

**THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL
SCHOOL OF SOCIAL WORK**

COURSE NUMBER: SOWO 919.01
COURSE TITLE: Systematic Reviews & Introduction to Meta-Analysis
SEMESTER & YEAR: SPRING, 2016
INSTRUCTOR: Matthew O. Howard, Ph.D.
 Office 563A, Tate-Turner-Kuralt Building
 919-932-8732 or 314-330-3479 (cell)
 mohoward@email.unc.edu
OFFICE HOURS: Friday, 12:00-2:00 p.m. or by arrangement
CLASS HOURS: Wednesday, 2:00-4:50 p.m., Room 226

COURSE DESCRIPTION: Students will learn cutting-edge methods of research synthesis and will prepare and submit a systematic review to a peer reviewed professional journal before the semester ends.

COURSE OBJECTIVES:

At the conclusion of this course:

1. Students will be able to identify suitable areas/issues for research synthesis efforts and to define variables and associations of interest therein.
2. Students will be able to identify, access, and systematically search key sources of scientific knowledge and to assess the adequacy of their literature searching efforts.
3. Students will be able to identify and systematically extract and code relevant data from pertinent studies, including information about independent and dependent variables, study design, implementation, and statistical results.
4. Students will be able to describe, anticipate, and cope successfully with information management issues in the conduct of systematic reviews and meta-analyses.
5. Students will be able to evaluate study quality (and to make corollary decisions as to which studies should be included in and excluded from a research synthesis).
6. Students will understand effect size metrics and be able to analyze and integrate study outcomes, including methods for combining results across studies and for testing differences between studies, and the effects of methods of outcome integration on research synthesis outcomes.
7. Students will be able to determine when NOT to do a systematic review or meta-analysis.
8. Students will be able to interpret the results of a research synthesis with regard to its conclusions, limitations, and generalizability.
9. Students will be able to prepare a research synthesis in accordance with current best practices (i.e., Meta-Analysis Reporting Standards [MARS], Primary Reporting Items for Systematic Reviews and Meta-Analysis [PRISMA]), consensus statement on quality of

reporting in meta-analyses [QUORUM], and meta-analysis of observational studies in epidemiology [MOOSE].

10. Students will be able to compare the quality of two or more research synthesis products using the Assessment of Multiple Systematic Reviews (AMSTAR) methodology.
11. Students will be able to identify threats to the validity of conclusions derived from systematic reviews and meta-analyses.
12. Students will develop application-level skills in one or more bibliographic “reference manager-type” software programs (e.g., EndNote, RefWorks, etc.) and will be able to describe current systematic review/meta-analysis proprietary and shareware software programs.
13. Students will submit for publication a systematic review that reflects best practices with regard to the preparation and reporting of research syntheses.
14. Students will become subject matter experts in the area of their systematic review.

EXPANDED DESCRIPTION: Over the past half-century, the scientific literature has grown exponentially. *PubMed*, only one among more than one-thousand searchable computerized bibliographic data bases, currently includes in excess of twenty-three million scientific records and adds 500,000 new records annually. Scientific studies have also grown increasingly rigorous. The first randomized controlled trial (RCT) was published in 1948; more than 150,000 RCTs are currently included in the Cochrane Library. The rapid growth of rigorous scientific research has also occasioned the development of new methods of research synthesis made possible by the Internet and advances in indexing and abstracting methods. Cooper (2010, p.4) noted that the research synthesist seeks “to summarize past research by drawing overall conclusions from many separate investigations that address related or identical hypotheses...and to present the state of knowledge concerning the relation(s) of interest and to highlight important issues that research has left unsolved.” Students in this course will acquire state-of-the-art skills in research synthesis including the ability to identify a suitable research area or issue for the preparation of a systematic review, advanced skills in literature identification and searching, practical skills in coding and collecting data from identified studies, the capacity to analyze and integrate study outcomes, the ability to interpret the evidence collected and to present their findings in accordance with best practice directives. As students read and discuss each of the seven steps in the research synthesis process, they will also be preparing their own systematic review for submission to a peer-reviewed journal prior to the end of the semester. Students will be expected to be thoroughly conversant with key course concepts conveyed in the readings and will be graded on the quality of their final research synthesis submission. It is expected that the research syntheses prepared by students will be of professional quality.

REQUIRED TEXTS/READINGS:

1. Bronson, D.E., & Davis, T.S. (2012). *Finding and evaluating evidence: Systematic reviews and evidence-based practice*. Oxford University Press.

This text is only 89 pages long and updates and expands on the Littell et al. book discussed below. We will read this book the first week of class and each student will briefly present the contents of one assigned chapter the following week in class.

2. Littell, J.H., Corcoran, J., & Pillai, V. (2008). *Systematic reviews and meta-analysis*. Oxford University Press, New York, New York.

Littell et al.'s text includes helpful reviews of research synthesis software and presents an informative outline for reporting systematic reviews and meta-analyses. It also presents a model for the conduct of research syntheses. We will read this book during the second week of class and each student will briefly present the contents of one assigned chapter the following week in class.

3. Saini, M., & Shlonsky, A. (2012). *Systematic syntheses of qualitative research*. Oxford University Press, New York, New York.

This text reviews developments and methods in the emerging area of qualitative research syntheses. We will read all of this book over the third and fourth weeks of class and students will each present the contents of one assigned chapter in the book.

4. Day, R.A., & Sakaduski, N. (2011). *Scientific English: A guide for scientists and other professionals. Third Edition*. Greenwood Press, Santa Barbara, CA.

This is an excellent book, very practical in nature, to help you improve your scientific writing. We will read the entire text during the fifth and sixth weeks of class and students will each present the contents of an assigned chapter.

5. The instructor will distribute a number of important articles pertaining to systematic reviews and meta-analysis over the course of the semester. Many of these assignments will be drawn from the optional readings listed below.

OPTIONAL TEXTS/READINGS:

1. Lipsey, M.W., & Wilson, D.B. (2001). *Practical meta-analysis*. Applied Social Research Methods, Vol. 49, Sage.

This is a classic and well-received introduction to meta-analysis that is heralded for the clarity of its presentation. Although more than a decade has passed since its publication, it is still a preferred introductory meta-analysis text by many experts in the research synthesis area.

2. Gough, D., Oliver, S., & Thomas, J. (2012). *An introduction to systematic reviews*. Sage Ltd., London, England.

This text consists of 11 chapters written by 12 authors located at the Evidence for Policy and Practice Information and Coordinating Center in London. The chapters examine issues similar to those addressed by Littell et al., although chapters relating to information management and stakeholder participation in research syntheses are novel and well addressed in this text.

3. Ellis, P.D. (2010). *The essential guide to effect sizes: Statistical power, meta-analysis, and the interpretation of research results*. Cambridge University Press, Cambridge, England.

This text is solely devoted to effect sizes and their relationship to issues of statistical power and meta-analysis.

4. Borenstein, M., Hedges, L.V., Higgins, J.P.T., & Rothstein, H.R. (2009). *Introduction to meta-analysis*. John Wiley & Sons, LTC: West Sussex, U.K.

An excellent and very detailed introduction to meta-analysis that is too lengthy for use in this class, but perhaps the single best introduction to meta-analysis for scientists who plan to use these methods extensively.

5. Cooper, H., Hedges, L.V., & Valentine, J.C. (eds.) (2009). *The handbook of research synthesis and meta-analysis*. Russell Sage Foundation, New York, New York.

This is an excellent textbook with 29 chapters that examine a diversity of issues relevant to formulating a problem for research synthesis including searching and coding the literature, statistically describing study outcomes, statistically combining effect sizes, special statistical issues and problems, data interpretation, tying research syntheses to substantive issues, and reporting the results of research syntheses.

6. Higgins, J.P.T., & Green, S. (2008). *Cochrane handbook for systematic reviews of interventions*. The Cochrane Collaboration and John Wiley & Sons, Ltd., West Sussex, England.

This is a long book consisting of 22 chapters addressing issues relevant to preparing and presenting Cochrane Collaboration systematic reviews.

TEACHING METHODS

I use a variety of teaching styles to convey course content including lectures, discussion, and small group work. The development of a supportive learning environment, reflecting the values of the social work profession, is essential for the success of this class. A supportive learning environment is fostered by listening to the ideas and views of others, being able to understand and appreciate a point of view that is different from your own, articulating clearly your own point of view, and linking experiences to readings and assignments. I will appreciate your contributions to making this a safe and respectful class for learning and growth. Although it is a cliché, I strongly believe there are no dumb questions and that if we all work together and

support each other that every student can end this course with dramatically enhanced professional research synthesis skills. I teach this course in a criterion-referenced fashion, which means I am trying to help each of you become professional-level scholars in the substantive area of your systematic review and in research synthesis methods generally and am not focused on how you compare to each other in this respect. My expectation is that all class members, including the instructor, work together collaboratively so that when the course is over students are experts in research synthesis methods and in their individual substantive areas of interest and have commenced their publication careers with the submission of a professional quality systematic review.

CLASS ASSIGNMENTS

Course requirements consist of 1) a **problem formulation statement** worth 5 points and due at the beginning of the 3rd week of class, 2) a **literature search protocol statement** worth 10 points and due at the beginning of the 5th week of class, 3) a **completed table** worth 10 points including at least 10 studies relevant to the focus of the systematic review due on the 8th week of class (also including coding forms for the tabled studies), 4) a **pass/fail take-home midterm exam** testing knowledge of assigned readings worth 10 points and due on the 9th week of class, 5) submission of a **draft systematic review** (including Introduction, Methods, Table, and References sections) on the 13th week of class along with a **list of potential publication outlets** (e.g., journals) worth 15 points, and 6) **submission of the final systematic review** to the instructor and to a professional journal and **presentation of the final systematic review in class** due on the 15th class, worth 50 points.

Grading System

Required Assignments

1. Problem Formulation Statement	5 pts
2. Literature Search Protocol Statement	10 pts
3. Completed Table of Studies/Coding Forms	10 pts
4. Pass/Fail Take-Home Midterm Exam	10 pts
5. Draft Systematic Review/List of Potential Outlets	15 pts
6. Final Systematic Review Submitted/Presentation of Review Results to Class	<u>50 pts</u>
	100 pts

In accordance with the Graduate School, letter grades are assigned to the following numeric ranges:

94-100 points =	H
80-93 points =	P
70-79 =	L
69 and below	F

CLASS PARTICIPATION

I will conduct this class in seminar fashion. I expect that students will do all assigned readings as scheduled and will feel free to call on students at any time regarding issues discussed in the readings. I hope we have many productive discussions regarding each of your projects. I expect students to attend all classes and to discuss with me any potential absence proactively (that is, before you miss class). It is vital you adhere to the course schedule or you will not finish your systematic review on time. I do not plan to give any incomplete grades in this class, so make sure you are willing to work very hard, attend regularly, and commit to writing a systematic review over the course of the next 15 weeks. If you perform at a high level in this class, you will gain immeasurably from the experience; that is, you will become an expert in your field, in the conduct of research syntheses, and may find yourself the author of a published systematic review.

POLICY ON INCOMPLETES AND LATE ASSIGNMENTS

If students encounter unavoidable obstacles to meeting class assignments, the student should discuss the circumstances with the instructor to determine if an initial grade of incomplete (INC) would be appropriate. I prefer not to give an incomplete grade and will give incompletes only in compliance with University policy. At the end of the course, when you are turning in your systematic review for my evaluation, please include a signed pledge stating that, "I have not given or received unauthorized aid in preparing this written work." 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.

POLICY ON ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Students with disabilities that affect their participation in the course may notify the instructor if they wish to have special accommodations in instructional format, etc. Please contact the University's Disability office to request the paperwork necessary for approved accommodations.

USE OF LAPTOPS OR OTHER ELECTRONIC DEVICES

Please turn off all cell phones or other devices that would disrupt the learning environment of the classroom.

Course Calendar

Class 1: January 13th: Syllabus Review, Instructor and Student Introductions, Overview of Systematic Reviews and Meta-Analyses (Definitions, Why Needed, Differences between Systematic and Narrative Reviews, 7-Step Systematic Review Development Process)

Class 2: January 20th: Formulating the Problem/Defining the Research Question/Developing a Protocol

Class 3: January 27th: Problem Formulation Statement Due (5 pts)/Searching the Literature/Information Management in Systematic Reviews/Using Reference Databases/Finding the Grey Literature/Using Bibliographic Reference Software

Class 4: February 3rd: Gathering Information from Studies/Data Extraction Methods

Class 5: February 10th: Literature Search Protocol Statement Due (10 pts)/Evaluating Study Quality

Class 6: February 17th: Introduction to Meta-Analysis

Class 7: February 24th: Introduction to Meta-Analysis

Class 8: March 2nd: Completed Table of 15+ Studies and Coding Sheets Due (10 pts)/Finish Introduction to Meta-Analysis

Class 9: March 9th: Pass/Fail Midterm Take-Home Exam (10 pts)

Class 10: March 23rd: Student Presentations of Work to Date with Instructor and Student Feedback to each Student (not graded)

Class 11: March 30th: Special Topics in Research Synthesis: Stakeholder Perspectives and Participation in Reviews/Best Practices and Current Guidelines for Systematic Reviews and Meta-Analyses/Making a Differences with SRs/MAs/Research Synthesis and Public Policy

Class 12: April 6th: Special Topics in Research Synthesis: Publication Bias/The Cochrane Collaboration/The Campbell Collaboration/Threats to Validity in Research Synthesis

Class 13: April 13th: Draft Systematic Review + List of Potential Publication Outlets Due (15 pts)/30-Minute Individual Meetings with Each Student (no group class)

Class 14: April 20th: 30-Minute Individual Meetings with Students (no group class).

Class 15: April 27th: Final Systematic Review Submission (to Instructor and Journal and Class Presentation of Systematic Review Due (50 pts)

READINGS AND COURSE OUTLINE

Class 1: January 13th: Syllabus Review, Instructor and Student Introductions, Overview of Systematic Reviews and Meta-Analyses (Definitions, Why Needed, Differences between Systematic and Narrative Reviews, 7-Step Systematic Review Development Process)

Required Readings for Next Week:

1. Read all of Bronson & Davis. Each student responsible for presenting one chapter the following week.

Class 2: January 20th: Formulating the Problem/Defining the Research Question/Developing a Protocol

Required Readings for Next Week:

1. Read all of Littell et al. by next week and present one assigned chapter in next week's class.

Class 3: January 27th: Problem Formulation Statement Due (5 pts)/Searching the Literature/Information Management in Systematic Reviews/Using Reference Databases/Finding the Grey Literature/Using Bibliographic Reference Software

Required Readings for Next Week:

1. Read one-half of the Saini & Shlonsky book and prepare to present one assigned chapter the following week.

Class 4: February 3rd: Gathering Information from Studies/Data Extraction Methods

Required Readings for Next Week:

1. Read the second half of the Saini & Shlonsky book and prepare to present one assigned chapter of the book next class.

Class 5: February 10th: Literature Search Protocol Statement Due (10 pts)/Evaluating Study Quality

Required Readings for Next Week:

1. Read one-half of Day & Sakaduski and prepare to present one assigned chapter next class.

Class 6: February 17th: Introduction to Meta-Analysis

Required Readings for Next Week:

1. Finish Day & Sakaduski and prepare to present one assigned chapter next class.

Class 7: February 24th: Writing the Systematic Review: Topic, Title, Abstract, and Introduction

Class 8: March 2nd: Completed Table of 10+ Studies and Coding Sheets Due (10 pts)/Handout Take-Home Mid-Term Exam/Writing the Systematic Review: Methods & Results Sections

Class 9: March 9th: Pass/Fail Midterm Take-Home Exam Due (10 pts)/Writing the Systematic Review: Discussion, References, and Tables

Class 10: March 23rd: Student Presentations of Work to Date with Instructor and Student Feedback to each Student (not graded)

Class 11: March 30th: Special Topics in Research Synthesis: Stakeholder Perspectives and Participation in Reviews/Best Practices and Current Guidelines for Systematic Reviews and Meta-Analyses/Making a Difference with SRs/MAs/Research Synthesis and Public Policy

Class 12: April 6th: Special Topics in Research Synthesis: Publication Bias/The Cochrane Collaboration/The Campbell Collaboration/Threats to Validity in Research Synthesis/Writing the Systematic Review: Publishing and Reporting Standards and journal selection.

Class 13: April 13th: Draft Systematic Review + List of Potential Publication Outlets Due (15 pts)/30-Minute Individual Meetings with Each Student (no group class)

Class 14: April 20th: 30-Minute Individual Meetings with Students, no group meeting.

Class 15: April 27th: Final Systematic Review Submission (to Instructor and Journal and Class Presentation of Systematic Review Due (50 pts)