



# POPM\*6960 Systematic Reviews and Meta-Analysis

Winter 2021  
Section(s): C01

Department of Population Medicine  
Credit Weight: 0.50  
Version 1.00 - December 08, 2020

---

## 1 Course Details

### 1.1 Calendar Description

This course covers the use of systematic reviews in animal and public health, the steps in conducting a systematic review, and quantitative synthesis of research results from multiple studies (meta-analysis). The course combines didactic lectures and videos with practical exercises during class time.

**Pre-Requisites:** POPM\*6200 and POPM\*6520

### 1.2 Course Description

This course covers the use of systematic reviews in animal health and public health, the steps in conducting a systematic review, and quantitative synthesis (meta-analysis). The course combines didactic lectures with "flipped teaching" sessions. For the flipped teaching sessions, students will be expected to view 3-5 short videos on the session materials and complete a short quiz prior to the class session (videos and quizzes will be posted on courselink). During the class sessions, students will work through practical examples related to the course materials. The meta-analysis section of the course will provide basic instruction in how to conduct meta-analysis using the software program "R". Evaluation will include pre-class quizzes, a final project [developing a protocol for a systematic review], and a final assignment on meta-analysis.

### 1.3 Timetable

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

There will be 2 synchronous remote sessions (90 minutes each); Wednesdays, 1:30 - 3 pm and Fridays, 8:30 -10 am. The class sessions will take place on Zoom - links will be posted on the courselink site. The session bolded in the following table are the flipped session.

Session	Date	Instructor	Topic
1	Wed Jan.13	Sargeant	Knowledge synthesis methods
2	Friday Jan15	Sargeant	Introduction to SRs, types of questions that can be addressed with systematic reviews, protocols
3	Wed Jan 20	Sargeant	<b>Defining the question and eligibility</b>
4	Friday Jan 22	Sargeant	<b>Suitable study designs to address systematic review questions</b>
5	Wed Jan 27	Sargeant	<b>Eligibility to searching</b>
6	Friday Jan 29	Sargeant	<b>Searching the literature</b>
7	Wed Feb 3	TBD	<b>Relevance screening</b>
8	Friday Feb 5	Sargeant	<b>Extracting data on key elements</b>
9	Wed Feb 10	Sargeant	<b>Extracting data on outcomes</b>
10	Friday	Sargeant	<b>Extracting data: process and reporting</b>

	Feb 12		
	Feb 15 - Feb 19		<b>Reading week, no classes</b>
11	Wed Feb 24	Sargeant	<b>Risk of bias – RCTs</b>
12	Friday Feb 26	Sargeant	<b>Risk of bias - observational and prevalence</b>
13	Wed March 3	TBD	Approaches to analysis for intervention questions – qualitative
14	Friday March 5	Sargeant	<b>Scoping studies</b>
15	Wed March 10	Berke	Lecture & Lab in Meta-analysis – Introduction
16	Friday March 12	Berke	Lecture & Lab in Meta-analysis – Binary Outcome
17	Wed March 17	Berke	Lecture & Lab in Meta-analysis - Fixed vs. Random Effects
18	Friday March 19	Berke	Lecture & Lab in Meta-analysis – Continuous Outcome
19	Wed March 24	Berke	Lecture & Lab in Meta-analysis – Subgroup Meta- Analysis
20	Friday March 26	Berke	Lecture & Lab in Meta-analysis – Meta-Regression
21	Wed	Berke	Lecture & Lab in Meta-analysis – Bias

	March 31		
	Friday April 2		Holiday, no class
22	Wed April 7	Sargeant	<b>Interpreting and presenting the results: GRADE and Summary of Findings tables</b>
23	Friday April 9	Sargeant	<b>Quality assessment of SRS – AMSTAR</b>
24	Monday April 12 - NOTE: this class is re- scheduled from Friday April 2	Sargeant	Introduction to indirect comparisons and network meta-analysis

## 1.4 Final Exam

There will not be a remote final examination for this course. A final project will be assigned. See "assessments" for details.

---

## 2 Instructional Support

### 2.1 Instructional Support Team

**Instructor:** Olaf Berke  
**Email:** oberke@uoguelph.ca  
**Telephone:** +1-519-824-4120 x58924  
**Office:** OVCS 2528  
**Office Hours:** NOTE: due to remote delivery in the winter of 2021, I will not be available by phone or in my UofG office - please use email or courselink for communications.

**Course Co-ordinator:** Jan Sargeant  
**Email:** sargeanj@uoguelph.ca  
**Telephone:** NA during remote teaching semester  
**Office:** OVCS 2536  
**Office Hours:** NOTE: due to remote delivery in the winter of 2021, I will not be available by phone or in my UofG office - please use email or courselink for communications.

---

### 3 Learning Resources

Pre-class videos and other materials are available on the courselink site.

In addition, there are several resources that cover multiple aspects of the course that students may find helpful.

These are:

1. The Cochrane Handbook. Specific to human healthcare, with a focus on medical questions that can be addressed with clinical trials (although there are resources to address broader questions available through the Cochrane website). The Cochrane Handbook can be accessed at: <http://handbook.cochrane.org>
  2. The European Food Safety Authority's Guidance of Systematic Reviews. This document is targeted towards questions of food and environmental safety. The sections on question formulation are excellent. The document is available at: [http://www.efsa.europa.eu/sites/default/files/scientific\\_output/files/main\\_documents/1637.pdf](http://www.efsa.europa.eu/sites/default/files/scientific_output/files/main_documents/1637.pdf)
  3. A special issue of the journal Zoonoses and Public Health dedicated to systematic reviews in animal health and food safety. The issue is open access, and can be accessed at: <http://onlinelibrary.wiley.com/doi/10.1111/zph.2014.61.issue-S1/issuetoc>
  4. The PRISMA statement and accompanying documents for reporting of systematic reviews and the PRIMSA-P statement for reporting systematic review protocols. Available at: <http://www.prisma-statement.org/> [please note that an updated version of the PRISMA statement is now available in pre-print - details on PRISMA 2020 can be found at: <https://osf.io/preprints/metaarxiv/v7gm2/> and (for the elaboration document): <https://osf.io/preprints/metaarxiv/gwdhk/>
-

## 4 Learning Outcomes

### 4.1 Course Learning Outcomes

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

1. By the end of this course, students should have demonstrated the ability to:
    1. Differentiate between scoping studies, systematic reviews, meta-analysis, and network meta-analysis.
    2. Describe the types of questions for which a systematic review is appropriate and the types of research questions that cannot be addressed by a systematic review.
    3. Design a protocol for a systematic review of an intervention question.
    4. Identify the relation between the steps of a systematic review and the reduction of bias at the review level.
    5. Describe the components of a pair-wise meta-analysis.
    6. Conduct a critical appraisal of a systematic review and meta-analysis.
- 

## 5 Teaching and Learning Activities

Information on pre-class expectations (readings, videos, and pre-class quizzes), as well as additional recommended readings, will be provided on the courselink site.

---

## 6 Assessments

### 6.1 Marking Schemes & Distributions

Pre-class quizzes for flipped class sessions (26% of final mark – i.e., each quiz / flipped session assignment is worth 2% of your final mark). Please follow the course outline to identify flipped sessions. Quizzes will be available on courselink at least 2 weeks before the class session and must be completed by 11 pm the evening prior to the corresponding class session. Late quizzes will not be accepted and a mark of zero will be given for each incomplete quiz.

Term project for systematic review component of the course (44% of final mark). Students

will be required to develop a protocol for a systematic review of an intervention question. Late assignments will be penalized by 10% per day (or part).

The assessment for the meta-analysis component of the course will consist of a take-home assessment, plus one or more assignments during that component of the course.

---

## 7 University Statements

### 7.1 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.

### 7.2 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>

### 7.3 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>

## 7.4 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.

## 7.5 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.

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>

## 7.6 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>

## 7.7 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.

## 7.8 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>

## 7.9 Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings and academic schedules. Any such changes will be announced via CourseLink and/or class email. All University-wide decisions will be posted on the COVID-19 website (<https://news.uoguelph.ca/2019-novel-coronavirus-information/>) and circulated by email.

## 7.10 Illness

The University will not normally require verification of illness (doctor's notes) for fall 2020 or winter 2021 semester courses. However, requests for Academic Consideration may still require medical documentation as appropriate.

---