

Texas A & M University
Department of Recreation, Park and Tourism Sciences

RPTS 689: Designing Experiments and Analyzing Data

Fall Semester, Academic Year 2012

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Office Hours: Any time, contact Department of RPTS Administrative Assistant Debbie Barnes for appointment 979-845-7324.

Prerequisites: A previous class in introductory statistics and a class in research design

Meets: Tuesdays, 4:30-7:30, AGLS 109

Resources:

Textbook:

Maxwell, S. & Delaney, H. (2004). *Designing experiments and analyzing data: a model comparison perspective*. Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.

Supplemental (we will not use this directly in the class. It is a fine resource for learning to use SPSS)

SPSS Survival Guide

e-learning

An elearning website has been established for this class. The site includes lecture notes, data sets, the course outline, assigned readings, and other resources for the class.

Course Description

This class provides an in-depth examination of experimental design and associated statistical analysis, within the context of park, recreation, and tourism research and management. Students learn to apply concepts to their own research, building actively and significantly upon their own research interests and conceptualization and theory that they developed previously.

Relevant Professional, University, and Park, Recreation, and Tourism Curriculum Standards

The class builds upon, extends, and integrates previous course work on epistemological foundations and professional issues as well as behavioral science process in parks, recreation, and tourism. It is also relevant to students interested in learning how to apply experimental design and analysis to park, recreation, and tourism management problems.

Learning Outcomes

By the end of the course, you should...

1. *Be able to design simple and complex experiments to investigate research and management questions in which you have interest.*
2. *Be able to use linear modeling approaches to analyze data from a wide range of experimental designs that are applicable to parks, recreation, and tourism research*
3. *Be able to critique experimental research in parks, recreation, and tourism according to criteria of internal validity, external validity, ecological validity, and statistical conclusion validity.*
4. *Be able to use and demonstrate in-depth understanding of experimental design options and the concepts of error, model comparison, measures of effect size, measures of association strength, variance explained, contrasts, planned comparisons, and post-hoc comparisons.*
5. *Be able to analyze data from experiments using statistical software and spreadsheets.*
6. *Be able to communicate results of analysis of data from experiments using narrative, figures, and tables.*

Course Requirements

- Attend and participate (Required for C or higher)
- Successfully complete two examinations (Required for C or higher)
- Successfully complete a Designing Experiments and Analyzing Data Workbook (Required for B or higher)
- Successfully complete a special interest project (Required for A)

Details on each of these assignments follow:

Attend and participate (required for C, B, and A). This is a graduate level class and regular attendance and involvement is expected. If you must miss a class, please discuss your absence with the instructor.

Successfully complete two Examinations (Required for C, B, or A). You will complete a learning assessment at midterm and at the conclusion of the class (final examination). To receive a C, B, or A, your score on each examination must be within 70% of the score of the student who has the highest score in the class.

Successfully complete all exercises in a Designing Experiments and Analyzing Data Workbook (Required for B or A)

A series of exercises in experimental design and data analysis workbook will be provided in the form of a workbook. The workbook will include an exercise in designing experiments, an exercise in validity of inferences that can be made from results of experiments, and a series of

data analysis exercises. Some of the data analysis exercises will involve calculations using a spreadsheet and others will be intended for analysis using statistical software only. “Successful completion” will require the following:

- Completion of all assigned exercises, organized into a single workbook and presented both as hard copy and a MS Word file
- Appropriate and effective use of English
- Correct approaches to analysis
- Effective design and presentation of figures and tables
- Consistency with the format described (an example is provided in the workbook)
- Written work that reflects application-level understanding of the relevant concepts, principles, and procedures

Students are encouraged to work in collaborative groups of no more than three students to solve the problems and analyze data. ***The written work for each assignment, though, must be completed by the individual student. Each student will produce a unique workbook that she or he has written.***

Successfully complete a special interest project related to experimental design and data analysis (Required for A). This project is intended to allow you the opportunity to explore, in depth, a topic that is of special interest to you in terms of experimental design, analysis of variance, or linear modeling. To complete the project you must submit, ***no later than midterm***, a proposal for the project that will be the topic of your inquiry. Your proposal must be no more than one page in length. It must specify a goal, objectives, procedures, and “deliverables” (i.e., that which will be turned in and/or presented), and it must specify the course objectives that are consistent with that project.

The project is best if it advances your thinking toward your thesis or dissertation. Thus, the project may entail anything that you choose that is (1) centrally relevant to the class and either (2a) a significant contribution toward your thesis or dissertation, or (2b) a significant issue that you face or might face as a recreation and tourism manager. ***Examples*** of projects follow:

- A paper that reviews and critiques approaches that previous authors have taken to experimental design and analysis in your specific area of interest.
- A report describing secondary analysis of data that you, your major professor, or a colleague collected. The analysis must be based on sound reasoning or existing theory and that reasoning must be evident in the report.
- A hypothetical journal article that describes an experiment that you would someday like to conduct.
- A small-scale experiment, complete with data analysis (might be a pilot study). The study might be reported through a PowerPoint presentation

Projects may be shared with one other student, if approved by the instructor. Assignments will not be accepted after their due date.

Disclaimer

This syllabus has been created as a guide to the class and is as accurate as possible. However, all information is subject to change as class needs change. Any changes will be discussed during class sessions and will be documented in writing.

Select Texas A&M University and Department of RPRT Class Policies

Students with documented disabilities

The Americans with Disabilities Act (ADA) is a federal antidiscrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities in Room 126 of the Koldus Building, or call 845-1637.

Aggie Honor Code

An Aggie does not lie, cheat, or steal, and does not tolerate those who do. The 2004-2005 Texas A&M University Student Rules on scholastic dishonesty defines plagiarism as: failure to credit sources used in an attempt to pass off someone else's work as his/her own; attempting to receive credit for work performed by another; or failing to credit work obtained in whole or in part from an outside source (<http://student-rules.tamu.edu/>). The penalty for academic dishonesty is a mark of zero for the assignment and a possible F for the course if this is a repeat offense.

Academic Misconduct

Academic misconduct in research or scholarship includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting research. It does not include honest error or honest differences in interpretations or judgments of data.

(<http://student-rules.tamu.edu/aggiecode.htm>) Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor request it, is sufficient grounds to initiate an academic dishonesty case.

Academic dishonesty includes the commission of any of the following acts: cheating, fabrication, falsification, multiple submissions, plagiarism, and complicity. This listing is not, however, exclusive of any other acts that may reasonably be called academic dishonesty. The full definition a listing of some prohibited behaviors for each area can be found at <http://www.tamu.edu/aggiehonor/faq.html>.

Academic Sanctions

The instructor may assign appropriate academic sanctions based upon the specifics of the incident. The penalty for a violation shall be an "F" in the course and "Honor Violation

Probation. Less severe penalties may be imposed if the circumstances warrant. Examples include:

- * Receiving a course grade reduction
- * Receiving a zero on an assignment
- * Being required to participate in extra requirements for a course
- * Being withdrawn from the class

Educational Sanctions

The instructor may assign appropriate educational sanctions. Examples of educational sanctions include requiring a student to attend an academic integrity seminar, to perform appropriate university or community service, or to make restitution for damage that occurred as a result of the incident. No Upper Division student found guilty of academic misconduct may receive Cum Laude, or Magna Cum Laude honors at graduation. Upper Division status is defined as having earned 60 or more credit hours, including transfer hours, prior to the date of the violation. This sanction is automatic upon a finding of academic misconduct, and is imposed without regard to the severity of other sanctions imposed by the instructor.

Electronic Devices

Cell phones, text messaging, pagers and other devices that disrupt the class must be turned off. Students whose electronic devices disturb class or actions using such devices in class will be asked to leave class and receive a one day unexcused absence.

Course Outline

<i>Order</i>	<i>Topic</i>	<i>Chapter</i>	<i>Illustrative Reading (FYI, optional reading)</i>
1	Conceptual Bases of Experimental Design and Analysis	1, 2	Zoerink & Lauener, 1991
2	One way, Between Subjects Design	3	Miller & Graef, 2000
3	Individual Comparisons of Means	4	Ellis, et al., 1993
4	Testing Several Contrasts	5	
5	Two Way, Between Subjects Factorial Designs	7	Lounsbury & Hoopes, 1988
6	Higher Order Between-Subjects Factorial Designs	8	
7	Midterm Examination and Review		
8	ANCOVA and Blocking	9	Searle, 1989
9	Designs with Random or Nested Factors	10	Long, et. al., 2000
10	One Way Within-Subjects Designs: Univariate Approach	11	Wilson & Hanna, 1999
11	Higher Order Designs with Within-Subjects Factors	12	Iwasaki & Mannell, 1999
12	Multivariate Approaches	13, 14	
13	Multilevel Modeling	15-16	
14	Final Examination		

PRT 7103 Fall, 2007
Illustrative Readings

Broach, E. & Dattilo, J. (2001). Effects of aquatic therapy on adults with multiple sclerosis. *Therapeutic Recreation Journal* 35 (2), 141-154.

Caldwell, L., Darling, N., Payne, L., & Dowdy, B. (1999). "Why are you bored? An examination of psychological and social control causes of boredom among adolescents. *Journal of Leisure Research* 31, 103-121.

Dattilo, J., Gast, D., Loy, D., & Malley, S. (2000). Use of single-subject research designs in therapeutic recreation. *Therapeutic Recreation Journal* 34 (3), 253-270.

Ellis, G., Maughan-Pritchett, M. & Ruddell, E. (1993). Effects of attribution based verbal persuasion and imagery on self efficacy of adolescent psychiatric patients. *Therapeutic Recreation Journal*, 27, 83-97.

Iwasaki, Y. & Mannell, R. (1999). Situational and personality influences on intrinsically motivated leisure behavior: interaction effects and cognitive processes. *Leisure Sciences* 21(4), 287-306.

Levine, R. & Hunter, J. (1983). Regression methodology: correlation meta-analysis, confidence intervals, and reliability. *Journal of Leisure Research* 15 (4), 323-343.

Long, T., Ellis, G., Trunnell, E., Tatsugawa, K., & Freeman, P. (2001). Animating recreation experiences through the COMPLEX model. *Journal of Park and Recreation Administration* 2, 1-22.

Lounsbury, J. & Hoopes, L. (1988). Five-year stability of leisure participation and motivation factors among 139 community residents. *Journal of Leisure Research* 20, 118-134.

Miller, C. & Graef, A. (2000). Degree and range of specialization across related hunting activities. *Leisure Sciences* 22, (3), 195-204.

Searle, M. (1989). Testing the reciprocity norm in a recreation management setting. *Leisure Sciences* 11, (4), 353-365.

Wilson, J. & Hanna, W. (1999). Cultivar and nitrogen fertility interactions with diseases of centipede grass. *Journal of Turfgrass Management* 3, (1), 43-51.

Zoerink, D. & Lauener, K. (1991). Effects of a leisure education program on adults with traumatic brain injury. *Therapeutic Recreation Journal*, 25, (3), 19-28.