

DEPARTMENT OF GERONTOLOGY
College of Health and Human Services
San Diego State University

Gerontology 630:
RESEARCH METHODS AND EVALUATION
Mario D. Garrett Ph.D.
Fall, 2009

Room: HH 216

Thursday, 16:00- 18:40 PM

Office Hours:

By appointment

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COURSE SYLLABUS

INTRODUCTION:

This course is a graduate level introduction to the field of research methods and evaluation and is a core course in the Master's of Science program in gerontology. The emphasis is on the **practical** skills needed to conduct research, namely; developing survey tools, formulating and investigating hypotheses, developing research designs, gathering empirical data, and analyzing and interpreting statistical results. Although not a course in statistics, this course will provide the necessary and comprehensive basis for Master's level students to develop valid survey designs, identify appropriate statistical analyses, perform statistical tests using the Statistical package for Social Science (SPSS), and interpret, discuss, and summarize these results. National data will be used in both the teaching and in the exercises. This course is sequentially structured so that the scientific process of investigation is followed, from hypothesis generating to data collection, analyses, interpretation and presentation.

This course is based on secondary data that applies to gerontological field of inquiry, but the theoretical and practical lessons apply to all scientific disciplines. This course is designed to provide an educational foundation in the research process particularly as it relates to gerontology. The course includes a review of available national data, Institutional Review Board (IRB) compliance, broader ethical issues on doing research, data acquisition and manipulation, and design theory and practice. Practical exercises will include examples of complying with IRB compliance requirements, designing questionnaires, access national data, basic and advanced statistical analyses, and presentation tools.

This course is a pre-requisite course, and compliments the more theoretical statistical course of Biostatistics 602, which is also a required course for the Master of Science in gerontology. **You are expected to have a computer (lap top to bring with you in class), SPSS software, Excel or spreadsheet software, and Microsoft Word. You are also expected to have access to the course documents/reference material. The final paper is a mock thesis which must be presented to the group.**

COURSE GOALS:

This course is designed to increase students' ability to:

1. Understand the intricacies of developing, using and interpreting results from surveys
2. Appraise, and interpret data manipulation
3. Participate in hypothesis generating, survey design, data collection, analyses and interpretation
4. Understand the necessary steps needed to perform empirical research.
5. Conduct empirical work, based on observation, at the Master's level.
6. Understand the applicability of Biostatistics in research.

COURSE OBJECTIVES:

At the end of the course, students will be able to:

- Undertake research
- Design research protocols
- Submit research protocol to IRB
- Develop and implement survey tools
- Design statistical programs to read raw data using SPSS
- Identify the type of statistical analyses appropriate for a given dataset
- Perform basic statistical analyses
- Interpret results
- Identify national databases related to gerontology
- Identify and extract federal data
- Develop, structure, and format a thesis
- Develop PowerPoint presentations
- Write-up the paper according to established scientific protocols
- Make formal presentations to a group.

TEACHING METHODS:

Primary teaching methods will include lecture, class participation, student presentations, student projects, work assignments, web-based tests, and invited speakers representing the different industries involved in statistics, survey design, and analyses will make presentations to the class.

CLASS REQUIREMENTS:

Class Participation - Each student is expected to attend class with no more than 3 absences, and to actively participate in class discussions and activities. After three unacknowledged absences the student will automatically be withdrawn from the class and will be assigned an F in their final course grade. Students who envisage missing classes and do not request prior permission for the absences need to request an "Incomplete" otherwise they will be assigned an "F". If a student needs to be absent from the class, prior permission/acknowledgement is required. In cases of medical or personal emergency the student is required to contact the instructor and request a leave of absence. The instructor has the right to request documentation. Religious observances will not be considered as absences for this purpose. Absences for religious observance need to be discussed with the instructor so that the student can work out a plan to make up for missed lectures, assignments, and activities. Absences for religious observances are treated separate, but students who plan to miss more than three classes for religious observance need to discuss this with the instructor to ensure that critical substance of the course is not being missed. It is the responsibility of the student to make up for lost lessons, and assignments. Absences for whatever reason, might require make-up work of approximately 10 page essay per missed class. Students are expected to complete all exercises, assignments and tests as identified in the syllabus. If students miss a class when an assignment was due, a practical or a test was scheduled, they are responsible for rescheduling and taking the assigned task before the end of the course. Note that there will be a deduction of 10 points from the maximum possible 100 points assigned to that task. If you miss the final paper, you will receive a 0 for that assignment and your final grade will be determined from the other exams and other assigned tasks and class participation. There will be no retro-grading after the final session/final exam. There will not be any make-up final. Job related excuses and other conflicting schedules are not acceptable. Students are responsible for arranging their schedules around classes.

Attendance - Students are expected to participate in question and discussion, perform all assignments after the session in which the material will be discussed.

Tests – Students are expected to complete all exercises, and tests. There will not be a final exam, although there will be a final paper (mock thesis) due the final two weeks of the course. If students miss class when a practical was scheduled they are responsible for rescheduling and taking the assigned task before the end of the course. There will not be retro-grading after the final session.

RESEARCH PAPER AND ORAL REPORT (Thesis: approximately 25 pages)

Students are required to develop a mock (mock "having the character of an imitation") thesis that illustrates the process of literature review, developing and submitting an Institutional Review Board (IRB) research protocol, survey design /data extraction and analyses, interpretation, discussion, and citation/bibliography. To accomplish this mock thesis, students are required to access data using the federal data exchange system (FERRET) and access specific variables within identified databases. FERRET has access to 12 large federal databases, enough variables to develop a mock thesis.

Once students obtain the data, the process of performing the analyses and interpreting results and discussion are the same. Although the course will not focus on the substance of the thesis (i.e. the research topic), the research protocol, survey tools, IRB submission, analyses, interpretation and form (thesis format) must be accurate and expose the student's comprehension of the course material. The final product will be a written paper that will be presented to the class and scored (graded) by the instructor.

Mock Thesis - Prepare a 10-12 page typed written paper and to present the paper to the class in two session in the final two weeks of this course.

SDSU MASTER'S THESIS AND PROJECT MANUAL

The Master's Thesis and Project Manual, SDSU, Eleventh Edition (hereafter, Thesis Manual) is the required text for Thesis 799 (The Thesis Manual is available at Aztec Shops Bookstore--619-594-7535).

I. Cover Page

1 page

Your name, course name and semester, instructor's name.

II. Abstract

1 paragraph

An abstract is a brief, comprehensive summary of the contents of the Mock Paper. It should provide a considerable amount of information succinctly.

Specifically, the abstract should describe:

- a. *The problem under investigation*
- b. *The subjects (number, age, gender, type, etc.)*
- c. *The study design or experimental method*
- d. *Sampling methods*
- e. *Procedures, including data collection methods, instruments, etc.*
- f. *Findings, implications, and conclusion*

III. Introduction

2 – 3 pages

The introduction should include a problem statement that clearly presents the gerontology problem or issue to be addressed in the proposed study and the rationale for proposing the study. Specifically, the introduction should contain the following components:

- a. *The problem statement and rationale*
- b. *Nominal definitions of important terms and concepts*

- c. *Relevance of the study to gerontology*
- d. *Research question(s)*

Problem: Begin with a description of the problem. Include a brief statement about what you plan to do in your study. Clearly describe the gerontological problem you plan to address in the mock thesis. You may be vague about how you will address the problem at this stage-but indicate that you intend to make the problem better or different. Define your key terms.

Significance: This section should include the incidence/prevalence, consequences of the problem (emotional, psychological, fiscal impact), and how your research may add to the knowledge to positively affect the problem.

First, you need to document the occurrence or prevalence of the specific problem and then justify the need and importance of studying it. How can research contribute to a better understanding of the problem?

Discuss why this problem is relevant to you, as a gerontologist, to your agency, to the profession and to society in general? (e.g. Why is it worth studying now?

IV. Literature Review

7 – 10 pages

The purpose of the literature review is to present and exhibit knowledge about the topic, including what has or has not been addressed previously, what limitations exist in the larger knowledgebase, what limitations exist in previous studies, and how the proposed study will add to knowledge in this area. The literature review offers a presentation of the background of the problem and includes both a theoretical and empirical examination and critique of the existing knowledge. The review of others' work should be comprehensive, but succinct, including information that is directly relevant to the study you will propose. Emphasis should be given to studies that justify the statement of the problem, research question, and hypothesis, and that support the selection of important study variables.

V. Methods

3 – 5 pages

The methods section should meticulously lay out the process by which the proposed study will be carried out, such that it could be replicated by other researchers if desired. The ability to replicate a study is a key feature of empirical research. The purpose of the Methods section is to describe explicitly the process by which your proposed study will be carried out. This section should be written in a step-by-step manner, such that another researcher if desired could replicate your study. Specifically, this section should include/address the following:

1. *The research design and notation*
2. *Sampling methods and procedures, including the target population, sampling frame, specific sampling procedures,*

3. *Measurement, including:*
 - a. *Operational definitions, levels of measurement, and values (if appropriate) of all independent, dependent, and control variables*
 - b. *Reliability and validity of instruments/measures/techniques*
 - c. *Procedure for testing new scales if applicable*
4. *Procedures*
5. *Human Subject Considerations: Informed consent template*
The final draft will also include a detailed critique of the proposal's methodology, including strengths and weakness, and the implications of these strengths and weakness (e.g., threats to internal and external validity, likelihood of Type I and II errors).

VI. Discussion/Implications

2 – 3 pages

This section should briefly address the findings and suggest the significance of the study for gerontology, policy, research, theory, and education. A brief conclusion should also be provided which summarizes what you have done and the significance in a few sentences.

VII. References/Citations

Citations should be provided in APA format. Use recent citations (after 1999) when possible, as dated citations may not be relevant to your current topic.

VIII. Appendices (e.g., instruments), figures

IX. Other

Oral Presentation - The oral report will be presented during the last two weeks before the end of the course. If you have a conflict with the date you are required to switch with another student. This is your responsibility. Presentations will take 15 minutes for each student; students will copy and distribute a formal paper to all class students. The instructor will evaluate and grade each presentation. These marks will count 55% towards the final grade (the written paper will contribute 40% and the presentation 15% of the final grade).

The goal for this presentation is to translate your mock thesis in a format that will educate your peers. You will have to present your ideas very clearly and succinctly, given the size of the class.

Oral presentation should last not more than 15-minutes.

In addition to the formal hard copy of the paper, students may want to include PowerPoint presentation or any other visual aid.

C HOMWORK ASSIGNMENTS

1. IRB Protocol

Go to web portal and press “Launch vIRB”

This will take you through the requirements for submitting your protocol to get it reviewed by SDSU’s Institutional Review Board. All research required a review by the IRB. **DO NOT SUBMIT THE IRB PROTOCOL FOR REVIEW TO THE IRB.** You are required to fill in all the sections and then print out a copy using Full Document Viewer under Protocol Utilities. Submit this protocol, as a hard copy, **on the day of your presentation.**

2. IRB Web-based course

SDSU IRB Human Subjects Tutorial

<http://www-rohan.sdsu.edu/~gra/login.php>

The tutorial will help you obtain certification and to pass the final multiple choice test. Your results will be forwarded electronically to the San Diego State University Foundation and the Committee on Protection for Human Subjects so that your successful completion may be documented. This certification will facilitate your research at SDSU. All users will receive an electronic message verifying the assessment results, which needs to be printed as a hard copy and provided to your instructor on your final exam as a record of completion. It is expected that completion of the assessment will require about 30 minutes. The assessment is written in multiple-choice format. Please choose the best answer to each question. You must receive a score of 90% (you can miss a total of 2 questions) or better to meet training requirements. If you fail please review pertinent content within the tutorial and re-take the assessment.

GRADING:

The following requirements will constitute the designated proportion of the final course grade:

Class Participation	15%	(one point per class)
Two Special Papers	5%	(Session 2: Survey Design)
	5%	(Session 4: Survey Monkey)
Mock Thesis	55%	(oral presentation 15%) (written paper 40%)
IRB certification Pass	10%	(proof of pass)
IRB Protocol	10%	(to be included in final paper)
	100%	

All coursework and grading will be completed by the last session of the course. Uncompleted work will be given a zero. There will be no retro-grading after the last session of this course.

The following score ranges will be used for grading:

- 90 - 100 = A = Superior Performance
- 80 - 89 = B = Satisfactory Performance
- 70 - 79 = C = Minimally Passing

60 - 69 = D = Unacceptable
below 59 = F = Failing

The Department of Gerontology will follow college policy regarding student grievances. These guidelines can be accessed at the Office of the Ombudsman web site: <http://www.sa.sdsu.edu/ombuds/process.html>

The single most important attribute of a scientist is their integrity and the integrity of their work. In this spirit students agree that by taking this course all required papers may be subject to submission for textual similarity review for the detection of plagiarism. All submitted papers will be included in this review. You may submit your papers in such a way that no identifying information about you is included. Another option is that you may request, in writing, that your papers not be submitted to detection of plagiarism software. However, if you choose this option you will be required to provide documentation to substantiate that the papers are your original work and do not include any plagiarized material.

REQUIRED TEXT:

William Trochim, & James P. Donnelly, (2004/5/6/7/8). The Research Methods Knowledge Base, 3e. Atomic Dog Publishing, Cincinnati, OH.

www.atomicdogpublishing.com

Field, A. (2004/5/6/7/8). Discovering Statistics Using SPSS for Windows :
Advanced Techniques for Beginners. Sage Publications; Book and CD-
ROM edition.

SDSU Graduate Division, 2004. The Master's Thesis and Project Manual.
Eleventh Edition.

<http://gra.sdsu.edu/Graduate/Thesis/index.htm>

September 3rd

Session 1. Introduction to Course

Focus: Overview of the course, expectation. Research Concepts
Thesis Manual. What is required to complete a master thesis/Capstone paper

References:

Trochim & Donnelly Chapter 1

SDSU Graduate Division, 2004. The Master's Thesis and Project Manual.
Eleventh Edition.

Homework:

Institutional Review Board Protocol

Web based Learning and test <http://gra.sdsu.edu/cphs/tutorial/>

Grade:

Class Participation

1

Homework

10

September 10th

Session 2. Literature Review, Sampling & Measurement

16:00- 18:30PM

Focus: Session 1 Literature review
Session 2 Sampling distribution
Sampling types review and evaluation
Designing sampling frame

References:

Field Chapter 1

Trochim & Donnelly Chapter 2 & 3

Homework: Special Paper: Design template for questionnaire

Grade:

Class Participation 1

Homework 5

September 17th
Session 3. IRB Protocol

Invited Speaker: Wendy Bracken

Focus: This session discusses what you need in order to submit a research protocol to the IRB. You will need to take the web-based course at: <http://www-rohan.sdsu.edu/~gra/login.php>
Wendy Bracken, the Regulatory Compliance Analyst with the Division of Research Administration in the Graduate and Research Affairs will host this session

References:

Trochim & Donnelly, Chapter 4

Homework:

IRB CERTIFICATION

<http://gra.sdsu.edu/cphs/tutorial/>

The tutorial will help you gain certification and to pass the final multiple choice test. Your results will be forwarded electronically to the San Diego State University Foundation and the Committee on Protection for Human Subjects so that your successful completion may be documented. This certification will facilitate your research at SDSU. All users will receive an electronic message verifying the assessment results, which needs to be printed as a hard copy and provided to your instructor as a record of completion. If you fail please review pertinent content within the tutorial and re-take the assessment.

Grade:

Class Participation	1
Homework	10

September 24th

Session 4. Primary data: Design Questionnaire 1

Focus: This class is designed into two parts. The first part is a discussion on how to design a survey/questionnaire, This is the second part discusses the practice of designing a questionnaire on the internet using the Survey Monkey.

References:

Trochim & Donnelly Chapter 4

Homework:

Design questionnaire on Survey Monkey.

Design a questionnaire and send it to all those on your (personal) e-mail list. Use the templates that you developed for the previous class as the basis. This tool will allow you to gather primary data and is one option to complete your mock thesis (the second option is to access secondary data from federal databases using DATA FERRET which you will perform in the class next week).

This option of gathering data (the other option is using Data Ferret) involves using Survey Monkey questionnaire and sending it out to at least 25 people. Survey Monkey will allow you then to collate the responses. Subsequently you will be able to read the data using SPSS, analyze it, and interpret and write-up results (subsequent sessions will demonstrate all of these steps). This option must have the responses collected by Section 6 Analysis course.

Grade:

Class Participation	1
Homework	5

October 2nd
Session 5. Secondary Data Sources

Focus: This session will provide students with techniques on how to access secondary data from federal agencies. Students will learn how to use DATAFERRETT. Hands-on practical exercises will be presented.

<http://www.thedataweb.org/support/user/index.html>

Current Datasets available through DataFerrett:

- American Community Survey (ACS)
- American Housing Survey (AHS)
- Behavioral Risk Factor Surveillance System (BRFSS)
- Consumer Expenditure Survey (CES)
- Current Population Survey (CPS)
- Decennial Census of Population and Housing (Census2000)
- National Ambulatory Medical Care Survey (NAMCS)
- National Center for Health Statistics Mortality (MORT)
- National Center for Health Statistics Natality
- National Health and Nutrition Examination Survey (HANES)
- National Health Interview Survey (NHIS)*
- National Hospital Ambulatory Medical Care Survey (NHAMCS)
- National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (FHWAR)
- Survey of Income and Program Participation (SIPP)
- Survey of Program Dynamics (SPD)

Homework: Select team coordinator. Team-select a database, select elements/variables/, and send batch download. Download SPSS file for data. Next week save data and SPSS file on disk and share it with team members.

Grade:

Class Participation

1

October 8

Session 6. Research Design and Sample Size

Focus: Session 1 This is a theoretical class that discusses different concerns of research designs.
Session 2 The second part of this lecture discusses sample size. How large a sample do you need to make sure that your measures can be tested significantly? Power estimates, and simple size estimates will be discussed and practical examples presented.

References:

Trochim and Donnelly Chapters 6, 7 8, & 9

Grade:

Class Participation 1

October 15
Session 7. Analysis

Focus: This session is based on either the responses from your questionnaire survey or from the data extraction. Select one form of data source. This session will introduce you to practical steps of how to read the data using SPSS, and to perform the following standard tests:
Mean, Sum of Squares, variance, and Standard Deviations Testing for Normal Distribution

References:

Field Chapter 1

Grade:

Class Participation 1

October 22nd

Session 8. Scaling/Coding/Explore Data

Focus: Session 1 This session is in two parts. The first session examines how to re-code variables. In most cases when data is either retrieved or acquired the answers or responses are not in the format that we can use. In order to enable use to analyze these data the variables need to be re-coded. The first part of this session will go through three examples of how to re-code.

- When the responses are qualitative
- When the responses are interval (age) and we need categories (e.g., youth, adult, elderly, old-old)
- When we need to combine variables together to produce an aggregate value (eg when computing Activities of Daily Living)

Session 2 The second session goes into data exploration, through Mean, Std. Error of Mean, Median, Mode, Std. Deviation, Variance, Skewness, Std. Error of Skewness, Kurtosis, Std. Error of Kurtosis, Range, Minimum, Maximum, Sum, and Percentiles. Normal distribution testing using Kolmogorov-Smirnov and Shapiro-Wilks tests. And basic statistical analysis Mann-Whitney, Wilcox, and Chi-square test.

References:

Field Chapter 2

Grade:

Class Participation 1

October 29th

Work Study

Focus: Draft the sections I to V of the mock theses.

Nov. 5th

Session 9. Advance Data Analysis I

Focus: Advanced Data Analysis is a practical module that is covered over two sessions (I, and II). This session reviews analyses of Correlation, regression (multiple Regressions) and Logistic Regression.

References:

Field Chapters 3, 4, and 5.

Grade:

Class Participation 1

November 12th

Session 10. Statistical Indices

Invited Speaker: Tony D'Angelo,

Focus: This session goes behind the scenes looking at one specific example of health care delivery system for minority population Tony D'Angelo will talk about life expectancy, morbidity, life tables and other statistical terms used in the health field. Mr. D'Angelo will discuss analysis in the real word context.

Grade:

Class Participation 1

November 12th

Session 11. Advanced Data Analyses II

Focus: Advanced Data Analysis is a practical module that will be covered over two sessions (I, and II). This session reviews analyses comparing two means, ANOVA, MANOVA and factor Analysis.

References:

Field, Chapters 6, 7, 8, 9 10, and 11.

Grade:

Class Participation 1

November 19th

Session 12. Interpretation of Results

Focus: Class participation. Students will have the opportunity to show their results and to get feedback and advice on how to interpret them.

Homework: Three papers from the most current Journal of Gerontology will be discussed. The papers will be used to illustrate the design, analysis, and results and provide a critique. This is a critical thinking exercise and will bring together the statistical and the design knowledge that you have learned.

Grade: Class Participation 1

Remember no classes next week
November 26th. Class will be on your own to write up your mock thesis. The following class will be on December 3rd.

December 3rd

Session 13. Writing-up

On your own, make sure to register for the two classes, Word Template, and Thesis Template, at the start of the semester and take the classes at anytime during this semester.

Focus: This session is designed to help you format your thesis. You can take these two classes at any time during this semester. The Graduate Division at SDSU is the authority that awards the degree and they require thesis (Plan A) to be submitted in an established format. This session will show you how to make your thesis compliant with this format. This session will be conducted by BATS (Baseline Access, Training and Support), which is a California State University initiative to provide all students, faculty, and staff with "baseline" access to information resources via networks, training in the uses of baseline hardware and software systems, and ongoing professional and technical support for utilization of computer resources at San Diego State University. In preparation you should read the procedures and planning sections of chapter 2 and the text-formatting chapter (Ch. 4 & 5) of the Thesis Manual prior to this session. Also, download and read the template instructions (i.e., ReadMe File) from the template web page at: <http://gra.sdsu.edu/Graduate/Thesis/template.htm>

Session1 Word Template Use

Session 2 Thesis Template

References:

SDSU MASTER'S THESIS AND PROJECT MANUAL

The Master's Thesis and Project Manual, SDSU, Eleventh Edition.

Grade: Class Participation 1

December 10th and 17th
Session 15. Student Reports

Focus: Group reports.

Each student will take 25 minutes to present their thesis; students will copy and distribute a formal paper to all the GERO 530 class students at this class.

The goal for this exercise will be to educate your peers. You will have to present your ideas very clearly and succinctly, given the size of the class.

Oral presentation should last not more than 15-minutes.

In addition to the formal hard copy of the paper, students may want to include PowerPoint presentation or any other visual aid. Come prepared.

Grade:

Class Participation 1

Marks will count 55% towards the final grade (the written paper will contribute 40% and the presentation 15% of the final grade).

HAVE A GREAT HOLIDAY!