



UNC
SCHOOL OF SOCIAL WORK

THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

CAMPUS BOX 3550
TATE-TURNER-KURALT BUILDING
CHAPEL HILL, NC 27599-3550

T 919.962.1225
<http://ssw.unc.edu>

COURSE AND INSTRUCTOR INFORMATION

Course Number: SOWO 923
Course Title: Systematic Reviews and Introduction to Meta-Analysis
Semester and Year: Spring 2021
Time and Location: Tuesday 9:00-11:50 am, Virtual classroom on Zoom
Instructor: William J. Hall (Will), PhD, MSW
Email Address: wjhall@email.unc.edu
Office Hours: By appointment

COURSE DESCRIPTION

This course focuses on conducting and writing systematic reviews in social work and related behavioral/social sciences, as well as an introduction to meta-analysis.

COURSE OBJECTIVES

Upon completion of the course, students should be able to:

1. Describe a systematic review and its purposes, understand the different types of systematic reviews, and develop appropriate research questions for a systematic review
2. Apply the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) standards for conducting a systematic review
3. Understand the rationale for and how to develop a protocol for a systematic review
4. Develop a search strategy for a systematic review, which includes identifying bibliographic databases for literature searches and creating search terms
5. Describe forms of gray literature and ways to locate gray literature
6. Discuss best practices for screening search results, extracting data from included studies, and assessing study quality and risk of bias
7. Use a reference management software program to organize and distill located studies
8. Understand and apply methods for synthesizing and summarizing data from included studies
9. Describe meta-analysis and appropriate conditions for meta-analysis
10. Understand effect sizes used in meta-analysis and steps to prepare data for meta-analysis
11. Understand the steps to perform a meta-analysis and how to interpret, explore, and report meta-analysis results

REQUIRED TEXTBOOKS AND READINGS

All three required textbooks are available electronically through UNC Libraries. Other required and optional readings will be posted on the course Sakai site.

- Nelson, H. D. (2014). *Systematic reviews to answer health care questions*. Lippincott, Williams & Wilkins.

- Littell, J. H., Corcoran, J., & Pillai, V. (2008). *Systematic reviews and meta-analysis*. Oxford University Press.
- Holly, C., Salmond, S., & Saimbert, M. (2017). *Comprehensive systematic review for advanced practice nursing* (2nd ed.). Springer.

CLASS ASSIGNMENTS AND EXPECTATIONS

Class Attendance, Preparation, Participation, and Homework (45%)

Attendance (15%). Attendance at all class sessions is expected. The instructor will take attendance at the beginning of each class. It is important to be on time as to not disrupt class. Two tardy instances will constitute one missed class session. If you will not be able to attend a class, let the instructor know as soon as possible, including the reason for your absence. If you are unable to attend a class, it is your responsibility to obtain notes, handouts, information about class content, and information about announcements. Students who miss two class sessions (excused and/or unexcused) may be required to take an Incomplete (IN) in the course and to retake either the missed sessions or the entire course the following year before receiving a grade.

Preparation. The assigned readings should be completed prior to the class session in which they are listed. Please complete the readings in the order in which they are listed in the syllabus. Students should complete required readings before class and come to class prepared to discuss and apply ideas from them. There are also optional readings which will likely not be discussed in class but provide supplementary information, advanced content, or are good reference sources.

Participation (10%). Students are expected to actively participate in all class sessions. Simply showing up and sitting in class is not sufficient to achieve full credit for class participation. Engaged attention and active participation in class activities and discussions is expected.

Homework (20%). Most class sessions during the first part of the semester have homework assignments. Homework tasks should be completed after the class session in which they are noted and are due the next week of class. Each student will upload their homework assignment to the course Sakai site under Assignments prior to class.

Paper 1: Initial Systematic Review Sections (25%), due March 16

The primary purpose of this course is for students to learn how to do a systematic review in the social/behavioral sciences based on the PRISMA guidelines. Each student will work on a review in their area of interest during the semester. The Paper 1 assignment will include the initial pieces of these systematic reviews. For this paper, students should include the following: the title of their systematic review; one paragraph on the purpose or goals of the systematic review and the research questions for the review – a full introduction section is not necessary; one paragraph introducing the methods used in preparing the systematic review; one or more paragraphs describing the inclusion criteria; one or more paragraphs describing the search strategy, including bibliographic databases, dates of coverage, search terms, and any other strategies used to locate relevant studies; one or two paragraphs describing the process of screening located studies with a PRISMA-style figure of a flowchart of the search and screening process; and one or two paragraphs describing the data extraction process. The reference list should contain the included studies being reviewed and any references cited in the paper. The other major component of this assignment is the completed extraction spreadsheet/table or extraction forms. Leading up to this assignment, students should have extracted all relevant

data/information (e.g., study design, sampling strategy and location, response rate, sample size and characteristics, measurement of variables of interest, analyses performed, and relevant results) from all of the included studies. As part of this assignment, students should submit a spreadsheet/table with the citations of the included studies along with the data/information extracted from these studies *or* students can submit individual forms for each included study instead of a spreadsheet/table. Papers should be written in APA format.

Paper 2: Draft Systematic Review (30%), due April 27

This assignment builds from the Paper 1 assignment, and students should include the following sections from Paper 1 in this Paper 2 assignment: title of the systematic review, purpose or goals of the systematic review and the research questions, inclusion criteria, search strategy, process of screening located studies, and data extraction methods. These pieces will make up what is typically the last paragraph of the introduction section and the majority of the methods section. In addition to these elements, students should include one or more paragraphs describing the methods for data synthesis. For this assignment, a meta-analysis is not required and may be discouraged due to the time constraints of the semester; however, justification for not conducting a meta-analysis should be included if a meta-analysis will not be conducted during this semester or in the future. After the methods section, students should include the following: one paragraph introducing the results section, multiple paragraphs summarizing the methodological quality of the included studies, an evidence table summarizing information from the included studies, and multiple paragraphs synthesizing the substantive findings from the included studies. Students will not be required to include components of the discussion section. The reference list should contain the included studies being reviewed and any references cited in the paper. Papers should be written in APA format.

GRADING SYSTEM

H	High Pass	100 – 94	Clearly Excellent
P	Pass	93 – 74	Entirely Satisfactory
L	Low Pass	73 – 70	Inadequate
F	Fail	69 or below	Unacceptable
IN	Incomplete		Work Incomplete

LATE ASSIGNMENTS AND EXTENSIONS

Assigned papers should be submitted at the beginning of the class session in which they are due. Late assignments are strongly discouraged. To obtain permission to submit an assignment after the deadline, the student must request approval from the instructor at least 24 hours before the assignment is due via email or in-person communication. Extensions may be granted under certain circumstances (e.g., illness, loss, or multiple assignments due). If permission for late submission is not granted before breaking a deadline, the grade will automatically be reduced 10%, and another 10% reduction will occur for every 24 hour period past the due date and time. In case of an emergency, a late paper may be accepted without penalty at the discretion of the instructor provided sufficient explanation, and possibly, documentation of the emergency.

ASSIGNMENT GUIDELINES

Written assignments should be typed and follow APA format as specified in the *Publication Manual of the American Psychological Association* (7th edition). However, students may use

another style (e.g., AMA, MLA, Chicago) if they plan to publish their systematic review in a journal that uses a format other than APA.

Assignments should be submitted on the course Sakai site in the Assignments tab. Put your name and PID number on the first page of all assignments. Also, write the following pledge on all written assignments: *"I have neither given nor received unauthorized aid in preparing this written work."*

HONOR CODE

The University of North Carolina at Chapel Hill has had a student-led honor system for over 100 years. Academic integrity is at the heart of Carolina and we all are responsible for upholding the ideals of honor and integrity. The student-led Honor System is responsible for adjudicating any suspected violations of the Honor Code and all suspected instances of academic dishonesty will be reported to the honor system. Information, including your responsibilities as a student is outlined in the Instrument of Student Judicial Governance. Information about the Honor Code can be found here: <https://studentconduct.unc.edu/students>

Your full participation and observance of the Honor Code is expected. Academic dishonesty is contrary to the ethics of the social work profession, unfair to other students, and will not be tolerated in any form. In keeping with the UNC Honor Code, if reason exists to believe that academic dishonesty has occurred, a referral will be made to the Office of the Student Attorney General for investigation and further action as required.

Plagiarism is the "deliberate" or "reckless" representation of another's words, thoughts, or ideas as one's own without attribution in connection with submission of academic work. Quote and cite any words that are not your own. If you paraphrase the words of another, you must still give proper attribution. Please refer to the APA Manual for information on attribution of quotes, plagiarism, and appropriate citation.

ELECTRONIC DEVICES IN THE CLASSROOM

Phones should be turned off or silenced during class – not on vibrate. No text messaging during class. The use of other electronic devices, such as laptops or tablet computers, in the classroom is only allowed for viewing or taking notes or working on in-class activities. Students who are caught using electronic devices for non-class activities (e.g., checking email, instant messaging, shopping, or web-browsing) will lose the right to use their device in class for the remainder of the semester. Each incident of inappropriate electronic device use will result in a 10 point deduction from the student's final grade.

ACCESSIBILITY RESOURCES AND SERVICES

The School of Social Work aims to create an educational environment that supports the learning needs of all students. The University of North Carolina – Chapel Hill facilitates the implementation of reasonable accommodations, including resources and services, for students with disabilities, chronic medical conditions, a temporary disability, or pregnancy complications resulting in difficulties with accessing learning opportunities. The Accessibility Resources and Service (ARS) Office at UNC has been established to coordinate all accommodations. If you might need accommodations at any point during the semester, please contact ARS prior to the

beginning of the semester or as early in the semester as possible so that they can assist you; this process takes time. You can visit their website at <http://accessibility.unc.edu>, and contact ARS by email: accessibility@unc.edu or phone at 919-962-8300. The accommodations process starts with ARS and helps instruct Faculty at the School of Social Work on how best to proceed. As a School, we are committed to working with ARS and students to implement needed accommodations for all of our students. In addition to seeking ARS supports, please also reach out to your instructor to communicate how best your needs can be met once you have begun the ARS process.

COURSE SCHEDULE AND OUTLINE

Class	Date	Topic Area	Assignment Due
1	Jan. 12	Introduction to Systematic Reviews	
2	Jan. 19	Types of Systematic Reviews and Picking a Topic for a Review	Homework 1a and 1b
3	Jan. 26	Planning a Systematic Review and Developing a Protocol	Homework 2a and 2b
4	Feb. 2	Searching the Literature	Homework 3
5	Feb. 9	No class – Individual student meetings with Angela Bardeen	Homework 4
	Feb. 16	No class – Wellness Break	
6	Feb. 23	Screening Studies and Managing References	Homework 5
7	March 2	Extracting Data from Included Studies	Homework 6
8	March 9	Assessing the Quality of Studies and Risk of Bias	
9	March 16	Synthesizing and Summarizing Data from Included Studies	Paper 1
10	March 23	Introduction to Meta-Analysis and Preparing for Meta-Analysis	
11	March 30	Conducting Meta-Analysis and Interpreting and Reporting the Results	
12	April 6	Practice with Meta-Analysis	
13	April 13	Writing the Findings from a Systematic Review	
	April 20	No class – Work on Paper 2	
	April 27	No class	Paper 2

Class 1: January 12

Introduction to Systematic Reviews

- Purpose of a systematic review
- Difference between a systematic review and a traditional narrative literature review
- Need for systematic reviews in the social/behavioral sciences
- Standards for systematic reviews

Required Reading:

- Nelson, H. D. (2014). Systematic reviews. In H. D. Nelson (Ed.), *Systematic reviews to answer health care questions* (pp. 1-9). Lippincott, Williams & Wilkins.

Optional Readings:

- Littell, J. H., Corcoran, J., & Pillai, V. (2008). Introduction. In *Systematic reviews and meta-analysis* (pp. 1-28). Oxford University Press.
- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *Annals of Internal Medicine*, 151(4), 264-269.
- Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P., ... & Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: Explanation and elaboration. *Journal of Clinical Epidemiology*, 62, e1-34.
- Welch, V., Petticrew, M., Petkovic, J., Moher, D., Waters, E., White, H., ... & PRISMA-Equity Bellagio group. (2016). Extending the PRISMA statement to equity-focused systematic reviews (PRISMA-E 2012): Explanation and elaboration. *Journal of Development Effectiveness*, 8(2), 287-324.

In-Class Handout: PRISMA checklist

Homework 1a: Develop one to three topic ideas for a systematic review that you could complete during this semester. Make sure you search relevant databases (e.g., PsycINFO, PROSPERO), Google, and/or GoogleScholar to make sure a systematic review has not already been completed on your topic idea.

Homework 1b: Schedule an individual meeting with Angela Bardeen, Behavioral and Social Sciences Librarian, during February 8 - 12. Please use this link to schedule your meeting: <https://calendar.lib.unc.edu/appointments/social-sciences?g=6112>. We will not have class that week, instead, each student will meet and have a consultation with Angela.

Class 2: January 19

Types of Systematic Reviews and Picking a Topic for a Review

- Types of systematic reviews
- Picking a topic for a systematic review
- Developing research questions for a systematic review

Required Readings:

- Nelson, H. D. (2014). Defining the topic and scope and developing research questions, analytic frameworks, and protocols. In H. D. Nelson (Ed.), *Systematic reviews to answer health care questions* (pp. 10-23). Lippincott, Williams & Wilkins.

- Saimbert, M., Pierce, J., & Hargwood, P. (2017). Developing clinical questions for systematic review. In C. Holly, S. Salmond, & M. Saimbert (Eds.), *Comprehensive systematic review for advanced practice nursing* (pp. 79-101). Springer.
- Littell, J. H., Corcoran, J., & Pillai, V. (2008). Formulating a topic and developing a protocol. In *Systematic reviews and meta-analysis* (pp. 29-51). Oxford University Press.

Optional Readings:

- On the course Sakai site, there are many examples of different types of systematic reviews.
- Homework 2a: Pick one topic for a systematic review that you will work on during this course, including the population group(s) and variables/constructs of interest. Note what type of systematic review it will be. Draft one or more research questions for this review.
- Homework 2b: Meet with Dr. Hall to refine your systematic review topic. Meetings will be held January 19 - 26.

Class 3: January 26

Planning a Systematic Review and Developing a Protocol

- Creating a protocol for a systematic review
- Specifying inclusion and exclusion criteria

Required Reading:

- Holly, C. (2017). Organizing and planning a systematic review. In C. Holly, S. Salmond, & M. Saimbert (Eds.), *Comprehensive systematic review for advanced practice nursing* (pp. 41-77). Springer.

Optional Readings:

- Peterson, K., Bougatsos, C., Cantor, A. G., & Wasson, N. (2014). Determining inclusion and exclusion criteria for studies. In H. D. Nelson (Ed.), *Systematic reviews to answer health care questions* (pp. 37-50). Lippincott, Williams & Wilkins.
- Shamseer, L., Moher, D., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., ... & Stewart, L. A. (2015). Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: Elaboration and explanation. *BMJ*, 349, g7647.

In-Class Handout: PRISMA-P 2015 checklist

Homework 3: Draft an outline of your systematic review protocol. This should include a working title of your review, any conceptual or theoretical frameworks that would guide the review, the research questions, the databases you plan to search, the search terms you plan to use, and the inclusion and exclusion criteria.

Class 4: February 2

Searching the Literature

- Identifying bibliographic databases for literature searches
- Developing search terms
- Using Boolean operators and truncation
- Searching for gray literature, reference harvesting, hand searching, and personal contacts

Required Reading:

- Dana, T., Paynter, R., Relevo, R., & Hamilton, A. (2014). Conducting searches for relevant studies. In H. D. Nelson (Ed.), *Systematic reviews to answer health care questions* (pp. 51-67). Lippincott, Williams & Wilkins.

Guest Speaker: Angela Bardeen, Behavioral and Social Sciences Librarian

Homework 4: Revise your draft protocol based on what you learned in class. Email this draft to Angela Bardeen ahead of your meeting with her next week and copy the instructor on this email.

Class 5: February 9

Individual Student Consultations with Angela Bardeen

- Instead of our regular classroom meeting, students will meet individually with Angela Bardeen, Behavioral and Social Sciences Librarian (bardeen@email.unc.edu)

Required Reading:

- Littell, J. H., Corcoran, J., & Pillai, V. (2008). Locating and screening studies. In *Systematic reviews and meta-analysis* (pp. 52-80). Oxford University Press.

Homework 5: Incorporate recommendations from Angela Bardeen into your protocol and finalize the outline of your protocol.

February 16 – No Class – Wellness Break

Class 6: February 23

Screening Studies and Managing References

- Reference management software programs (e.g., Covidence, Endnote, Mendeley, Zotero)
- Dual screening of studies
- Multi-stage screening of studies
- Calculating inter-screener reliability
- Creating a PRISMA flowchart of the search and screening process

Required Reading:

- McDonagh, M. S., & Peterson, K. (2014). Selecting studies for inclusion. In H. D. Nelson (Ed.), *Systematic reviews to answer health care questions* (pp. 68-80). Lippincott, Williams & Wilkins.

Guest Speaker: Angela Bardeen, Behavioral and Social Sciences Librarian

Resource: PRISMA flow diagram

Homework 6: Decide on which reference management program you will use for your review. Perform your searches for studies based on your feedback from Angela Bardeen. Import your search results into a reference management program. Begin screening the studies found.

Class 7: March 2

Extracting Data from Included Studies

- Determining information/data to extract from included studies
- Developing data extraction forms or spreadsheets
- Dual extraction of data from studies

Required Reading:

- Blazina, I., Bougatos, C., & Zakher, B. (2014). Extracting data from studies and constructing evidence tables. In H. D. Nelson (Ed.), *Systematic reviews to answer health care questions* (pp. 81-96). Lippincott, Williams & Wilkins.

Optional Reading:

- Littell, J. H., Corcoran, J., & Pillai, V. (2008). Data extraction and study quality assessment. In *Systematic reviews and meta-analysis* (pp. 66-71). Oxford University Press.

Homework 7: Finish screening studies. Begin data extraction from included studies.

Class 8: March 9

Assessing the Quality of Studies and Risk of Bias

- Study quality related to internal validity, external validity, and measurement validity
- Assessing risk of bias of included studies based on systematic review type
- Tools available for assessing study quality and risk of bias

Required Readings:

- Chou, R. (2014). Assessing quality and applicability of studies. In H. D. Nelson (Ed.), *Systematic reviews to answer health care questions* (pp. 97-122). Lippincott, Williams & Wilkins.
- Littell, J. H., Corcoran, J., & Pillai, V. (2008). Data extraction and study quality assessment. In *Systematic reviews and meta-analysis* (pp. 72-78). Oxford University Press.

In-Class Handouts:

- *Tools for RCTs:* RoB2, GRADE, Downs and Black Checklist, SIGN, Joanna Briggs Institute, Methodological Quality Rating Scale
- *Tools for Observational or Quasi-Experimental Studies:* ROBINS-I, RoBANS, GRADE, RTI Item Bank, Downs and Black Checklist, Joanna Briggs Institute, Newcastle-Ottawa Scales, SIGN
- *Tools for Association, Prediction, or Prevalence Studies:* AXIS, Joanna Briggs Institute, GRADE, PROBAST, QUIPS
- *Tools for Qualitative Studies:* NICE, CASP, Joanna Briggs Institute, Walsh & Downe
- *Tools for Multiple Types of Studies:* MMAT

Class 9: March 16

Synthesizing and Summarizing Data from Included Studies: Narrative and Tabular Approaches

- Creating evidence tables
- Describing the methodological characteristics of included studies
- Summarizing substantive findings from studies using narrative/qualitative synthesis

Required Reading:

- Fu, R. (2014). Qualitative analysis. In H. D. Nelson (Ed.), *Systematic reviews to answer health care questions* (pp. 139-166). Lippincott, Williams & Wilkins.

Optional Readings:

- Thomas, J., O'Mara-Eves, A., Harden, A., & Newman, M. (2017). Synthesis methods for combining and configuring textual or mixed methods data. In D. Gough, S. Oliver, & J. Thomas (Eds), *An introduction to systematic reviews* (2nd ed., pp. 181-209). Sage Publications.
- Popay, J., Roberts, H., Sowden, A., Petticrew, M., Arai, L., Rodgers, M., ... & Duffy, S. (2006). *Guidance on the conduct of narrative synthesis in systematic reviews*. Economic and Social Research Council Methods Programme.

Assignment Due: Paper 1

Class 10: March 23

Introduction to Meta-Analysis and Preparing for Meta-Analysis

- Meta-analysis as the synthesis of effect sizes
- Advantages of meta-analysis
- Circumstances where a meta-analysis is inappropriate
- Effect sizes commonly used in meta-analysis
- Preparing effect size data for meta-analysis

Required Readings:

- Thomas, J., O'Mara-Eves, A., Kneale, D., & Shemilt, I. (2017). Synthesis methods for combining and configuring quantitative data. In D. Gough, S. Oliver, & J. Thomas (Eds), *An introduction to systematic reviews* (2nd ed., pp. 211-224). Sage Publications.
- Littell, J. H., Corcoran, J., & Pillai, V. (2008). Effect size metrics and pooling methods. In *Systematic reviews and meta-analysis* (pp. 79-110). Oxford University Press.

Class 11: March 30

Conducting Meta-Analysis and Interpreting and Reporting the Results

- Overview of meta-analysis software programs
- Steps in conducting a meta-analysis
- Common summary effect sizes estimated in meta-analysis (e.g., SMD, r, OR)
- Forest plots
- Assessing the heterogeneity of effect sizes
- Ways to explore sources of heterogeneity
- Assessing for publication bias
- Interpreting and reporting meta-analysis results

Required Readings:

- Thomas, J., O'Mara-Eves, A., Kneale, D., & Shemilt, I. (2017). Synthesis methods for combining and configuring quantitative data. In D. Gough, S. Oliver, & J. Thomas (Eds), *An introduction to systematic reviews* (2nd ed., pp. 224-249). Sage Publications.
- Littell, J. H., Corcoran, J., & Pillai, V. (2008). Assessing bias and variation in effects. In *Systematic reviews and meta-analysis* (pp. 111-132). Oxford University Press.

Class 12: April 6

Practice with Meta-Analysis

- Students will work in pairs practicing running a meta-analysis using materials provided by the instructor

Class 13: April 13

Writing the Findings from a Systematic Review

- Standards for reporting systematic reviews
- Writing the introduction, methods, results, and discussion sections of a systematic review

Required Readings:

- Booth, A., Sutton, A., & Papaioannou, D. (2016). Writing, presenting and disseminating your review. In *Systematic approaches to a successful literature review* (2nd ed., pp. 272-300). Sage Publications.
- Littell, J. H., Corcoran, J., & Pillai, V. (2008). Conclusions. In *Systematic reviews and meta-analysis* (pp. 133-139). Oxford University Press.

Optional Readings:

- Holly, C. (2017). Systematic review of experimental evidence: Meta-analysis of interventions. In C. Holly, S. Salmond, & M. Saimbert (Eds.), *Comprehensive systematic review for advanced practice nursing* (pp. 193-224). Springer.
- Holly, C. (2017). Systematic review of observational and descriptive evidence. In C. Holly, S. Salmond, & M. Saimbert (Eds.), *Comprehensive systematic review for advanced practice nursing* (pp. 225-247). Springer.
- Salmond, S., & Stannard, D. (2017). Systematic review of qualitative evidence. In C. Holly, S. Salmond, & M. Saimbert (Eds.), *Comprehensive systematic review for advanced practice nursing* (pp. 249-278). Springer.
- Salmond, S. (2017). Mixed-method reviews. In C. Holly, S. Salmond, & M. Saimbert (Eds.), *Comprehensive systematic review for advanced practice nursing* (pp. 308-319). Springer.

Resources: PRISMA, AMSTAR2, SIGN, ROBIS

April 20 – No Class – Work on Paper 2

April 27 – Final Assignment (Paper 2) is due at 9:00 am