Instructor: Brian Flay, D.Phil.; Office: Waldo 411
Phone: 737-3837 (this will reach my cell if I am not in my office)
e-mail: brian.flay@oregonstate.edu
[Please always include H676 in the subject line]

Required Readings:


Background Texts: available in the “Week 0 – Texts” folder in the course directory (see below) as PDF files.
  Borenstein, 2016. Worked case examples of MAs using the CMA software.

Other full texts on the course webpage

See chapters 44 and 45 of TEXT for other resources and software.

Other required readings: Other required readings for this course are available in weekly folders at:
http://people.oregonstate.edu/~flayb/MY%20COURSES/H676%20Meta-Analysis%20Fall2016/
[If you are ever someplace without this long address, then go to www.bflay.net, then navigate through the “MY COURSES” folder to this class folder.]

Course Description:
Systematic reviews and meta-analyses are used to synthesize the available evidence for a given question to inform policy or future research in any quantitative discipline. The systematic review can also play a role in the design and publication of any new primary study by placing the new study in context by describing what we knew before, and what we hoped to learn from the new study. A key element in most systematic reviews is the statistical synthesis of the data, or the meta-analysis. This course will cover approaches to systematic reviews briefly, but then focus on the meta-analysis of the results from the studies found/included in a systematic review.

The course will roughly follow the order of the material in the textbook, except that we will spend some time during week 1 going over what it takes to properly conduct a systematic review. I will expect students to come to this class with a topic already in mind (perhaps your second-year project or your dissertation topic) and some sense that there are 10 to 20 quantitative studies available on the topic from
which you can derive one or more effect sizes using a metric that is consistent across studies (e.g., Cohen’s standardized mean differences, odds ratios, or correlations). You will work through the steps of deriving the effect sizes, conducting the various steps of the meta-analysis, and writing up the review and meta-analytic results. During the course, we will review published meta-analyses to help understand various issues that can arise and the alternative approaches that can be taken to deal with them in conducting and reporting careful and proper meta-analyses.

There will be extensive readings for this class, which will serve as the basis for our class discussions. Students are expected to read all of the set readings BEFORE class, prepare written questions/comments before class (see below), actively participate in class discussions, and complete course assignments and presentations. For those weeks where there are more readings listed than can reasonably be read by everyone, we will select/assign readings during class the week before.

● Course Objectives:
At the completion of this course, students will be able to:
1) Demonstrate knowledge about the process of conducting a systematic review.
2) Produce effect sizes for quantitative articles
3) Conduct a meta-analysis of the effect sizes.
4) Critically review published systematic reviews and meta-analyses.
5) Produce a publishable meta-analytic review on a topic of their choice.

● Course Requirements:
1) Class Participation: Written questions/comments, in-class participation 10%
2) Lead one class discussion: Each one of you will lead on a topic (2/3 per week) 10%
3) Protocol for systematic review and meta-analysis, due Sunday after 2nd class 15%
4) Coding and entry of data into CMA, due Sunday after 5th class 15%
5) Outline of term paper – 1-3 pages due Saturday after 8th class 5%
6) Powerpoint presentation due Sunday after 8th class 5%
7) Presentation of your findings: 10-minute presentations each in Week 10 5%
8) Final Paper – due 7am, Sunday Dec 4th 35%

1) Class Participation: In a graduate seminar, it is critical that you come to class well prepared to actively contribute to class discussions. This means that you must have completed assigned readings before class and be prepared to discuss them. Your engagement with course material and willingness to share your insights, thoughts, questions, and knowledge with the class will be the basis of your class participation grade. Email me a reflective paragraph or two (no more than 200 words) on the assigned readings by Tuesday evening prior to each class. Superior comments reflect solid understanding of the readings and a critique of how they complement or contrast with one another and your other knowledge.

2) Lead one class discussion: One aspect of active class participation will include being well-prepared to lead the discussion (40-50 minutes) on a selection of the readings for part of one class.

3) Protocol: Write a 4-5 page paper providing the detailed protocol for your proposed systematic review and meta-analysis. Due via email by 7am Sunday after the 2nd (Week 1) class.

4) Coding and entry of data into CMA: Submit your coding sheets to me by 7am Sunday after the 5th (Week 4) class.
5) **Outline of term paper (5 points):** Outline of your final paper, due by **7am Friday after the 8th (Week 7) class.**

6) **Powerpoint of your final presentation for week 9:** Due by **7am the Sunday after the 8th (Week 7) class.**

7) **Presentation of your findings:** At **the last class - week 10** - each of you will make your 5-minute presentation summarizing what your research question was, how you went about doing your literature search and analysis, and what you found. Practice this so that you use up the complete 5 minutes (but not more) and get across a lot of detail in a succinct way.

8) **Final Paper:** Write up your review and meta-analysis in the style of a publishable paper in the journal of your choice. Include all of the detail expected in a high-quality SR & MA. The final paper should be 20-25 pages (double-spaced) of text, plus tables, figures and relevant references (following APA style, even if that is not the style of your journal of choice). **The paper is due via email by 7am Monday Dec 5th.**

**Final Grades:**
A total of 100 points is possible for the course and the percentage of the total points obtained will be used to determine your grade according to the following:

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>94-100%</td>
<td>A</td>
</tr>
<tr>
<td>90-93%</td>
<td>A-</td>
</tr>
<tr>
<td>87-89%</td>
<td>B+</td>
</tr>
<tr>
<td>84-86%</td>
<td>B</td>
</tr>
<tr>
<td>80-83%</td>
<td>B-</td>
</tr>
<tr>
<td>77-79%</td>
<td>C+</td>
</tr>
<tr>
<td>74-76%</td>
<td>C</td>
</tr>
<tr>
<td>70-73%</td>
<td>C-</td>
</tr>
<tr>
<td>67-69%</td>
<td>D+</td>
</tr>
<tr>
<td>64-66%</td>
<td>D</td>
</tr>
<tr>
<td>60-63%</td>
<td>D-</td>
</tr>
<tr>
<td>Below 60%</td>
<td>F</td>
</tr>
</tbody>
</table>

**Services to Students with Disabilities**
"Accommodations are collaborative efforts between students, faculty and Services for Students with Disabilities (SSD). Students with accommodations approved through SSD are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through SSD should contact SSD immediately at 737-4098."

**Academic Dishonesty:**
Oregon State University provides clear definition and sanctions for academic dishonesty. As a result, academic dishonesty of any kind is not tolerated. Students caught cheating, **plagiarizing (copying anyone else’s work as if it is your own),** or participating in any form of academic dishonesty will receive an F on the assignment or test (and possibly an F in the course). A formal report to the chair of the Department, to the Dean, and to the Student Conduct Program will be made. Link to Statement of Expectations for Student Conduct: [http://oregonstate.edu/admin/stucon/achon.htm](http://oregonstate.edu/admin/stucon/achon.htm)

**Diversity Statement:**
The College of Health and Human Sciences strives to create an affirming climate for all students including underrepresented and marginalized individuals and groups. Diversity encompasses differences in age, color, ethnicity, national origin, gender, physical or mental ability, religion, socioeconomic background, veteran status, sexual orientation, and marginalized groups. We believe diversity is the synergy, connection, acceptance, and mutual learning fostered by the interaction of different human characteristics.

**Religious Holiday Statement**
Oregon State University strives to respect all religious practices. If you have religious holidays that are in conflict with any of the requirements of this class, please see me immediately so that we can make alternative arrangements.
Improving Your Paper and Research Writing (and your career)

- The following readings provide useful advice on grant preparation for qualitative and quantitative research as well as the CONSORT and TREND guidelines for publishing research results. The guidelines are actually useful guides to what should be in the methods section of a research article or a grant proposal; the PRISMA guidelines are most relevant for your final paper for this course.


PLoS Collections – Ten Simple Rules Collections (for multiple graduate student and career activities).
Note that there is some redundancy – and that is by design. The readings come from different literatures with different styles and levels of explanation.

<table>
<thead>
<tr>
<th>Week</th>
<th>Readings</th>
</tr>
</thead>
</table>
| 0    | [Sep 22\textsuperscript{nd}] Why do a SR or MA and what to include  
   i. TEXT Preface, and Chapters 1 & 2  
   ii. DeCosta Chapters 1 & 2  
   iii. P&R Chapters 1-3  
   iv. Aromataris & Riitano (2014)  
   v. Gough et al. (2012)  
   vi. Example protocol |
| 1    | [Sep 29\textsuperscript{th}] How to find and code studies  
   a. Finding the studies  
   i. TEXT Chapter 40  
   ii. P&R Chapter 4  
   iii. DeCosta Chapters 3  
   v. Levay et al., 2016  
   b. Coding & synthesizing the studies  
   i. DeCosta Chapter 4  
   ii. Munn et al., 2014  
   iii. Kugley et al (Campbell Guide - skim)  
   iv. Borenstein, 2016 – Go over the “Basic analysis” case studies  
   v. Moher et al., 2015 – Reporting Standards |
| 2    | [Oct 6\textsuperscript{th}] Quality of studies/evidence  
   i. P&R Chapter 5  
   ii. P&R Chapter 6 (to pg.171 only  
   iii. Higgins et al., 2013  
   iv. Valentine & Thompson, 2013  
   v. TEXT Chapter 30  
   vi. Gugiu & Gugiu, 2010  
   vii. Zingg et al., 2016 |
| 3    | [Oct 13\textsuperscript{th}] Effect sizes and fixed-vs random-effects models  
   a. Effect sizes  
   i. DeCosta, Chapters 5-7  
   ii. TEXT Chapters 3-8  
   iii. P&R Chapter 6 (Section 6.11 to pg 196 only  
   iv. TEXT Chapter 28  
   b. Fixed- vs random-effects models  
   i. DeCosta Chapter 8  
   ii. TEXT: Chapters 10-14  
   iii. Work the data files for Chapter 14 |
4 [Oct 20th] Heterogeneity, and subgroup analysis and meta-regression
   a. Heterogeneity
      i. P&R: Chapter 7 (to pg. 217 only)
      ii. TEXT: Chapters 15-18
      iii. Work the data files for TEXT chapter 18
   b. Subgroup (moderator) analysis and meta-regression
      i. P&R Chapter 7 pgs 218-226
      ii. DeCosta Chapter 9
      iii. TEXT Chapters 19-21
      iv. See data files for Chapter 19
      v. See BCG data files for Chapter 20
      vi. Borenstein, 2016 – work through the subgroups/regression case studies

Coded data files and main effects analysis due 7am Sunday Oct 23rd

5 [Oct 27th] Complex data structures, power analysis
   a. Complex data
      i. TEXT Chapters 22-26
      ii. Anderson et al., 2013
      iii. Petticrew et al., 2013
      iv. Pigott & Sheperd, 2013
      v. Squires et al., 2013
      vi. Noyes et al., 2013
      vii. Borenstein, 2016 – work through the Statins by Gender case study
   b. Power analysis
      i. TEXT Chapter 29
      ii. Valentine et al., 2010

6 [Nov 3rd] Publication and reporting biases
   i. TEXT Chapter 30
   ii. Criteria for judging risk of bias
      iii. Williamson et al., 2005
      iv. Kirkham et al., 2010
      v. Ioannidis, 2010
      vi. Langan et al., 2012
      viii. Hartung et al., 2014
      ix. Mavridis et al., 2014
      x. Katikireddi et al., 2015
      xi. Page et al., 2015
      xii. Shadish & Lecy, 2015
7 [Nov 10th] Issues related to effect size, further methods, criticisms
   i. TEXT Chapters 31-34
   ii. TEXT Chapters 35-38
   iii. Furukawa et al., 2006
   iv. TEXT Chapter 42
   v. TEXT Chapter 43
   vi. Petticrew, 2015
   vii. P&R Chapter 9

8 [Nov 17th] Reporting/dissemination
   i. Liberati et al., 2009
   ii. Moher et al., 2009
   iii. Moher et al., 2015 (from Week 1)
   iv. TEXT Chapter 41
   v. Sections of a Cochrane review
   vi. P&R Chapter 8

Final paper outline due 7am Friday Nov 18th

9 [Nov 24th] Week 9 – Happy Thanksgiving!

   PowerPoint for presentation due 7am Sunday Nov 26th

10 [Dec 1] Week 10 – Student presentations – 10 minutes each.

   Final Paper due – 7am Monday Dec 5th