
Environmental Statistics and Research Methods (ESRM)

United Nations University (UNU-IAS)

Spring 2020

Location: TBA

Time: From 10 April until 3 July, 2020

Lecturer: Kensuke FUKUSHI

Contact Information: fukushi@unu.edu

Office Hours: by appointment

As of 22 January 2020

1. Course description

ESRM teaches a series of methods related to data analysis. Provide lectures include basics of statistics, applied statistics, sociological research analyses, sampling design, and other related method that are essential for natural and social scientists and engineers. In addition, an exercise to learn how to use the basic content learned in the lecture will be provided during the class.

2. Course Objectives and Learning Goals:

The purpose of this course is to understand basic skill to analyze environmental and social data, and to learn practical research methods and skills that would be useful throughout a research operating cycle, including problem identification, field survey, interpretation, academic writing, and dialogue with end-users (policy makers, private sectors and citizen). Environmental investigation often covers a broad range of disciplines of social science to natural science. Since the systems under environmental study are complex, statistical methods are important techniques in the interpretation of project results. By the end of the course, each student is expected to familiar with basic statistical methods and common research methods to apply them to their own thesis research.

3. Requirements and Grading Policy

- Class participation: 30%
- Assignments: 20%
- Final exam: 50%

4. Course Outline

Lecture	Date	Content	Instructor
Lecture 1	04/2 (Thu), 9:30-11:00	- Course Guidance - Project Design (Chap.1)	Kensuke Fukushi.
Lecture 2	04/9 (Thu), 9:30-11:00	Describing data (Chap.2)	Kensuke Fukushi.
Lecture 3	04/16 (Thu), 9:30-11:00	Using Statistics to answer questions (Chap.3)	Kensuke Fukushi.
Lecture 4	04/23 (Thu), 9:30-11:00	Difference between two samples (Chap. 4)	Kensuke Fukushi.
Lecture 5	04/30 (Thu), 9:30-11:00	Relationship between variables (Chap. 5)	Kensuke Fukushi.
Lecture 6	05/07 (Thu), 9:30-11:00	Analyzing frequency data (Chap. 6)	Kensuke Fukushi.
Lecture 7	05/14 (Thu), 9:30-11:00	Qualitative analysis methods (I) - Qualitative Research Design - Qualitative Methods: Theory Building Methodology, Visual Ethnography - Qualitative Data Analysis: Nvivo Software for Data Analysis	Geetha Mohan
Lecture 8	05/21 (Thu) 09:30-11:00	Qualitative analysis methods (II) - Overview: the nature and scope of qualitative research - Common qualitative methods and research examples	Geetha Mohan
Lecture 9, 10	06/04 (Thu), 09:30-11:00	- Using statistics software (SPSS or STATA) and multivariate statistics including hands-on session - Description of the data and analysis methods - Examples of multivariate regression	Geetha Mohan
Lecture 11	06/11(Thu), 09:30-11:00	Qualitative analysis methods (III) - Stakeholder Analysis - Joint Fact Finding	Alexandros Gasparatos (UTokyo)
Lecture 12	06/18 (Thu), 09:30-11:00	Social network analysis: methods and case studies	Alexandros Gasparatos (UTokyo)
Lecture 13	06/25 (Thu), 09:30-11:00	Peer-review process and academic writing - Selection of journal and types of manuscript - Peer-review and editorial process - Common reasons of rejection	Kensuke Fukushi.

		- Common mistakes and tips for scientific writing	
Lecture 14	07/02 (Thu), 09:30-11:00	Wrap-up feedback session	Kensuke Fukushi.
Lecture 15	07/09 (Thu), 09:30-12:30	Final exam	Kensuke Fukushi.

5. Course Readings

- C. Philip Wheeler & Penny A. Cook (2000): *Using Statistics to Understand the Environment*, Routledge.
- Peter J. A. Shaw (2003) *Multivariate Statistics for the Environmental Sciences*, Arnold.
- P.K. Ramachandran Nair & Vimala D. Nair. (2014): *Scientific Writing and Communication in Agriculture and Natural Resources*, Springer.
- Andrew J. Friedland and Carol L. Folt (2000): *Writing successful science proposals (second edition)*, Yale University Press, New Haven & London.
- Wayne C. Booth, Gregory G. Colomb and Joseph M. Williams (2008): *The Craft of Research (Chicago Guides to Writing, Editing, and Publishing)*, Univ of Chicago Press.
- John M. Swales and Christine B. Freak (2012): *Academic Writing for Graduate Students: Essential Tasks and Skills (Michigan Series in English for Academic & Professional Purposes) (3rd Edition)*, Univ. of Michigan Press.
- J. W. Crewel (2014): *Research Design, Qualitative, Quantitative, and Mixed Methods Approaches (4h Edition)*. Sage Publication
- L. Richards (2015): *Handling Qualitative Data: A Practical Guide (3rd Edition)*. Sage Publication.
- P. Bazeley and K. Jackson (2013): *Qualitative Data Analysis with NVIVO (2nd Edition)*. Sage Publication.
- Yin, R. K. (2012): *Applications of case study research*. Thousand Oaks, CA: Sage.
- Wolcott, H. T. (2008): *Ethnography: A way of seeing*. Walnut Creek, CA: AltaMira.
- Becker, H. S. (1998): *Tricks of the trade: How to think about your research while you are doing it*. University of Chicago Press.
- Strauss, A., & Corbin, J. (1998): *Basics of qualitative research: Grounded theory procedures and techniques*. Thousand Oaks, CA: Sage.
- Clandinin, D. J., & Connelly, F. M. (2000): *Narrative inquiry: Experience and story in qualitative research*. San Francisco: Jossey-Bass.
- Moustakas, C. (1994): *Phenomenological research methods*. Thousand Oaks, CA: Sage.