support with the course project.

The instructor will lecture in an interactive discussion-based manner, provide feedback to students on individual projects, help with project direction, oversee/prepare applied learning exercises and mark assignments.

2.1 Instructional Support Team

Instructor:	Jennifer Ellis
Email:	jellis@uoguelph.ca
Telephone:	519-824-4120 x56522
Office:	ANNU 234B

2.2 Communicating with your Instructor

Communicating with your instructor:

During the course, your instructor will interact with you on various course matters on the course website using the following ways of communication:

- **Announcements:** The instructor will use **Announcements** on the Course Home page to provide you with course reminders and updates. Please check this section frequently for course updates from your instructor.
- **Email:** If you have a conflict that prevents you from completing course requirements, or have a question concerning a personal matter, you can send your instructor a private message by email. If you email the course instructor, please keep in mind that the instructor receive a lot of email in a day. The instructor for this course is involved with other courses and research commitments, just as you are. In order to facilitate a response to your email, please consider the following guidelines: allow 24 to 48 hours for a response (if you send an email late at night, we may not even see it until the next day).The instructor will attempt to respond to your email within 24-48 hours.
- **Weekly meetings:** weekly 1on1 meetings (30 min slots) are available to all students,

throughout the course, to support with course content and major project. These meetings are bookable in advance (the blocks of bookable time slots are provided at the start of the semester), are limited to one per week and can be online (teams) or in person.

3 Learning Resources

3.1 Required Resources

CourseLink (Website)

<https://courselink.uoguelph.ca/d2l/home/742282>

Microsoft Teams (Software)

<https://www.microsoft.com/en-ca/microsoft-365/microsoft-teams/group-chat-software>

3.2 Course Technology and Technical Support

System and Software Requirements

This course will use a variety of technologies including;

- CourseLink (main classroom)
- Teams (via Office 365)
- Zoom (backup)

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>

Course Technologies

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

Teams (via Office 365)

Office 365 Teams is a collaboration service that provides shared conversation spaces to help teams coordinate and communicate information. This course will use Teams for one on one meetings with your Instructor. It is recommended that you use the desktop version of Teams. As a student you are responsible for learning how to use Teams and it's features.

For Teams Support visit the CCS website for more information.

<https://www.uoguelph.ca/ccs/services/office365/teams>

Zoom

This course may use Zoom. Check your system requirements to ensure you will be able to participate.

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

3.2 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.

3.2 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

4.1 Course Learning Outcomes

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

1. Conduct a systematic literature review.
2. Critically analyze published literature.

3. Construct a database from a systematic literature review.
 4. Apply meta-analysis methods for modelling of categorical, linear and non-linear data types collected from the literature.
 5. Assess and measure the appropriateness of method options used in meta-analysis.
 6. Assess model goodness-of-fit and troubleshoot data and coding problems.
 7. Evaluate and compare models (extant and developed)
 8. Interpret and judge the biological significance of equations developed.
 9. Accurately and effectively communicate scientific analyses in written and oral form.
 10. Proficiently use terminology common in statistical modelling.
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5 Teaching and Learning Activities

5.1 Lecture

Week 1

Topics: Introduction

Week 1

Topics: Module 1: Conducting a systematic literature review

Week 2

Topics: Module 1: Conducting a systematic literature review

student presentations - research topic

Week 2

Topics: Module 2: Data visualization & Exploration

Week 3

Topics: Module 2: Data visualization & Exploration

Week 3

Topics: Module 2: Data visualization and exploration

Week 4

Topics:	Module 2: Data visualization and exploration
Week 4	
Topics:	Module 3: Mixed models for meta-analysis - linear regression
Week 5	
Topics:	Module 3: Mixed models for meta-analysis: linear regression
Week 5	
Topics:	Module 3: Mixed models for meta-analysis - linear regression
	student presentations - trial analysis on own data (assignment A1)
Week 6	
Topics:	Module 4: Mixed model fitting
Week 6	
Topics:	Module 4: Mixed model fitting
Week 7	
Topics:	Reading week - no classes
Week 8	
Topics:	Module 5: database splitting for model development and evaluation
Week 8	
Topics:	Assignment A2 student presentations
Week 9	
Topics:	Module 6: mixed models for meta-analysis: categorical data

Week 9

Topics: Module 7: Mixed models for meta-analysis: non-normal data

Week 10

Topics: Module 8: Mixed models for meta-analysis - non-linear regression

Week 10

Topics: Student presentations - assignment A3

Week 11

Topics: Module 9: Model evaluation - statistical and graphical

Week 11

Topics: Review and consult

Week 12

Topics: Module 10: Writing a meta-analysis paper

Week 12

Topics: Review and consult

Week 13

Topics: Review and consult

Week 13

Topics: Student practice presentations

6 Assessments

Assignments A1-A4 will encompass an oral presentation or written submission of findings and submission of statistical code. Assignment code and outcomes will be made available to the instructor the day before any presentation.

The final Project Presentation will be 15 minutes long, plus a 10 minute question period.

Presentation slides will be made available to the instructor and students the day before the presentation.

The final Project Paper will be structured as a journal article using an example/template from a relevant journal, and will be submitted approx. one week after the presentation. This will allow students to integrate feedback from the presentation into their report. The reports will be written and evaluated individually. The topic of each project will be decided between the student and their advisor and shared with the instructor in the 3rd week of class.

6.1 Marking Schemes & Distributions

Name	Scheme A (%)
Assignment A1	5
Assignment A2	5
Assignment A3	5
Assignment A4	5
Final Presentation	30
Final Paper (manuscript draft)	50
Total	100

6.2 Assessment Details

Assignment A1 (5%)

Date: Thu, Feb 9

Learning Outcome: 1, 2, 3, 9

Assignment 1 (A1)

Presentation of literature search strategy/search terms, literature funnel and database template populated with at least 10 studies

Assignment A2 (5%)

Date: Thu, Mar 2

Learning Outcome: 4, 5, 6, 9

Assignment 2 (A2)

Presentation of mixed-model analysis of sample dataset, identification of optimal fixed-random structure & outliers

Assignment A3 (5%)

Date: Thu, Mar 16

Learning Outcome: 4, 5, 6, 9

Assignment 3 (A3)

Presentation of data analysis proposal, including assessment of data type, appropriate analysis approach, and planned comparisons

Assignment A4 (5%)

Date: Thu, Mar 30

Learning Outcome: 7, 9

Assignment 4 (A4)

Presentation of model evaluation (statistical and graphical)

Final Presentation (30%)

Date: Thu, Apr 6

Learning Outcome: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Final Paper (manuscript draft) (50%)

Date: Thu, Apr 20

Learning Outcome: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

7 Course Statements

7.1 Course Netiquette Expectations

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

7.2 Course Policy on Technology

It is your responsibility to make sure you have access to a good internet connection and a suitable computer or electronic device such as a tablet or smartphone along with a web camera, microphone and speakers/headphones. Your device needs to be capable of browsing and reviewing recorded or live video, audio and printed content from Courselink and across the internet. The University of Guelph's online Learning Management System (aka CourseLink) is integral to the delivery of this course. It is also your responsibility to ensure that you can access the course materials and complete online course requirements within the time allotted. If CourseLink is not accessible for a significant period of time (not including scheduled maintenance) deemed by the instructor to have had an impact on students' abilities to complete assignments, deadlines will be extended. In addition to accessing the Courselink website via a suitable web browser, due to the ongoing Covid-19 restrictions additional software and applications will be used in the delivery of this course. These will include but not be limited to Zoom, Webex, MS Teams, MSOffice365 (Word, PowerPoint, Excel), Slido, email and a multi-purpose media player. The instructors will provide recommendations for software applications that are suitable for the purposes of the course but you will be ultimately responsible for finding, installing and maintaining any applications you use for this course. In online classes, you need to use technology to connect to course events as well as take notes and interact with the course material. This should be done in a way that respects your fellow students by not creating undue distractions (see below under Online Behaviour). Also, keep in mind that if your technology uses the University's network, the University's acceptable use policy also comes into play.

http://www.uoguelph.ca/cio/sites/uoguelph.ca.cio/files/CIO-ITSecurity-03.1.3-AUP-Approved_0.pdf

7.3 Recording of Online Course Activities

Learning activities may be recorded by the instructor or TAs and posted to CourseLink, Zoom, YouTube or another appropriate platform for grading and dissemination. As a result, individual students may be recorded during these sessions. By enrolling in this course, it is assumed that students agree to the possibility of being recorded during classes or other "live" course activities. If you prefer not to be distinguishable during a recording, you may:

1. Turn off your camera,
2. Mute your microphone (you should always mute your microphone when not participating anyway),
3. Edit your identification in the online session or application (e.g. use your initials instead),
4. Use the chat function to pose questions (again with identifying information adjusted)

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

7.4 Course Policy Regarding use of Electronic Devices and Recording of Lectures

In keeping with University policy, electronic recording of classes is expressly forbidden without consent of the individual instructor for that class. 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. If the instructor provides a recording of the class or learning activity, these recordings are also 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. Please note that, if provided, these recordings are an optional additional tool for assisting with your learning and there is no guarantee a recording will be available for every online activity.

7.5 Late Policy

If you choose to submit assignments to the **Dropbox** tool late, the full allocated mark will be reduced by 25% per day after the deadline for the submission of the assignment to a limit of three days at which time access to the **Dropbox** folder will be closed. Submitting work on time is an important life skill, and when you enter the workforce.

Extensions will be considered for medical reasons or other extenuating circumstances. If you require an extension, discuss this with the instructor as soon as possible and well before the due date. Barring exceptional circumstances, extensions will not be granted once the due date has passed. These rules are not designed to be arbitrary, nor are they inflexible. They are designed to keep you organized, to ensure that all students have the same amount of time to work on assignments, and to help to return marked materials to you in the shortest possible time.

7.6 Dropbox Submissions

Assignments should be submitted electronically via the online **Dropbox** tool. 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 of your assignments in the event that they are lost in transition. In order to avoid any last-minute computer problems, your instructor strongly recommend 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/>

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.
