Course Outline

EST 603

RESEARCH METHODS & DESIGN

David A. Sonnenfeld, Ph.D.
Department of Environmental Studies

SUNY College of Environmental Science and Forestry
Fall 2010, TuTh 12:30-1:50 pm, Marshall 319

DESCRIPTION

Overview

This course surveys foundations of (especially, social) scientific research methods and design. It is designed for first-year graduate students in Environmental Studies, with emphases in environmental communication, environmental policy and related fields. Topics include the scientific method; research ethics; research design; measurement; sampling; quantitative, qualitative, and mixed data collection techniques; data analysis and interpretation; and research proposal development. Students will learn how to define a research question, explore the strengths and limitations of various research methods, gain brief practical experience with several methods, and draft a preliminary research proposal. It is expected that, upon successful completion of this course, students will study in greater depth those particular research method(s) most appropriate for their research.

Enrollment

Instructor’s permission required for enrollment. This course is required for students in the MS in Environmental Studies graduate program. New and continuing students in that program have first priority for enrollment. Other graduate students will be admitted as space allows, with priority given to students working under the supervision of faculty in the Dept. of Environmental Studies. Enrollment will be limited to 15 students.

Objectives

By the completion of this course, students should be able to:

- Define a research question, clearly and succinctly;
- Determine appropriate levels and units of analysis for that research question;
- Operationalize a research question, specifying dependent and independent variables;
- Select appropriate method(s) for studying various types of research questions;
- Locate, identify, and review relevant scholarship for research on a selected question;
- Draft a preliminary research proposal; and
- Demonstrate familiarity with campus policies for protection of human subjects, including Institutional Review Board (IRB) procedures.
Requirements

- Attend all class sessions;
- Read all required texts;
- Complete the CITI online research ethics training module;
- Complete all course research practica; and
- Write a preliminary research proposal.

Grading

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Weekly assignments (11)</td>
<td>35%</td>
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<tr>
<td>Mid-term exam</td>
<td>20%</td>
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<tr>
<td>Research proposal &amp; presentation</td>
<td>35%</td>
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<tr>
<td>Attendance and participation</td>
<td>10%</td>
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</tbody>
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Communication

Office: Marshall 211B
Hrs.: TuTh 2:00-3:30 pm, & by appointment
Tel. 315.470.4931/ 6636, fax 470.6915
E-mail: <dsonn@esf.edu>, and <DASonnenfeld@gmail.com>
URL: http://www.esf.edu/es/sonnenfeld

TEXTS

Required

Recommended

Bookstore
Follett's Orange Bookstore, Marshall Square Mall, 720 University Ave., tel. 478.6821
RESEARCH PROPOSAL

Scope. May take the form of a preliminary proposal for master's thesis research (for MS students), a draft dissertation research or funding proposal (for PhD students), or a proposal for a research-based internship (for MS, MPS, or PhD students).

Contents. All of the following should be included: title, abstract, statement of problem/research question, justification, review of the literature, formal statement of research question, dependent and independent variables, hypotheses, proposed research design and methods, measures for protection of human subjects, proposed research schedule, resource requirements, budget, possible funding sources, preliminary bibliography.


Oral Presentation. Present your research proposal in class, 10-15 min., including questions and discussion. Week 15. (25% of Research Proposal grade)

Written Proposal. Cover sheet, abstract, spelling and grammar checked, citations and references. Maximum length, 20 pp. double-spaced, inclusive. Due at beginning of the regularly scheduled Final Exam period for this course. (75% of Research Proposal grade)

SCHEDULE

PART I: SCIENCE IN CONTEXT

Week 1 – The Scientific Context: Philosophy of Science

Tues., 8/31: Course introduction
Why study research methods?
Aims of this course
Syllabus review
REQUIRED:
Singleton & Straits, Approaches to Social Research, ch 1

Thurs., 9/2: The scientific method
In historical perspective
Scientific revolutions (Kuhn)
Strengths, limitations & critiques
REQUIRED:
Singleton & Straits, Approaches to Social Research, ch 2
RECOMMENDED:
Kuhn, Structure of Scientific Revolutions
ADDITIONAL:

*** Weekly Assignment #1 – Essay: Why Science? (due Tues., 9/7) ***

**Week 2 – The Intellectual Context: What Is a Research Question?**

**Tues., 9/7: Formulating a research question**

- The relationship between theory and method
- What makes a question interesting?
- What is researchable? Feasibility...
- The 'so what?!' factor
- The value of simplicity

REQUIRED:
Singleton & Straits, *Approaches to Social Research*, ch 4

RECOMMENDED:
Booth et al., *The Craft of Research*, ch's 1-4
Bui, *How to Write a Master's Thesis*, ch 2

ADDITIONAL:

*** Weekly Assignment #2 – Preliminary Research Question (due Tues., 9/14) ***

**Thurs., 9/9: NO CLASS**

**Week 3 – The Scholarly Context: Understanding the Literature**

**Tues., 9/14: Workshop: preliminary research questions**

**Thurs., 9/16: Review of the literature**

- Identifying relevant journals
- Accessing scientific literature
- The peer-review process
- Review essays
- Critical perspectives

REQUIRED:
Singleton & Straits, *Approaches to Social Research*, ch 17

RECOMMENDED:
Booth et al., *The Craft of Research*, ch's 5-6
Bui, *How to Write a Master's Thesis*, ch 3

*** Weekly Assignment #3 – Preliminary Bibliography (due Tues., 9/21) ***

**Week 4 – The Ethical Context: Research Ethics**

**Tues., 9/21: Protecting Human Subjects**

Who are 'human subjects'?

Why do they need protection, and from whom?

How are they protected, and by whom?

Federal guidelines and regulations, incl. the Belmont Report

Professional codes of conduct

SU/ ESF Institutional Review Board procedures

**REQUIRED:**

Singleton & Straits, *Approaches to Social Research*, ch 3


**RECOMMENDED:**

Bui, *How to Write a Master's Thesis*, ch 4

*** Weekly Assignment #4 – Complete SU/IRB CITI training (due Thurs., 9/23) ***

**Thurs., 9/23: Workshop: Research Ethics**

**REQUIRED:**


**PART II: RESEARCH DESIGN**

**Week 5 – Elements of Research Design**

**Tues., 9/28: Levels and units of analysis**

Research stages

Levels of analysis; levels of abstraction

Units of analysis

Ecological fallacy

**REQUIRED:**

Singleton & Straits, *Approaches to Social Research*, ch 4
ADDITIONAL:

*** Weekly Assignment #5 – Research Question Elaboration (due Tues., 10/5) ***

**Thurs., 9/30: Variables and relationships**

- Variables
- Types of variables
- Relationships between variables
- Research questions (cont'd) and hypotheses

REQUIRED:
Singleton & Straits, *Approaches to Social Research*, ch 4

ADDITIONAL:

**Week 6 – Measurement and Sampling**

**Tues., 10/5: Measurement**

- The measurement process
- Operationalization
- Levels of measurement
- Reliability
- Validity

REQUIRED:
Singleton & Straits, *Approaches to Social Research*, ch 5

*** Weekly Assignment #6 – Measurement/ Sampling Exercise (due Tues., 10/12) ***

**Thurs., 10/7: Sampling**

- Why sample?
- Defining the population of interest
- Sampling approaches
- Case study approaches
- Data analysis
- Interpretation
- Bias
Generalization

REQUIRED:
Singleton & Straits, \textit{Approaches to Social Research}, ch 6

ADDITIONAL:

\textbf{Week 7 – Midway Course Review}

\textit{Tues., 10/12: Research Design: Review and Discussion}

- Research stages
- Levels and units of analysis
- Variables
- Measurement
- Sampling

\textit{Thurs., 10/14: Mid-Term Examination}

\textbf{Week 8 – Research Proposals and Funding}

\textit{Tues., 10/19: Elements of a Research Proposal}

- Why write a research proposal?
- Elements of a research proposal
- Research funding
- Community of Science (CoS)

REQUIRED:

*** Weekly Assignment #7A – Research Proposal Outline (due Tues., 10/26) ***

*** Weekly Assignment #7B – Possible Funding Sources (due Tues., 10/26) ***

*** Weekly Assignment #7C – Setting Up Your COS Profile (due Tues., 10/26) ***

\textit{Thurs., 10/21: Workshop: Research Funding}
PART III: RESEARCH METHODS

Week 9 – Introduction: Selecting Appropriate Method(s)

Tues., 10/26: Overview of Research Methods

Overview of research methods
Quantitative (multivariate) methods
Qualitative (interpretive) methods
Historical methods
Evaluation research
Mixed research methods
Using available data
Inter-University Consortium for Political and Social Research (ICPSR)

REQUIRED:
Singleton & Straits, *Approaches to Social Research*, ch's 1, 12

ADDITIONAL:

*** Weekly Assignment #8 – Literature Review (due Tues., 11/2) ***

Thurs., 10/28: Quantitative Methods: Survey Research

General features of survey research
Uses and limitations of surveys
Survey research designs
Steps in survey research
Forms of survey research
Administering surveys
Interpreting quantitative data

REQUIRED:
Singleton & Straits, *Approaches to Social Research*, ch's 9, 15-16

Week 10 – Survey Instrumentation: Questionnaire Design

Tues., 11/2:

Designing and developing a survey
Types of questions
Pretesting

REQUIRED:
Singleton & Straits, *Approaches to Social Research*, ch 10
**Thurs., 11/4: Survey Research Practicum**

**Week 11 – Qualitative Methods: Participatory Research**

**Tues., 11/9:**

- Participant observation/ ethnographic research
- Participatory action research

**REQUIRED:**
Singleton & Straits, *Approaches to Social Research*, ch 11

**RECOMMENDED:**
Wilmsen, et al., *Partnerships for Empowerment*

**ADDITIONAL:**

*** Weekly Assignment #9 – Survey Research Exercise (due Tues., 11/9) ***

**Thurs., 11/11: Participant Observation Practicum**

**Week 12 – Qualitative Methods: Using Available Data**

**Tues., 11/16:**

- Discourse/ content analysis
- Comparative historical analysis
- Case-study based research
- What is a case?

**REQUIRED:**
Singleton & Straits, *Approaches to Social Research*, ch 12

**RECOMMENDED:**
ADDITIONAL:


*** Weekly Assignment #11 – Qualitative Methods Exercise (due Tues., 11/23) ***

**Thurs., 11/18: Qualitative Methods Practicum**

Week 13 – Integrative Research Methods

**Tues., 11/23: Systems Analysis**

TBA

RECOMMENDED:


**Thurs., 11/25: THANKSGIVING HOLIDAY**

Week 14 – Mixed and Applied Research Methods

**Tues., 11/30: Mixed Research Methods**

Mixed research methods

Applied research methods

Meta analysis

REQUIRED:

Singleton & Straits, *Approaches to Social Research*, ch's 13-14

ADDITIONAL:


**Thurs., 12/2: Workshop: Mixed Research Methods**

PART IV: RESEARCH PROPOSALS

Week 15 – Student Presentations/ Discussion

Finals Week – Research Proposals Due