EMR 6550

Experimental and Quasi-Experimental Designs

Fall 2013

Course Description

Design provides the conceptual framework, using structural elements, from which a study is planned and executed. It also sets the basic conditions from which facts and conclusions are inferred. As such, design warrants special treatment given that even the most sophisticated and elegant statistical procedures can rarely, if ever, correct for poor design. Design is one of three discreet, yet interrelated parts of what social scientists often refer to as method or methodology, and is perhaps the most important. With an emphasis on causal inference and various types of validity, the course consists of systematically studying the theoretical, philosophical, and ideological foundations of and principles for designing experimental, quasi-experimental, and, to a lesser extent, nonexperimental investigations for applied research and evaluation. Design of quasi-experimental studies that either lack a comparison group or pretest observation and quasi-experimental studies that use both control groups and pretests, including interrupted time-series and regression discontinuity designs, as well as randomized experimental designs, including the conditions conducive to doing them and more practical matters such as ethical considerations, attrition, and random assignment, are the primary foci of the course. Students also will be introduced to design sensitivity/statistical power for individual-level and group-level studies. Each of the major designs (as well as statistical power) include data analysis applications, therefore, students should have at least a fundamental knowledge of statistics to succeed in the course.
Credit and Course Hours

3 semester hours

This class meets from 6:00 PM to 8:30 PM on Tuesday beginning September 3, 2013 and ending December 10, 2013.

The course meets in Sangren Hall, room 1740.

Instructor

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Teaching Assistant

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Course Website

The website for this course is located at http://www.wmich.edu/evalphd/courses/eval-6970-experimental-and-quasi-experimental-designs-for-applied-research-and-evaluation/. From this site, students can access course lecture notes, homework assignments, data sets, and other materials related to the course.

eLearning

The website for eLearning is located at https://elearning.wmich.edu/. Students should submit all homework and project assignments via eLearning by 5:00 PM on their due date.

Office Hours

By appointment

Course Objectives

This course has multiple student learning objectives. Students will be expected to develop the following knowledge, skills, and abilities, including but not limited to:

1. Demonstrate a clear understanding of the vocabulary of research design and related vocabularies (e.g., cause, effect, counterfactual, random assignment, random selection, attrition, control group, comparison group, manipulation check, moderating variable, mediating variable, nonequivalent dependent variable) and how to apply those concepts to the construction and criticism of designs
2. Demonstrate a clear understanding of the theoretical, philosophical, and ideological foundations of contemporary research paradigms and their inquiry strategies
3. Demonstrate a clear understanding of the differences between causal description and causal explanation
4. Demonstrate a clear understanding of the various types of validity and their relation to design, measurement, and analysis
5. Demonstrate a clear understanding of threats to the validity of inferences and conclusions as related to internal and external validity
6. Identify plausible threats to the validity of inferences and conclusions in studies found in the peer-reviewed, serial literature
7. Design high-quality, cause-probing studies under both ideal and less than ideal conditions by using elements of design
8. Make intelligent, informed decisions when designing research and evaluation studies that logically couple research questions to elements of design under consideration of their costs and benefits

Throughout the course students will also work on improving their communication and interpersonal skills, which are vitally important in evaluation, including but not limited to:

1. Conveying constructive criticism in a professional, balanced, and tactful manner
2. Facilitating discussion to engage others in dialogue about research and evaluation design
3. Writing clearly and concisely for both academic and non-academic audiences
4. Giving high quality, professional oral presentations for both academic and non-academic audiences

**Required Textbook**

The textbook required for this course is:


**Supplementary Readings**

In addition to the readings from the textbooks, the following additional readings are encouraged:

Software Requirements

Power and Precision 2.0 is required for this course and the full version can be purchased for $95 for a one year lease at the student rate (through the instructor). Students will also need access to a data analysis package such as SAS or SPSS for applied statistical problems.
Course Components

Grades will be based on (a) class attendance and participation, (b) homework performance, and (c) performance on two examinations. Students should not put their names on homework or examinations, but rather only use their WIN numbers, so that examinations and homework can be graded blind to student identity.

Class Attendance and Participation

Students are expected to attend class regularly, participate in class discussions, and provide constructive feedback for others in the course. Your overall class participation grade will be based on (a) voicing your reflections on the readings (e.g., by noting positive contributions and constructive criticisms), (b) getting others in the class involved (e.g., by asking questions, having stimulating discussion/debate), (c) contributing information and experiences that supplement the readings, (d) providing fair and balanced feedback to others, and obviously (e) attending class and being on time. Class attendance and participation is worth 10% of the total course grade.

Homework

Each section of the class on the course schedule has readings you should do as well as studying the Glossary entries for the assigned reading. Based on those readings and on the lecture, the homework will have you apply the concepts you learned in class to both real research and hypothetical research problems. There are four homework assignments for the course and each is worth 10% of the course grade (40% combined). Instructions for each homework assignment are available from the course website.

No late homework will be accepted. All homework must be submitted via eLearning by 5:00 PM on the day they are due.

Examinations

There are two examinations in this class, each worth 25% of the total course grade (50% combined). The two examinations will consist of multiple-choice items.

Policy on missing examinations:

- Make up examinations are never given.
- If you miss an examination and present an acceptable excuse such as a physician’s excuse, notification of family death or illness, your course grade will be based on the grades that are available.
- If you miss an examination and do not present an acceptable excuse, you will be assigned a “0” on that examination.
- All excuses must be in writing and should (1) identify your name and course, (2) identify the date of the missed examination, and (3) provide a reasonably complete explanation of why the examination was missed. Supporting documentation should be provided. The excuse should be turned in as soon as possible after the examinations, but in any event no later than two weeks after the examination (except for the final examinations, for which an excuse must be turned in immediately). The excuse becomes a part of your course record and will not be returned.
A verbal excuse, either in person or on the telephone, is not acceptable. Do not for any reason call the instructor to tell him that you are going to miss an examination.

It is crucially important in this class that you read the book. Study it carefully. The reason is not that test items will be taken directly from the book—they will not be. The reason is that you will need a great deal of exposure to the difficult concepts and methods we will cover. Simply attending class, and reading the books one time, will not be enough to do well. You will have to study the concepts in the books more than once to really do well on the examinations.

Teaching Philosophy

Cognitive science suggests that students learn most effectively when they actively construct the meaning of material by articulating and applying the information. Consequently, this course emphasizes active learning.

- Before class, students will need to read material to be applied in class, and in particular they should learn the key terms and concepts for the assigned reading
- In the first half of the class, the instructor and teaching assistant will lecture on the assigned material and related material, but not always on the assigned material
- Students will do well in this course if they come prepared to ask questions about the material during this time
- In the second half of the class, students will engage in structured class discussions and activities

Suggestions for Succeeding in this Course

There is an extensive amount of reading and several major work products required for this course and we will be covering several related and unrelated topics, with which you may or may not be familiar. Therefore, in order to succeed in this course it is imperative that you do not fall behind. (1) Carefully study and repeatedly read the book and other assigned readings. The concepts in this class are often complex, and learning to apply them is a crucial skill to acquire. Reading the book and assigned readings helps with both problems. (2) Organize and participate in a study group. Such groups can help you check your understanding of concepts and their application, and to see that you are doing assigned homework and other assignments correctly.
### Course Schedule

Topics, readings, and assignments tentatively follow the schedule below. Due dates for class assignments (i.e., assessments) will not change, but dates for seminar topics might. All assignments are due by 5:00 PM on the date indicated in the course schedule.

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 3</td>
<td>Course overview</td>
<td>EQD Chapter 1</td>
<td></td>
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<td></td>
<td>Experiments and generalized causal inference</td>
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<td>September 10</td>
<td>Statistical conclusion validity &amp; internal validity</td>
<td>EQD Chapter 2</td>
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<tr>
<td>September 17</td>
<td>Introduction to statistical power/design sensitivity, construct validity, and external validity</td>
<td>EQD Chapter 3</td>
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<tr>
<td>September 24</td>
<td>Quasi-experimental designs that either lack a control group or lack pretest observations on the outcome</td>
<td>EQD Chapter 4</td>
<td>Homework #1</td>
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<tr>
<td>October 1</td>
<td>Quasi-experimental designs that use both control groups and pretests</td>
<td>EQD Chapter 5</td>
<td></td>
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<tr>
<td>October 8</td>
<td>Interrupted-time series designs</td>
<td>EQD Chapter 6</td>
<td>Homework #2</td>
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<td>October 15</td>
<td><em>No class – American Evaluation Association conference</em></td>
<td><em>Gugiu, Westine, Coryn, &amp; Hobson (2013)</em></td>
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<td>October 22</td>
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<td>Midterm examination</td>
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<td>October 29</td>
<td>Regression discontinuity designs</td>
<td>EQD Chapter 7</td>
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<tr>
<td>November 5</td>
<td>Randomized experiments: Rationale, designs, and conditions conducive to doing them</td>
<td>EQD Chapter 8</td>
<td>Homework #3</td>
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<td>November 12</td>
<td>Practical problems 1: Ethics, participant recruitment, and random assignment</td>
<td>EQD Chapter 9</td>
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<tr>
<td>November 19</td>
<td>Practical problems 2: Treatment implementation and attrition</td>
<td>EQD Chapter 10</td>
<td>Homework #4</td>
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<tr>
<td>November 26</td>
<td><em>No class – Thanksgiving week</em></td>
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<tr>
<td>December 3</td>
<td>Generalized causal inference from single and multiple studies</td>
<td>EQD Chapters 12 &amp; 13</td>
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<tr>
<td>December 10</td>
<td></td>
<td></td>
<td>Final examination</td>
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**EQD** = *Experimental and Quasi-Experimental Design for Generalized Causal Inference.*
Grading and Weighting of Course Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Attendance and class participation</td>
<td>10%</td>
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<tr>
<td>Homework</td>
<td>40%</td>
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<tr>
<td>Midterm examination</td>
<td>25%</td>
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<tr>
<td>Final examination</td>
<td>25%</td>
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</tbody>
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Where:

100% – 95% = A
94% – 90% = BA
89% – 85% = B
84% – 80% = CB
79% – 75% = C
< 75% = F

Need for Accommodation

Any student with a documented disability (e.g., physical, learning, psychiatric, vision, hearing, etc.) who needs to arrange reasonable accommodations must contact the professor and the appropriate Disability Services office at the beginning of the semester. The two disability service offices on campus are: Disabled Student Resources and Services (269-387-2116) and the Office of Services for Students with Learning Disabilities (269-387-4411).

Diversity Statement

The IDPE maintains a strong and sustained commitment to the diverse and unique nature of all learners and high expectations for each student.

Academic Integrity

You are responsible for making yourself aware of and understanding the policies and procedures in the Undergraduate and Graduate Catalogs that pertain to Academic Honesty. These policies include cheating, fabrication, falsification and forgery, multiple submission, plagiarism, complicity and computer misuse. [The policies can be found at http://www.wmich.edu/catalog under Academic Policies, Student Rights and Responsibilities.] If there is reason to believe you have been involved in academic dishonesty, you will be referred to the Office of Student Conduct. You will be given the opportunity to review the charge(s). If you believe you are not responsible, you will have the opportunity for a hearing. You should consult with your instructors if you are uncertain about an issue of academic honesty prior to the submission of an assignment or test.

To access the Western Michigan University Code of Honor and general academic policies on such issues as diversity, religious observance, and students with disabilities, please visit http://osc.wmich.edu/ and www.wmich.edu/registrar.