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Introduction to Systematic Review Methodology Course Syllabus

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McGowan, Bethany S., "Introduction to Systematic Review Methodology Course Syllabus" (2020).
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ILS 595 – Introduction to Systematic Review Methodology

Course Information

Summer II 2020: June 15 - August 4, 2020

Asynchronous, Online

Live online sessions every Monday and Wednesday, 10:30 - 12:55

3 credit hours

Instructor

Bethany S. McGowan

Email: bmcgowa@purdue.edu

Office Hours: By appointment

Course Description

This course will introduce students to established methodologies for creating evidence syntheses such as systematic reviews, iterative reviews, and scoping reviews with emphasis on finding and managing information. Long popular in the health sciences disciplines, systematic reviews have become increasingly important in other disciplines to inform policy and decision making. This course combines student-centered classroom sessions with project work to achieve the final course deliverable—a systematic review protocol. Students will learn the steps required to conduct a systematic review and will spend the course developing the framework for a systematic review or similar evidence synthesis, based on a topic of their choosing. They will receive feedback at each stage of the protocol design process and practice using tools that support systematic review processes.

Learning Objectives

After completing the course, students will be able to:

1. Execute the processes required to conduct a systematic review, or similar evidence synthesis;
2. Create a publication-quality systematic review protocol

Required Texts

There is no required text. Readings will come from current literature related to the systematic review process.

Course Requirements

Course Participation: 10%

Assignments: 45% (15 x 3 points each)

Assessments: 45% (9 x 5 points each)

Missed or Late Work

Assignments must be submitted by 11:59 pm on the date due. Late assignments will be assessed a 10% reduction from full point value, for each day they are late.

Communication

Communication will be through group or individual email to your Purdue Career Account. If you need to contact me, please email bmcgowa@purdue.edu and insert the subject header "ILS 595." Email communication will be replied to within 24-48 hours.

I will host live online sessions every Monday and Wednesday, 10:30 - 12:55 pm. Please use this time to drop in and ask outstanding questions.

Course Participation

Course participation is required. All students are expected to have completed all readings for each session. Students will be required to actively participate in discussion forums as a part their participation grade. Participation can include, but is not limited to sharing with the whole class, sharing in small groups, or completing in class activities.

Grading Scale

A+	97 - 100% of points
A	94 - 96% of points
A-	90 - 93% of points
B+	87 - 89% of points
B	84 - 86% of points
B-	80 - 83% of points
C+	77 - 79% of points
C	74 - 76% of points
C-	70 - 73% of points
D+	67 - 69% of points
D	64 - 66% of points
D-	60 - 63% of points

Academic Dishonesty

Purdue prohibits "dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty." [Part 5, Section III-B-2-a, Student Regulations] Furthermore, the University Senate has stipulated that "the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest." [University Senate Document 72-18, December 15, 1972].

Please review the following resource page on plagiarism:

http://www.education.purdue.edu/discovery/research_integrity.html.

For more information on academic integrity please review the below page with Purdue's student guide for academic integrity:

<https://www.purdue.edu/odos/academic-integrity>

The Purdue Honor Pledge:

“As a boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together - we are Purdue”

Grief Absence Policy for Students

Purdue University recognizes that a time of bereavement is very difficult for a student. The University therefore provides the following rights to students facing the loss of a family member through the Grief Absence Policy for Students (GAPS). GAPS Policy: Students will be excused for funeral leave and given the opportunity to earn equivalent credit and to demonstrate evidence of meeting the learning outcomes for missed assignments or assessments in the event of the death of a member of the student’s family.

Violent Behavior Policy

Purdue University is committed to providing a safe and secure campus environment for members of the university community. Purdue strives to create an educational environment for students and a work environment for employees that promote educational and career goals. Violent Behavior impedes such goals. Therefore, Violent Behavior is prohibited in or on any University Facility or while participating in any university activity.

Emergencies

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. Relevant changes to this course will be communicated to students electronically. You are expected to read your @purdue.edu email on a frequent basis.

Accessibility and Accommodations

Purdue University strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let me know so that we can discuss options. You are also encouraged to contact the Disability Resource Center at: drc@purdue.edu or by phone: 765-494-1247.

Nondiscrimination

Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, genetic information, marital status, parental status, sexual orientation, gender identity and expression, disability, or status as a veteran. The University will conduct its programs, services and activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in [Executive Memorandum No. D-1](#), which provides specific contractual rights and remedies. Any student who believes they have been discriminated against may visit www.purdue.edu/report-hate to submit a complaint to the Office of Institutional Equity. Information may be reported anonymously.

Class Schedule

Session	Date	Topics	Readings	Assignments
1	Monday, June 15 - Tuesday, June 16	<p>Course Introductions: Student and Instructor Introductions, Syllabus Review</p> <p>What is a systematic review?</p> <p>Introduction to evidence-based analyses and systematic reviews</p> <p>Observe how systematic reviews are conducted in your discipline</p> <p>Choose a review topic</p>	<p>Petticrew, M., & Roberts, H. (2008). <i>Systematic reviews in the social sciences: A practical guide</i>. John Wiley & Sons. <i>Chapter 1: Why do we need systematic reviews?</i></p> <p>Andrews, Richard. 2005. The place of systematic reviews in education research. <i>British Journal of Educational Studies</i>. 53(4): 399-416.</p> <p>Kitchenham, B. (2004). Procedures for performing systematic reviews. Keele, UK, Keele University, 33(2004), 1-26.</p> <p>Chandler J, Cumpston M, Thomas J, Higgins JPT, Deeks JJ, Clarke MJ. <i>Chapter I: Introduction</i>. In: Higgins JPT, Thomas J, Chandler J, Cumpston M, Li T, Page MJ, Welch VA (editors). <i>Cochrane Handbook for Systematic Reviews of Interventions</i> version 6.0 (updated August 2019). Cochrane, 2019. Available from www.training.cochrane.org/handbook. ***You are only required to read the Introduction section, otherwise scan at your leisure***</p>	<p>Due by Tuesday, June 16 at 11:59 p.m.</p> <p><i>Assignment 1:</i> Complete the Pre-Course Assessment</p> <p>Are systematic review protocols published in journals in your discipline? If so, identify 1-2 publications you might use as models. If you are having trouble, schedule a meeting with the course instructor.</p> <p><i>Discussion Board Posts:</i> Please respond to the following prompts by Tuesday, June 16 at 11:59 pm:</p> <ol style="list-style-type: none"> 1. How are you planning to use a systematic review to support your research? 2. What types of questions are most conducive to systematic reviews? 3. Seeking Clarity: Identify one or more issues you would like more clarity on or would like to learn more about. 4. Your readings include SR procedures from multiple disciplines: Health Sciences, Social Sciences, Education, and Computer Science. What differences did you note in procedures across the three disciplines? How are they similar?

2	Wednesday, June 17 - Sunday, June 21	<p>Identify your research topic</p> <p>Consider if a systematic review fits your research needs</p> <p>Decide if you need to update an existing review</p> <p>Establish your systematic review team</p> <p>Consider where you want to register your systematic review protocol.</p>	<p>Grant, M. J., & Booth, A. (2009). A typology of reviews: an analysis of 14 review types and associated methodologies. <i>Health Information & Libraries Journal</i>, 26(2), 91-108.</p> <p>Garner, et al. (2016). When and how to update systematic reviews: consensus and checklist. <i>bmj</i>, 354, p. i3507 .</p> <p>PLoS Medicine Editors. (2011). Best practice in systematic reviews: the importance of protocols and registration. <i>PLoS medicine</i>, 8(2), e1001009.</p>	<p>Due by Sunday, June 21 at 11:59 p.m.</p> <p><i>Assignment 2:</i> Identify a general research topic for your systematic review. Check Web of Science and the Cochrane Library for systematic reviews on similar research topics. Does a similar review already exist? If so, does it need to be updated?</p> <p>Use the class lecture and reading assignments to decide if you need to conduct an alternative type of review, an original systematic review, or an updated systematic review. Submit a 100-word discussion explaining your decision and the evidence that supports it.</p> <p><i>Discussion Board Posts:</i> After reviewing other types of reviews, is a systematic review the best fit for your research? Why or why not?</p> <p>Consider the following 3 locations for registering your systematic review protocol: Prospero, Open Science Framework, or Purdue ePubs. Which fit your research needs?</p> <p>Who do you need on your review team? Discuss potential members and their roles. Consider extending invitations early.</p> <p>Seeking Clarity: Identify one or more issues you would like more clarity on or would like to learn more about.</p>
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3	Monday, June 22 - Tuesday, June 23	<p>Select your research question framework</p> <p>Develop your research question</p>	<p>Cochrane Handbook for Systematic Reviews of Interventions, Chapter 5: Defining the review question and developing criteria for including studies.</p> <p>Ratan, S. K., Anand, T., & Ratan, J. (2019). Formulation of research question—Stepwise approach. <i>Journal of Indian Association of Pediatric Surgeons</i>, 24(1), 15.</p> <p>Systematic Reviews: Commonly Used Research Question Frameworks [in course material]</p>	<p>Due by Tuesday, June 23 at 11:59 p.m.</p> <p><i>Assignment 3:</i> Choose a question framework and use it to develop a research question.</p> <p><i>Discussion Board Posts:</i> Which research question framework(s) fit your research needs?</p> <p>Identify an article that uses your selected framework(s), and evaluate its use in the publication. Based on your evaluation, will the framework fit your needs?</p> <p>Seeking Clarity: Identify one or more issues you would like more clarity on or would like to learn more about.</p>
4	Wednesday, June 24 - Sunday, June 28	Refine your hypothesis	<p>https://www.gov.uk/government/publications/evaluation-in-health-and-well-being-overview/introduction-to-logic-models</p> <p>Biondi-Zoccai, G., Lotrionte, M., Landoni, G., & Modena, M. G. (2011). The rough guide to systematic reviews and meta-analyses. <i>HSR proceedings in intensive care & cardiovascular anesthesia</i>, 3(3), 161–173. ***Pay close attention to the sections on developing a hypothesis.***</p> <p>Petticrew, M. (2015). Time to rethink the systematic review catechism? Moving from 'what works' to 'what happens'. <i>Systematic reviews</i>, 4(1), 36.</p>	<p>Due by Sunday, June 28 at 11:59 p.m.</p> <p><i>Assignment 4:</i> Use the basic logic model template [in course material] to develop a hypothesis. If a hypothesis is not relevant for your study, explain.</p> <p><i>Discussion Board Post:</i> Consider Petticrew's commentary on using systematic reviews for hypothesis testing. What are the strengths and weaknesses of his argument?</p> <p>Is the development of a hypothesis appropriate for your review? Why or why not?</p> <p>Seeking Clarity: Identify one or more issues you would like more clarity on or would like to learn more about.</p>

5	Monday, June 29 - Tuesday, June 30	<p>Select appropriate databases</p> <p>Develop your preliminary search strategy</p>	<p>Vassar, M., Yerokhin, V., Sinnett, P. M., Weiher, M., Muckelrath, H., Carr, B., ... & Cook, G. (2017). Database selection in systematic reviews: an insight through clinical neurology. <i>Health Information & Libraries Journal</i>, 34(2), 156- 164.</p> <p>Cochrane Handbook Chapter 6. Searching for Studies</p> <p>Russell-Rose T, Chamberlain J. Expert Search Strategies: The Information Retrieval Practices of Healthcare Information Professionals. <i>JMIR Med Inform</i> 2017;5(4):e33</p>	<p>Due by Tuesday, June 30 at 11:59 p.m.</p> <p><i>Assignment 5:</i> Submit a preliminary search strategy for each of your selected databases. Explain your approach for identifying search terms and selecting appropriate databases.</p> <p>Schedule a meeting to discuss your search strategy and selected databases with the course instructor.</p> <p><i>Discussion Board Post:</i> Which databases did you decide to use to conduct your review. Why? Are you confident in your selection?</p> <p>Seeking Clarity: Identify one or more issues you would like more clarity on or would like to learn more about.</p>
6	Wednesday, July 1 - Sunday, July 5	<p>Developing Objectively Derived Search Strategies</p>	<p>Hausner, E., Waffenschmidt, S., Kaiser, T., & Simon, M. (2012). Routine development of objectively derived search strategies. <i>Systematic reviews</i>, 1(1), 19.</p> <p>Belter, C. W. (2016). Citation analysis as a literature search method for systematic reviews. <i>Journal of the Association for Information Science and Technology</i>, 67(11), 2766-2777.</p>	<p>Due by Sunday, July 5 at 11:59 p.m.</p> <p><i>Assessment 1:</i> Submit your refined search strategy.</p> <p><i>Assignment 6:</i> Follow the 'Using Text Mining Tools to Inform Search Term Generation' Tutorial [provided in course material]. Use R and Voyant Tools to conduct text analyses that help you select keywords for your search strategy.</p> <p>Use Belter's bibliometrics analysis approach to identify relevant articles.</p> <p><i>Discussion Board Posts:</i> Did the use of text mining tools reveal appropriate keywords? Did you find the approach useful?</p> <p>Did the use of citation analysis reveal appropriate references? Did you find the approach useful?</p> <p>Seeking Clarity: Identify one or more issues you would like more clarity on or would like to learn more about.</p>

7	Monday, July 6 to Tuesday, July 7	<p>Review PRISMA preferred reporting items</p> <p>Use EndNote to store and organize results</p>	<p>Moher, D., Shamseer, L., Clarke, M. <i>et al.</i> Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. <i>Syst Rev</i> 4, 1 (2015). https://doi.org/10.1186/2046-4053-4-1</p> <p>Bramer, W. M., Giustini, D., de Jonge, G. B., Holland, L., & Bekhuis, T. (2016). De-duplication of database search results for systematic reviews in EndNote. <i>Journal of the Medical Library Association: JMLA</i>, 104(3), 240.</p> <p>Bramer, W. M. (2018). Reference checking for systematic reviews using Endnote. <i>Journal of the Medical Library Association: JMLA</i>, 106(4), 542.</p>	<p>Due by Tuesday, July 7 at 11:59 p.m.</p> <p><i>Assignment 7:</i> Use the 'Cite While you Write' function in EndNote, or similar function in alternative citation management tools, to discuss your progress so far. Which studies seem most promising? Include citations for those. Do you have outstanding questions? Should be ~300 words.</p> <p><i>Discussion Board Posts:</i> Which text mining tool did you decide to use? EndNote, Zotero, Mendeley, or other?</p> <p>Did you experience any issues when importing citations to create your EndNote (or alternative) library?</p> <p>Was Bramer's reference checking approach useful?</p> <p>Seeking Clarity: Identify one or more issues you would like more clarity on or would like to learn more about.</p>
8	Wednesday, July 8 to Sunday, July 12	<p>Select inclusion and exclusion criteria</p> <p>Use NVivo to screen citations.</p>	<p>Meline, T. (2006). Selecting studies for systematic review: Inclusion and exclusion criteria. <i>Contemporary issues in communication science and disorders</i>, 33(21-27).</p> <p>Houghton, C., Murphy, K., Meehan, B., Thomas, J., Brooker, D., & Casey, D. (2017). From screening to synthesis: using nvivo to enhance transparency in qualitative evidence synthesis. <i>Journal of clinical nursing</i>, 26(5-6), 873-881.</p> <p>Landeiro, F., Barrows, P.,</p> <p>Using NVivo in Systematic Reviews</p>	<p>Due by Sunday, July 12 at 11:59 p.m.</p> <p><i>Assessment 2:</i> Define your inclusion and exclusion criteria. Explain the reasoning for your selections.</p> <p><i>Assignment 8:</i> Download NVivo and use it to conduct a round of title/abstract screening on at least 20 citations.</p> <p><i>Discussion Board Posts:</i> Discuss your experience using NVivo to screen articles. Did you encounter any issues?</p> <p>Seeking Clarity: Identify one or more issues you would like more clarity on or would like to learn more about.</p>

9	Monday, July 13 to Tuesday, July 14	Use Rayyan to screen citations.	<p>Ouzzani, M., Hammady, H., Fedorowicz, Z., & Elmagarmid, A. (2016). Rayyan—a web and mobile app for systematic reviews. <i>Systematic reviews</i>, 5(1), 210.</p>	<p>Due by Tuesday, July 14 at 11:59 p.m.</p> <p><i>Assignment 9:</i> Import your citations from your citation management tool to Rayyan. Share your Rayyan library with your research team. Use your inclusion and exclusion criteria to screen and code citations.</p> <p><i>Discussion Board Posts:</i> Did you encounter any issues using Rayyan?</p> <p>Seeking Clarity: Identify one or more issues you would like more clarity on or would like to learn more about.</p>
10	Wednesday, July 15 to Sunday, July 19	Mitigate publication bias with grey literature	<p>Ferguson, C. J., & Brannick, M. T. (2012). Publication bias in psychological science: Prevalence, methods for identifying and controlling, and implications for the use of meta-analyses. <i>Psychological Methods</i>, 17(1), 120–128. https://doi.org/10.1037/a0024445</p> <p>Ferguson, C. J., & Heene, M. (2012). A vast graveyard of undead theories: Publication bias and psychological science's aversion to the null. <i>Perspectives on Psychological Science</i>, 7(6), 555–561. https://doi.org/10.1177/1745691612459059</p> <p>Tools for Measuring Study Quality: NIH Study Quality Assessment Tools</p> <p>Other Select Tools including GRADE and the Newcastle-Ottawa Scale</p>	<p>Due by Sunday, July 19 at 11:59 p.m.</p> <p><i>Assignment 10:</i> Select a tool to assist you with your study quality assessment.</p> <p><i>Discussion Board Posts:</i> What other types of bias exist in studies, outside of publication bias? Are researchers in your discipline more prone to a particular type of bias?</p> <p>Seeking Clarity: Identify one or more issues you would like more clarity on or would like to learn more about.</p>

11	Monday, July 20 to Tuesday, July 21	<p>Register your systematic review protocol</p> <p>Establish an outline for your systematic review protocol publication</p>	<p>Musson, E. N., Gray, A. M., & Leal, J. (2017). Reducing social isolation and loneliness in older people: a systematic review protocol. <i>BMJ open</i>, 7(5), e013778.</p> <p>Use the systematic review protocol and support template to guide you in developing a protocol outline.</p>	<p>Due by Tuesday, July 21 at 11:59 p.m.</p> <p><i>Assessment 3:</i> Register your protocol with Prospero, OSF, or ePubs.</p> <p><i>Assignment 11:</i> Reference the systematic review protocol you found earlier this semester or the Musson et al. publication. Draft an outline for your systematic review protocol publication.</p> <p><i>Discussion Board Posts:</i> What elements are outstanding? For which elements do you need more information to complete?</p> <p>Seeking Clarity: Identify one or more issues you would like more clarity on or would like to learn more about.</p>
12	Wednesday, July 22 to Sunday, July 26	Craft your SR protocol 'Abstract' and 'Introduction' Sections	<p>For Guidance: Musson, E. N., Gray, A. M., & Leal, J. (2017). Reducing social isolation and loneliness in older people: a systematic review protocol. <i>BMJ open</i>, 7(5), e013778.</p>	<p>Due by Sunday, July 26 at 11:59 pm</p> <p><i>Assignment 12:</i> Submit a draft of the 'Abstract' and 'Introduction' sections of your protocol.</p> <p><i>Discussion Board Posts:</i> Seeking Clarity: Identify one or more issues you would like more clarity on or would like to learn more about.</p>
13	Monday, July 27 to Tuesday, July 28	Craft your SR protocol 'Methods' Section	<p>For Guidance: Musson, E. N., Gray, A. M., & Leal, J. (2017). Reducing social isolation and loneliness in older people: a systematic review protocol. <i>BMJ open</i>, 7(5), e013778.</p>	<p>Due by Tuesday, July 28 at 11:59 pm</p> <p><i>Assignment 13:</i> Submit a draft of the 'Methods' section of your protocol.</p> <p><i>Discussion Board Posts:</i> Seeking Clarity: Identify one or more issues you would like more clarity on or would like to learn more about.</p>

14	Wednesday, July 29 to Sunday, August 2	Craft your SR protocol 'Analysis' and 'Discussion' Sections	For Guidance: Musson, E. N., Gray, A. M., & Leal, J. (2017). Reducing social isolation and loneliness in older people: a systematic review protocol. <i>BMJ open</i> , 7(5), e013778.	Due by Sunday, August 2 at 11:59 pm <i>Assignment 14:</i> Submit a draft of the 'Analysis' and 'Discussion' sections of your protocol. <i>Discussion Board Posts:</i> Seeking Clarity: Identify one or more issues you would like more clarity on or would like to learn more about.
15	Monday, August 3 to Tuesday, August 4	Edit draft protocol Incorporate instructor feedback		<i>Discussion Board Posts:</i> Seeking Clarity: Identify one or more issues you would like more clarity on or would like to learn more about.
16	Wednesday, August 5	This is goodbye. Present a 10- minute review of your protocol.		<i>Assessment 4:</i> Incorporate peer and instructor feedback and edit protocol draft. Submit final version. Consider submitting completed protocol to journal of choice or to Purdue ePubs. ***Due in Class*** Present a 10-minute presentation, reviewing major elements of your systematic review protocol. Feel free to invite your research team. Please plan to attend this session live online. <i>Assessment 5:</i> Complete course post-assessment

Disclaimer

This syllabus is subject to change. Any changes will be communicated in class and/or via email.