Course Outline

EST 603

RESEARCH METHODS & DESIGN

David A. Sonnenfeld
Department of Environmental Studies

SUNY College of Environmental Science and Forestry
Fall 2017, TuTh 9:30-10:50 am, Bray 300

DESCRIPTION

Overview

This course surveys foundations of (especially, social) scientific research methods and design. All master's and PhD students in Environmental Studies, Environmental Science, Natural Resources Management, Landscape Architecture, or other fields with a 'human dimensions' or policy aspect to their research are welcome. Topics include the scientific method; research ethics; research design; measurement; sampling; quantitative, qualitative, and multimethod data collection techniques; data analysis and interpretation; and research proposal development. Students learn how to define a research question, explore the strengths and limitations of a variety of social science research methods, gain practical experience with several data collection methods, and draft a preliminary research proposal. Following completion of this course, it is expected that students will conduct further, in-depth study of those method(s) of data collection and analysis most appropriate to their research topic, research question(s), and field(s) of study.

Prerequisites

Prior or concurrent coursework in statistical analysis is recommended.

Objectives

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

- Define a scientific research question, clearly and succinctly;
- Determine appropriate levels and units of analysis for that research question;
- Locate, critically review, and apply relevant peer-reviewed, scholarly literature on a selected question;
- Operationalize a research question, specifying dependent and independent variables;
- Select appropriate method(s) of data collection and analysis for various types of research questions;
- Demonstrate familiarity with ESF/SU policies and procedures for the protection of human subjects, including via the Institutional Review Board (IRB); and
- Draft a preliminary thesis/dissertation research proposal.
Requirements

- Attend all class sessions
- Read all required texts
- Participate in all class discussions
- Complete all homework assignments, including online training modules on the protection of human subjects
- Write a preliminary research proposal

Grading

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework assignments</td>
<td>30%</td>
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<tr>
<td>Mid-term exam</td>
<td>30%</td>
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<tr>
<td>Research proposal &amp; presentation</td>
<td>30%</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: 211B Marshall
Hrs.: M 3:30–5:30 pm, Tu 3:30–4:30pm, & by appt.
E-mail: <dsonn@esf.edu> and <DASonnenfeld@gmail.com>
Web: http://www.esf.edu/es/sonnenfeld

TEXTS

Required


Recommended


Bookstore

*ESF Virtual Bookstore*, available via *myESF*. For further information see:
http://www.esf.edu/students/books.htm

LIBRARY GUIDE

http://libguides.esf.edu/est603
SCHEDULE

PART I: SCIENCE IN CONTEXT

Week 1 – The Scientific Context: Philosophy of Science

Tues., 8/29: Course introduction
  Why study research methods?
  Aims of this course
  Assumptions
  Syllabus review
  REQUIRED:
  Singleton & Straits, Approaches to Social Research, preface, ch 1
  ADDITIONAL:
  *** Weekly Assignment #1 – Essay: Why Science? (due Tues., 9/5) ***

Thurs., 8/31: The scientific method
  In historical perspective
  Scientific revolutions (Kuhn)
  Strengths, limitations & critiques
  REQUIRED:
  Singleton & Straits, Approaches to Social Research, intro to Part I, ch 2
  RECOMMENDED:
  Kuhn, Structure of Scientific Revolutions
  Öberg, Interdisciplinary Environmental Studies
  ADDITIONAL:

Week 2 – The Intellectual Context: Selecting a Research Topic

Tues., 9/5: Selecting a problem or topic
  The relationship between theory and method
  What makes a problem/ topic interesting?
  What is researchable? Feasibility...
  The 'so what?!' factor
  The value of simplicity
  REQUIRED:
  Singleton & Straits, Approaches to Social Research, ch 4
  RECOMMENDED:
  Bui, How to Write a Master's Thesis, ch 2
  ADDITIONAL:

*** Weekly Assignment #2 – Preliminary Research Question (due Tues., 9/12) ***

**Thurs., 9/7: Review of prior scholarship**
Identifying relevant, peer-reviewed journals
Accessing scientific literature
Review essays
Critical perspectives
Properly citing and referencing source material

REQUIRED:
Singleton & Straits, Approaches to Social Research, ch 17, pp. 558-563

RECOMMENDED:
Bui, How to Write a Master's Thesis, ch's 3, 6

**Week 3a – The Scholarly Context: Reviewing Prior Studies**

**Tues., 9/12: Workshop: selecting a research topic**

*** Weekly Assignment #3 – Complete SU/ IRB CITI training (due Tues., 9/19) ***

*** Weekly Assignment #4 – Preliminary Bibliography (due Tues., 9/26) ***

**Week 3b – The Ethical Context: Protecting Human Subjects**

**Thurs., 9/14: Protecting human subjects**
Who are 'human subjects'? (definition)
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 policies and procedures

REQUIRED:
Singleton & Straits, Approaches to Social Research, ch 3

RECOMMENDED:
Bui, How to Write a Master's Thesis, ch 4
Week 4 – The Ethical Context: Protecting Human Subjects (cont'd)

Tues., 9/19: Workshop: research ethics

GUEST SPEAKER:
Jeanne Dietrich, IRB Administrator, Office of Research Integrity and Protections, Syracuse University (invited)

REQUIRED:
Collaborative Institutional Training Initiative (CITI) Web-based Training Program, available via on-campus access of the website of Syracuse University's Office of Research Integrity and Protections. Estimated duration: 2-6 hrs. Must be completed prior to class; bring copy of completion certificate.

Thurs., 9/21: NO CLASS

PART II: RESEARCH DESIGN

Week 5 – Units of Analysis & Variables

Tues., 9/26: 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

RECOMMENDED:
Bui, How to Write a Master's Thesis, ch 2

ADDITIONAL:

*** Weekly Assignment #5 – Research Question Elaboration (due Tues., 10/3) ***

Thurs., 9/28: Variables and relationships

Variables
Types of variables
Relationships between variables
Formulating research questions and hypotheses

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

ADDITIONAL:
Week 6 – Measurement and Sampling

Tues., 10/3: 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., 10/10) ***

Thurs., 10/5: Sampling
Defining the population of interest
Sampling and case study approaches
Data analysis and interpretation
Sampling bias
Generalization
REQUIRED:
Singleton & Straits, Approaches to Social Research, ch 6
ADDITIONAL:

Week 7 – Course Review & Mid-Term

Tues., 10/10: Research design: review & discussion
Research stages
Levels and units of analysis
Variables
Measurement
Sampling

*** Weekly Assignment #7 – Research Proposal Outline (due Thurs., 10/19) ***

Thurs., 10/12: Mid-term examination

*** Bring pencils and an eraser ***

Week 8 – Writing Research Proposals

Tues., 10/17: Elements of a research proposal
Why write a research proposal?
Elements of a research proposal
REQUIRED:

**Thurs., 10/19: Workshop: research funding**
Research funding
Pivot funding database
GUEST SPEAKER:
Jane Verostek, Moon Library (invited)
RECOMMENDED:
"ESF Grants Search" Library Guide:  [http://libguides.esf.edu/grants](http://libguides.esf.edu/grants)
*** Note: Class session will be in the Baker 437 computer lab (to be confirmed) ***

**PART III: RESEARCH METHODS**

**Week 9 – Overview; Survey Research Design**

**Tues., 10/24: Overview of research methods**
Overview of research methods
Quantitative (multivariate) methods
Qualitative (interpretive) methods
Using available data
Multimethod and applied research methods
REQUIRED:
Singleton & Straits, *Approaches to Social Research*, ch 1 (review); intro to Part III
RECOMMENDED:
Singleton & Straits, *Approaches to Social Research*, ch's 7, 8
Bui, *How to Write a Master's Thesis*, ch 6
ADDITIONAL:
*** Weekly Assignment #8 – Literature Review (due Tues., 10/31) ***

**Thurs., 10/26: Survey design**
General features of survey research
Uses and limitations of surveys
Survey research designs
Steps in and forms of survey research
Administering surveys
REQUIRED:
Singleton & Straits, *Approaches to Social Research*, ch 9
RECOMMENDED:
Singleton & Straits, *Approaches to Social Research*, ch's 15-16

*** Weekly Assignment #9 – Survey Research Exercise (due Tues., 11/7) ***

**Week 10 – Survey Research Methods**

**Tues., 10/31: Survey instrumentation**
- Designing and developing a survey
- Types of questions
- Pretesting

REQUIRED:
Singleton & Straits, *Approaches to Social Research*, ch 10

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

ADDITIONAL:

**Thurs., 11/2: Survey research practicum**

*** Note: Class session in the Baker 437 computer lab (to be confirmed) ***

**Week 11 – Field Research Methods**

**Tues., 11/7: Field research methods**
- 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 #10 – Participant Observation Exercise (due Tues., 11/14) ***

**Thurs., 11/9: Participant observation practicum**

**Week 12 – Using Available Data**

**Tues., 11/14: Using available data**
- 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 – Available Data Research Exercise (due Tues., 11/28) ***

Thurs., 11/16: Available data practicum

*** Note: Class session in the Baker 310 computer lab (to be confirmed) ***

THANKSGIVING BREAK

Week 13 – Integrative Research Methods

Tues., 11/28: Mixed, systems & applied methods
Mixed research methods
Systems approaches
Applied research methods
Meta-analysis

REQUIRED:
Singleton & Straits, Approaches to Social Research, ch 13

RECOMMENDED:
Meadows, Thinking in Systems
Singleton & Straits, Approaches to Social Research, ch 14

ADDITIONAL:

PART IV: RESEARCH PROPOSALS

Thurs., 11/30: Research proposals – open workshop
Week 14 – Student Presentations/ Discussion

Tues., 12/5

Thurs., 12/7

Finals Week – Research Proposals Due

NOTICES

Accommodations

SUNY-ESF works closely with the Office of Disability Services (ODS) at Syracuse University in assisting students with learning and physical disabilities. If you may need accommodations in this course related to a disability, please contact the ESF Office of Student Affairs, 110 Bray Hall, tel. 315.470.6660, for assistance with the process. You may also contact ODS directly, 804 University Avenue, rm. 309; call 315.443.4498, to schedule an appointment. ODS is responsible for coordinating disability-related accommodations and issues Accommodation Authorization Letters to students with documented disabilities, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible. To learn more about ODS, visit http://disabilityservices.syr.edu.

Academic integrity

Plagiarism is presenting others’ work as your own without acknowledgment of its source(s). Plagiarism includes verbatim and close paraphrasing of material from course texts and other published materials, cutting and pasting from electronic sources, and unattributed paraphrasing. Acts of academic dishonesty are defined in the ESF Academic Integrity Handbook and violate the College’s Code of Student Conduct. Students are accountable for such acts. If you have any questions about how to properly quote or reference others' work, please consult writing reference texts, your instructor, or other campus resources.

Personal electronics

This course is intended to be an educational experience for all. To ensure that the classroom environment is conducive for learning, please follow these guidelines in use of personal electronics: Cell phones should be off while class is in session. If you need to maintain your phone on silent mode due to a personal emergency, please notify the instructor in advance. Digital devices may be used for reading, note-taking, and course-related research activities. Text messaging, social media viewing, updating, etc., during class is disruptive and not permitted. Disruptive behavior is a violation of ESF’s Code of Student Conduct. Students who are disruptive may be asked to leave the classroom; persistent disruptions will have further consequences.

Fire alarm procedures

If a fire alarm sounds, exit the building immediately, to the area designated for this course. Stay together as a class until released. Take all personal belongings with you, including keys, backpacks, electronics, and coats. Let your instructor know in advance if you have any special needs in case of a building evacuation. For further information, contact the Office of Student Affairs, tel. 315.470.6660.