Course Description

This course, the first in the research methods sequence for doctoral students, focuses on quantitative research methods. Students will be introduced to scientific inquiry and research methods including: problem and hypothesis formulation, reviewing research literature, human subjects protection, measurement, sampling, and study design. The goal of the course is to provide students with the foundational knowledge and skills needed to carry out independent quantitative research and to critically evaluate existing studies.

Course Objectives

Upon completion of this course, students will be able to:

1. Understand the logic, process, and language of scientific inquiry
2. Understand and follow ethical standards of scientific inquiry, particularly with regard to protecting human subjects
3. Critically evaluate existing quantitative research studies
4. Formulate and conceptualize policy and practice-related research questions
5. Develop hypotheses and design research studies to answer these research questions using defensible quantitative research methodology.

Required Texts


Additional articles are listed in the course outline below

Course Requirements and Grading

Students will be evaluated on the following course requirements (detailed assignment instructions will be provided in class).
Human subjects protection training

Complete the on-line Collaborative IRB Training Initiative (CITI) training and post a copy of your Completion Report to Sakai. Completing this assignment confirms that you have received the minimum training required to be involved in research with human subjects. This assignment is not graded.

Research proposal assignments (30%)

Students will develop a research proposal in six segments. These segments will start from identifying a research topic, developing a research question, conducting a literature review, to selecting a research approach including study design, sampling procedure, and measurements.

Final research proposal (40%)

The assignments will be used to develop the final research proposal that students turn in as a final project for the course.

Research proposal presentation (15%)

10 minute presentation of the research proposal to the class (e.g., using PowerPoint).

Article critique presentation (15%)

Each student will select a quantitative, empirical research study that is 1) published in a peer-reviewed journal and 2) has been cited in the student’s research proposal, and will then give a 10 minute in-class presentation (e.g., using PowerPoint) that critically analyzes the study.

All written assignments are to be typed, double-spaced, with no more than 1-inch margins on all sides using a standard font, and submitted via Sakai before class on the due day.

It is important that assigned readings be completed prior to coming to class in order to have informed class discussions. All class sessions will assume that students have read the assigned material.

Students are expected to notify the instructor if they are unable to attend class. Absences and lack of preparation will impact the students’ final grades.
## Assignment Due Dates

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>CITI human subjects protection training</td>
<td>Sep 8</td>
</tr>
<tr>
<td>Research proposal Topic</td>
<td>Sep 15</td>
</tr>
<tr>
<td>Research proposal Question and Significance</td>
<td>Sep 29</td>
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<tr>
<td>Research proposal Background</td>
<td>Oct 13</td>
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<tr>
<td>Research proposal Specific Aims</td>
<td>Oct 20</td>
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<tr>
<td>Research proposal Sampling, Data Collection, and Measures</td>
<td>Oct 27</td>
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<tr>
<td>Article critique presentation</td>
<td>Nov 3</td>
</tr>
<tr>
<td>Research proposal Study Design</td>
<td>Dec 1</td>
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<tr>
<td>Research proposal presentation</td>
<td>Dec 15</td>
</tr>
<tr>
<td>Final research proposal</td>
<td>Dec 22</td>
</tr>
</tbody>
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## Course Outline

### Week 1 (Sep 1): Introduction and Overview of the Course

- Overview of course and assignments
- The research process

**Read**


### Week 2 (Sep 8): Ethical Issues and Human Subject Protection

- Ethics of conducting and reporting research
- IRB process

**Read**

- Rubin & Babbie (2014) Ch. 5-The Ethics and Politics of Social Work Research
Skim


Assignment Due

- CITI training human subjects protection certificate

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**Week 3 (Sep 15): Research questions and hypotheses**

- Purposes of research
- Problem formulation
- Literature reviews
- Critically assessing prior research
- Hypotheses

Read

- Rubin & Babbie (2014) Ch. 7-Problem Formulation

Assignment Due

- Research proposal topic

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**Week 4 (Sep 22): Conceptualization**

- Conceptualization
- Operationalization
- Types of variables (dependent, independent, control, confounding, mediators, and moderators)

Read

- Rubin & Babbie (2014) Ch. 8-Conceptualization

**Skim**


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**Week 5 (Sep 29): Measurement**

• Levels of measurement
• Typologies, scales, indexes
• Measurement error
• Reliability
• Validity

**Read**

• Rubin & Babbie (2014) Ch. 9-Measurement
• Choose one article from:
Assignment Due

- Research proposal question and motivation

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**Week 6 (Oct 6): Questionnaire Design and Survey Research**

- Writing questions
- Designing questionnaires
- Survey administration/modes

**Read**

- Rubin & Babbie (2014) Ch. 10-Constructing Measurement Instruments
- Rubin & Babbie (2014) Ch. 16-Survey Research

**Skim**


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**Week 7 (Oct 13): Sampling**

- Probability sampling
- Non-probability sampling
- External validity

**Read**

- Rubin & Babbie (2014) Ch. 15-Sampling

**Skim**


Assignment Due
• Research proposal Background

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**Week 8 (Oct 20): Sampling**

• Sample size and sampling error
• Effect size
• Power

**Read**

• Rubin & Babbie (2014) Ch. 15-Sampling (section on Sample Size and Sampling Error)

**Skim**


**Assignment Due**

• Research proposal Specific Aims

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**Week 9 (Oct 27): Research Design**

• Cross-sectional
• Longitudinal
• Repeated cross-section
• Cohort

**Read**

• Rubin & Babbie (2014) Ch. 7-Problem Formulation (sections on The Time Dimension, Units of Analysis)

**Skim**

Assignment Due

• Research proposal Sampling Approach, Method of data collection and Measures

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Week 10 (Nov 3): Article critique presentations

Assignment Due

• Article critique presentations

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Week 11 (Nov 10): Causality

• What is a cause?
• Counterfactual
• Causal inference

Read

• Rubin & Babbie (2014) Ch. 11-Causal Inference and Experimental Designs
• Duncan, G. J. (2008). When to promote, and when to avoid, a population perspective. Demography, 45, 763-784.

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Week 12 (Nov 17): Experimental Designs

• RCTs
• Threats to validity

Read

• Rubin & Babbie (2014) Ch. 11-Causal Inference and Experimental Designs

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**Nov 24**

**NO CLASS**

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**Week 13 (Dec 1): Quasi-experimental designs**

• Pre-post designs, difference-in-differences, and other extensions

**Read**

• Rubin & Babbie (2014) Ch. 12-Quasi-Experimental Designs

**Skim**


**Assignment Due**

• Research proposal Study Design

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**Week 14 (Dec 8): Advanced Research Topics**

• Regression discontinuity
• Sibling studies and Fixed effects

**Read**

Skim


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**Week 15 (Dec 15): Research proposal presentations**

Read

• Rubin & Babbie (2014) Ch. 24-Writing Research Proposals and Reports

Assignment Due

• Research proposal presentation

**Academic Integrity Policy**

All work submitted in a graduate course must be your own. It is unethical and a violation of the University’s Academic Integrity Policy to present the ideas or words of another without clearly and fully identifying the source. Inadequate citations will be construed as an attempt to misrepresent the cited material as your own. Use the citation style preferred by the discipline.

Plagiarism is the representation of the words or ideas of another as one’s own in any academic exercise. To avoid plagiarism, every direct quotation must be identified by quotation marks or by appropriate indentation and must be properly cited in the text or in a footnote. Acknowledgement is required when material from another source is stored in print, electronic, or other medium and is paraphrased or summarized in whole or in part in one’s own words. To acknowledge a paraphrase properly, one might state: “to paraphrase Plato’s comment...” and conclude with a footnote identifying the exact reference. A footnote acknowledging only a directly quoted statement does not suffice to notify the reader of any preceding or succeeding paraphrased material. Information which is common knowledge, such as names of leaders of prominent nations, basic scientific laws, etc., need not be footnoted; however, all facts or information obtained in reading or research that are not common knowledge among students in the course must be acknowledged. In addition to materials specifically cited in the text, only materials that contribute to one’s general understanding of the subject may be acknowledged in the bibliography. Plagiarism can, in some cases, be a subtle issue. Any question about what constitutes plagiarism should be discussed with the faculty member.
Plagiarism along with any and all other violations of academic integrity by graduate and professional students will normally be penalized more severely than violations by first-year undergraduate students. Since all violations of academic integrity by a graduate or professional student are potentially separable under the Academic Integrity Policy, faculty members should not adjudicate alleged academic integrity violations by graduate and professional students, but should refer such allegations to the appropriate Academic Integrity Facilitator (AIF) or to the Office of Student Conduct. The AIF that you should contact is Antoinette Y. Farmer, 732.932.2621. The student shall be notified in writing, by email or hand delivery, of the alleged violation and of the fact that the matter has been referred to the AIF for adjudication. This notification shall be done within 10 days of identifying the alleged violation. Once the student has been notified of the allegation, the student may not drop the course or withdraw from the school until the adjudication process is complete. A TZ or incomplete grade shall be assigned until the case is resolved. For more information regarding the Rutgers Academic Integrity Policies and Procedures, see: http://academicintegrity.rutgers.edu/integrity.shtml.

**Disability Accommodation**

Please Note: Any student who believes that s/he may need an accommodation in this class due to a disability should contact the Office of Disability Services, Lucy Stone Hall Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854, email address: dsoffice@echo.rutgers.edu, phone: (848) 445- 6800, fax: (732) 445-3388, for a letter of accommodation. Students must have a letter of accommodation from the Office of Disability Services in order to receive accommodations.