

**Quantitative and Qualitative Data Analysis  
MES  
Spring 2007**

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**Course Description:**

As an interdisciplinary field of inquiry, Environmental Studies calls for a diverse set of interdisciplinary research approaches. This program offers an exposure to a range of approaches in research methods and data analysis employed by those in the social and natural sciences. The program invites integration and blending of a variety of methods in interdisciplinary ways to more fully address the complexities of the social and natural environments they study. The goals of the program are for students to:

- 1) gain a good sense of the breadth and application of qualitative and quantitative research methods available for social and physical environmental research
- 2) practice hands-on training in applying a range of qualitative and quantitative (descriptive and inferential statistics) methods to answer research questions
- 3) use the spreadsheet software EXCEL to graphically display data and to perform statistical analysis
- 4) select and apply appropriate analytical approaches to data for course poster project
- 5) review a range of research that blends qualitative and quantitative methods
- 6) Learn to critically evaluate popular accounts of scientific research findings and be informed consumers of statistical information
- 7) gather tools necessary to construct successful and effective interdisciplinary thesis research

**Required Course Readings:**

Lowe, Celia. 2005 *Wild Profusion: Biodiversity Conservation in an Indonesian Archipelago*. Princeton University Press.

Bestor, Theodore. 2004 *Tsukiji: The Fish Market at the Center of the World*. University of California Press.

Keller, Gerald. "Applied Statistics with Microsoft® Excel" by Gerald Keller

Selected readings in course share folder on MASU.

### **Suggested Readings:**

Thomas, R. Murray. 2003 *Blending Qualitative and Quantitative Research Methods in Theses and Dissertations*. Sage Publication: Thousand Oaks.

Hammersly, Martyn and Paul Atkinson. 1995 *Ethnography: Principles in Practice*. Second edition. Routledge: New York.

Rubin, Herbert and Irene Rubin. 2005 *Qualitative Interviewing: The Art of Hearing Data*. Second edition. Sage Publications: Thousand Oaks.

Elliott, Jane 2005 *Using Narrative in Social Research: Qualitative and Quantitative Approaches*. Sage Publications: Thousand Oaks.

Creswell, John. 2007 *Qualitative Inquiry and Research Design: Choosing among five approaches*. Sage Publications: Thousand Oaks.

Crawley, Michael J. 2005 *Statistics: An Introduction using R* John Wiley & Sons  
ISBN: 0470022981

Taylor, George *Integrating Quantitative and Qualitative Methods in Research*  
University Press of America; 2nd edition (November 28, 2005), ISBN: 0761832416

Gonick, Larry and Woolcott Smith “*The Cartoon Guide to Statistics*”  
HarperPerennial of Harper Collins Publishers, ISBN 0-06-273102-5

### **Assessment:**

#### Homework assignments

Statistical problem sets from book chapters following each lecture

Computer Lab problem sets

Experiential ethnographic projects

#### Midterm exam

Take-home statistical problems

Take-home questions on qualitative approaches

#### Final exams

Quantitative: in-class computer based statistical problems

Qualitative: in-class written exam on qualitative material

#### Seminar and workshops

Preparation for and participation in seminar

Participation in class-room workshops

### Week 1

- T (4/3)      6-8      Introduction: Integration of qualitative and quantitative methods  
Covenant  
8-10      Overview of Descriptive Statistics, Probability, Sampling and Estimation  
Reading Assignment: Chapters 1-9 in Keller; Creswell and Clark,  
ch 1 from *Mixed Methods*  
*Review* Calheiros, et.al. "Participatory Research Methods in  
Environmental Science: Local and Scientific Knowledge of a  
Limnological Phenomenon in Pantanal Wetland of Brazil;"  
*Review* Rocheleau, Diane "Maps, Numbers, Text and Context:  
Mixing Methods in Feminist Political Ecology" (on MASU)  
*Hand out and go over poster assignment*  
*Give Sampling and Estimation exercise.*
- Th (4/5)      6-7      Thesis presentation by MES student  
7-9      Qualitative approaches: representation and interpretation  
9-10      Seminar: Hammersley and Atkinson, Ch 1 in *Ethnography:  
Principles and Practice* (on MASU)  
*Give Assignment: Observation of use of public space*

### Week 2

- T (4/10)      6-8      Integrating Social Theory in Environmental Studies  
8-10      Participant Observation in Fieldwork: Example of India
- Th (4/12)      6-8      Oral history, Oral Traditions, Narrative Data Analysis  
Workshop: Practice conducting oral histories  
8-10:      Seminar: Ong, Vansina, Jan Ch 1 "Oral Tradition as Process" in  
*Oral Tradition as History*; Rubin and Rubin Ch 1, "Listening,  
Hearing and Sharing Social Experiences" in *Qualitative  
Interviewing: The Art of hearing data.*  
*Give Assignment #2: Conducting an oral history*  
**Due:** Ethnography Assignment #1 Observation of use of public  
space  
*Select Poster teams*

### Week 3

- T (4/17)      6-8      Hypothesis testing, Inference: one population  
Reading Assignment: Chapters 10 and 11 in Keller.  
8-10      Seminar: "Unweaving the Uncanny" (Chapter 7 in *Unweaving the  
Rainbow* by Richard Dawkins) and excerpts from *Luck: The  
Brilliant Randomness of Everyday Life* by Nicholas Rescher.  
**Due:** Sampling and Estimation homework
- Th (4/19)      6-10      Lab: Hypothesis Testing—CAL  
*Refine project topics*

#### Week 4

- T (4/24)      6-8      Inference: Two populations  
Reading Assignment: Chapters 12 and 13 in Keller.  
8-10      Seminar: Popular article  
**Due:** Hypothesis testing homework
- Th (4/26)      6-10      Lab: Inference —CAL  
**Due:** Hypothesis testing lab problem  
*Data selection for projects*

#### Week 5

- T (5/1)      6-8      Analysis of Variance  
Reading Assignment: chapter 14 in Keller  
8-10      Chi square tests  
**Due:** Inference homework
- Th (5/3)      6-8      Questionnaires, unobtrusive methods,  
Berg, Bruce, Ch 8 “Unobtrusive Measures in Research”; Bernard,  
H. Russell, Ch 11, “Questionnaires and Survey Research”  
8-10      Seminar *Tsukiji*  
*Give Assignment #3: Unobtrusive methods*  
**Due:** Ethnographic Assignment #2: Oral History  
*Give Take-Home Mid-term exam*

#### Week 6

- T (5/8)      6-9      **Dennis Hayes: Rachel Carson Lecture Longhouse**  
6-8      Participatory and Action Research; TEK and LEK  
8-10      Seminar: Huntsinger and Ballard, “Salal Harvester Local  
Ecological Knowledge, Harvest Practices and Understory  
Management on the Olympic Peninsula, Washington”; Huntington;  
“Using Traditional Ecological Knowledge is Science: Methods and  
Applications”  
**Due** *Take home mid-term*
- Th (5/10)      6-10      Lab: ANOVA—CAL  
**Due:** Inference lab problem  
*Statement of project research question or hypothesis*

#### Week 7

- T (5/15)      6-8      Coding and Interpretation  
7-10      Workshop: Coding Dena’ina transcripts  
Bernard, H. Russell, Ch 15 *Coding and Codebooks for quantitative  
data.*

**Due:** Oral History Assignment

- Th (5/17)      6-8      Simple Linear and Multiple Regression  
Reading Assignment: Chapters 17 and 18 in Keller.  
8-10      Non-parametric tests  
Reading Assignment: Chapters 15 and 16 in Keller.  
**Due:** ANOVA and Chi-square homework/lab

**Week 8**

- T (5/22)      6-8      Ethics and Ethics exercise  
*AAA guidelines on ethics*  
8-10      Seminar: Wild Profusion  
**Due:** Ethnographic Assignment #3: Unobtrusive Methods

- Th (5/24)      6-10      Lab: Regression—CAL  
*Submit outline of project, research questions, description of data set, and tests/analysis used*

**Week 9**

- T (5/29)      6-8      Integration: Sustainability Indicators: guest speaker(s).  
8-10      Seminar: Robinson, John. "Squaring the circle? Some thoughts on the idea of sustainable development"  
**Due:** Non-parametric tests homework

- Th (5/31)      6-8      Quantitative Review  
8-10      Qualitative Review  
**Due:** Regression homework/lab

**Week 10**

- T (6/5)      6-7:30      Poster Presentations  
8-10      Question and Answer session on posters

- Th (6/7)      6-8      Quantitative Final Exam  
8-10      Qualitative Final Exam

**Week June 11-15      Evaluation conferences**