UNIVERSITY OF KENTUCKY
APPLICATION FOR CHANGE IN EXISTING COURSE: MAJOR & MINOR

1. Submitted by College of Public Health Date _____

   Department/Division offering course Gerontology

2. Changes proposed:
   (a) Present prefix & number GRN 650 Proposed prefix & number GRN 650

   (b) Present Title Research Methods in Gerontology

   New Title Research Design in Gerontology

   (c) If course title is changed and exceeds 24 characters (Including spaces), include a sensible title (not to exceed 24 characters) for use on transcripts:
   Research Design

   (d) Present credits: 3 Proposed credits: 4

   (e) Current lecture: laboratory ratio 3:0 Proposed: 3:1

   (f) Effective Date of Change: (Semester & Year) Fall, 2007

3. To be Cross-listed as: _____ _____
   Prefix and Number Signature: Department Chair

4. Proposed change in Bulletin description:
   (a) Present description (including prerequisite(s):
   This course will provide training in research methods appropriate for the study of aging and the aged and will critically assess special considerations involved in studying this population. Topics to be covered will include: data sources for research on aging (including medical informatics and clinical epidemiology sources); the use of animal models in aging research; research designs for the study of aging [reconciling age, period, and cohort effects]: longitudinal research; measurement tools for assessing the elderly [functional assessment, ADLs, life satisfaction scales, etc.]) issues in interviewing older people; qualitative methods in aging research; the ethics of research on aging and the aged. Prereq: STA 570 or equivalent

   (b) New description:
   This course will provide training in research design appropriate for the study of aging and the aged and will critically assess special considerations involved in studying this population. Topics to be covered will include: philosophy of science; data sources for research on aging (including medical informatics and clinical epidemiology sources); the use of animal models in aging research; special design considerations for the study of aging [reconciling age, period, and cohort effects]: longitudinal research; measurement tools for assessing the elderly [functional assessment, ADLs, life satisfaction scales, etc.] issues in interviewing older people; qualitative methods in aging research; the ethics of research on aging and the aged.

   (c) Prerequisite(s) for course as changed: Admission to Gerontology PhD. Program.

5. What has prompted this proposal?
   Need to focus on elements of research design early in a student's career, and before specific methods are identified and studied. In addition, there is an need for hands-on demonstration and practice.

6. If there are to be significant changes in the content or teaching objectives of this course, indicate changes:
   Refocus on design (instead of methods).

7. What other departments could be affected by the proposed change?
   None

8. Is this course applicable to the requirements for at least one degree or certificate at the University of Kentucky? X Yes ☐ No

9. Will changing this course change the degree requirements in one or more programs?* ☐ Yes X No

If yes, please attach an explanation of the change.*

10. Is this course currently included in the University Studies Program? ☐ Yes x No
If yes, please attach correspondence indicating concurrence of the University Studies Committee.

11. If the course is a 100-200 level course, please submit evidence (e.g., correspondence) that the Community College System has been consulted.

*NOTE: Approval of this change will constitute approval of the program change unless other program modifications are proposed.

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12. If the course is 400G or 500 level, include syllabi or course statement showing differentiation for undergraduate and graduate students in assignments, grading criteria, and grading scales. ☐ Check here if 400G-500.

12. Is this a minor change? ☐ Yes X No
(NOTE: See the description on this form of what constitutes a minor change. Minor changes are sent directly from the Dean of the College to the Chair of the Senate Council. If the latter deems the change not to be minor, it will be sent to the appropriate Council for normal processing.)

13. Within the Department, who should be consulted for further information on the proposed course change?

Name: John F. Watkins Phone Extension: 7-1450, ext. 80240

Signatures of Approval:

2-20-08 DATE of Approval by Department Faculty	GRAHAM D. ROWLES / Graham D Rowles printed name Reported by Department Chair signature
2-20-08 DATE of Approval by College Faculty	Linda A. Alexander / Linda A Alexander printed name Reported by College Dean signature Assoc Dean for Academic Affairs
*DATE of Approval by Undergraduate Council	/ printed name Reported by Undergraduate Council Chair signature
*DATE of Approval by Graduate Council	/ printed name Reported by Graduate Council Chair signature
2/21/08 *DATE of Approval by Health Care Colleges Council (HCCC)	Heidi Anderson / Heidi M Anderson printed name Reported by Health Care Colleges Council Chair signature
*DATE of Approval by Senate Council	Reported by Office of the Senate Council
*DATE of Approval by the University Senate	Reported by the Office of the Senate Council

*If applicable, as provided by the *University Senate Rules.* (http://www.uky.edu/USC/New/RulesandRegulationsMain.htm)

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Excerpt from *University Senate Rules:*

SR 3.3.0.G.2: **Definition.** A request may be considered a minor change if it meets one of the following criteria:

a. change in number within the same hundred series;
b. editorial change in the course title or description which does not imply change in content or emphasis;
c. a change in prerequisite(s) which does not imply change in content or emphasis, or which is made necessary by the elimination or significant alteration of the prerequisite(s);
d. a cross-listing of a course under conditions set forth in *SR 3.3.0.E*;
e. correction of typographical errors.

GRN 650: RESEARCH DESIGN IN GERONTOLOGY

Fall 2006

Class Meetings: Tuesdays 1:00-4:00 (Gerontology 304E, Conference Room)

Lab Meetings: Thursday 11:30-12:30 (Gerontology 304E, Conference Room)

Instructors: Joy M. Jacobs-Lawson, Ph.D.
John Watkins, Ph.D.

Offices: Jacobs-Lawson: 306A Health Sciences Building
Tel: 257-1450 Ext.80194
FAX: 323-5747
E-Mail: jjaco4@email.uky.edu
Office hours: By appointment at almost any time during business hours (call or e-mail me to confirm that I am available or to schedule a meeting, or just stop by when the door is open).

Watkins: 306B Health Sciences Building
Tel: 257-1450 Ext. 80240
FAX: 323-5747
E-Mail: TBA
Office Hours TBA

Introduction

Emergence of gerontology as an interdisciplinary subject for scientific study has been accompanied by the development of diverse designs for research on the aging process and elders that take into account unique issues in conducting research with this population. These issues include: concerns in reconciling biomedical and behavioral research cultures; debate regarding the use of animal models for human aging; problems in distinguishing among age, period, and cohort effects; difficulties with human aging population research ranging from problems in subject recruitment to high drop out rates (both voluntary and involuntary); special considerations in interacting with frail elders (e.g. hearing impairment, fatigue, developing rapport, etc.); and ethical concerns in the conduct and use of both biomedical and social/behavioral research. In this course, each of these issues is considered in the context of an attempt to: (1) reveal and nurture each participant's own unique style of research; (2) place alternative contemporary research approaches within the broader framework of gerontology and the progress of science; and (3) provide practical hands-on experience in the development and critique of alternative approaches to research.

Prerequisites

Admission to the doctoral program in gerontology or approval from the course instructors.

Course Objectives

The objectives of this course are:

(1) To develop familiarity with different paradigms of research in gerontology;
(2) To gain experience with the process of research critique;
(3) To gain experience in research design and the development of a research proposal;
(4) To gain insight into selected methodological issues specific to the design and conduct of research on aging and the aged; and
(5) To enhance awareness and develop sensitivity to major ethical issues conducting gerontology research.

Course Themes

Research Design in Gerontology will encompass the following themes:

(1) Personal, social, and intellectual research paradigms; "What are we trying to do?"
(2) Logical empiricism, scientific method and experimental approaches to quantitatively oriented aging research.
(3) Animal models and biomedical research design.
(4) Qualitative research in gerontology.
(5) Mixed method research: Gerontology as integrative science.
(6) Ethical issues in aging research.

Required Course Texts

Kuhn, T. S. (1970). *The structure of scientific revolutions.* Chicago: University of Chicago Press.

Creswell, J.W. (2003). *Research design: Qualitative, quantitative, and mixed method approaches* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Locke, L. F., Silverman, S. J., & Spirduso, S. J. (2004). *Reading and understanding research* (2nd ed). Thousand Oaks, CA: Sage Publications.

Recommended Text

As our program follows APA style format, you may want to purchase a copy of American Psychological Association (2001). *Publication manual of the American Psychological Association* (5th Ed.). Washington, DC: American Psychological Association. (Exceptions to this will be made with approval of the dissertation committee if the style of writing proposed is more widely accepted in the students' primary area of study. However, for this course, all documents are expected to be formatted according to APA guidelines.)

Readings

The course will entail a significant amount of reading. In addition to readings from the required texts, a list of readings, comprising chapters and articles from a wide range of sources, will be provided for each topical area. **Required** sources will be made available in 306, Health Sciences Building. Additional

recommended readings will also be made available in 306, Health Sciences Building. These are readings you may find of interest but are not necessarily required. Course participants will be expected to have read, **at a minimum**, the required readings ***prior*** to each class session.

Guest Speakers

Dr. Glenn Telling	Prions & Paradigm Shifts
Dr. Rodney Guttmann	Biomedical Methods: Animal Models
Dr. Graham Rowles	Qualitative Research Methods, Data Collection and Analysis
Dr. Heidi Ewen	Mixed Methods in Aging Research
Dr. Amy Hosier	Qualitative Data Collection and Analyses

Class Expectations

As this is a core graduate course in the doctoral program, the expectations of participants are high. We presume that you are attuned to the need to maximize what you obtain from the course. Consequently, it is assumed that participants will, at a minimum, complete the following activities as a component of their participation:

(1) Attend and **fully participate** in class and lab sessions (failure to attend 3 class/lab sessions may result in an incomplete for the course);
(2) Complete all assignments in timely manner;
(3) Develop an "identity" as a researcher;
(4) Assist colleagues in the class by providing "peer review" of their work including their research proposal.

Grading and Assignments

Evaluated activities through the semester will account for specific percentages of the course total as summarized below. Final grades will be assigned by achievement towards three categories: A = 90-100%; B = 80-89%; and C = 70-79%. A more detailed description can be found at the end of the syllabus. For each assignment you will need to turn in two copies (one for each instructor).

(1) NIH R03 Grant Application (35% of grade)

Each student will develop an R03 research proposal on a topic of their choice using a National Institutes of Health (NIH) PHS 398 format.

(2) Critical Analysis of an NIH Research Proposal (15%)

Each student will develop a concise critique and appraisal of existing proposals using NIH Study Section criteria and procedures.

(3) Research Critiques (30% of grade)

Each student will critique three research articles that coincide with material discussed in the course. Each critique is worth 10% of the grade.

(a) Quantitative Research Critique
(b) Qualitative Research Critique
(c) Biomedical Research Critique

(4) Protecting Study Volunteers Examination (0% of grade)

If you have not already completed the IRB training course required by the University, you are **required** to complete the modules required for both the Social/Behavioral Sciences and Medical Sciences. This must be completed by November 30, 2006. Although you will not receive course credit for completing this assignment, failure to complete it will result in an "I" for the course. To complete the modules visit: http://www.rgs.uky.edu/ori/humansubjects.html#Anchor-EducReq.

Select the CITI Course option and follow the instructions provided.

(5) Other Assignments (15% of grade)

Each of these projects will entail preparation of material (usually no more than one or two pages) that will be used and discussed during individual class sessions. Each exercise is worth 5% of your grade.

(a) Independent/Dependent Variables (IV/DV) Exercise (5%)
(b) Age, Cohort & Time: Disentangling the ACT (5%)
(c) Send in the Clones: Ethical Considerations in a Brave New World (5%)

(6) Class Participation (5% of grade)

Late Assignments: It is expected that all assignments will be completed and given to the instructions on the date that they are due. Late assignments will be penalized up to 10% for each day after the assigned due date. With respect to the NIH Grant Proposal, all draft must be submitted on time; failure to do so will result in a reduction on the final grade on the grant proposal.

Academic Honesty: PLAGIARISM and CHEATING are serious academic offenses. The minimum penalty for those academic offenses is failure in the assignment in which the infraction occurs.

The University regulations pertaining to this matter can be found at http://www.uky.edu/StudentAffairs/Code/

Format of Class Sessions

The format of this course will be diverse. In-class activities will include lectures, guest speakers, topical presentations by class members, discussion of readings and specific research design issues, in-class processing of materials generated for class-related assignments, and Socratic problem presentation.

Format of Laboratory Sessions

Lab sessions will also vary in format. Lab activities will include discussion of the components of the grant, frequent "clinical" consulting and feedback sessions on grant preparation. It will also include discussions of how to conduct literature reviews, critique research articles, employ appropriate statistics, and how to develop effective research designs. Labs are developed to facilitate application of concepts and

how to develop effective research designs. Labs are developed to facilitate application of concepts and materials presented and discussed in class.

Please Note:

If you are disabled in any way, and/or feel that there is anything we need to know that might improve your learning environment in this class, please contact one of us by telephone or in person.

Course Schedule

PART I: FUNDAMENTALS OF RESEARCH

WEEK 1

CLASS SESSION (August 29) Introduction: What are we trying to do? *

(1) Introductions
(2) On the Purpose of Research: Individual Perspective
(3) Course Outline, Assignments, and Instructor Expectations.
(4) On the Role of Research
(5) What Kind of Researcher Are You?

LAB SESSION (August 31) Introduction to writing grants

(1) What are grants and what are contracts?
(2) What are the sections of grants; what does each section contain? [PHS 398 Form *Handouts*]
(3) Discussion of Grant Writing (*R03 guidelines*).
(4) Discussion of Biographical Sketches and Preliminary Studies (*Assignment for next week's lab*).

WEEK 2

CLASS SESSION (September 5) Philosophy of Research

(1) Scientific Revolutions and the Progress of Science (Kuhn's perspective).
(2) Case Study: Prions and Paradigm Shifts (Guest: Dr. Glenn Telling).
(3) Critique, Questions and Issues.

LAB SESSION (September 7) Professional Resumes and Biosketches

(1) What should appear on professional resumes?
    i. Bring copy of biosketch on overhead for discussion.
(2) Writing a "Specific Aims Section."
(3) Distribution of research proposals for NIH Study Section.

Assignment due: Biosketch and Preliminary Studies

WEEK 3

CLASS SESSION (September 12) Translating Philosophy into Action

(1) Wrap up of Kuhn
(2) Historical and Conceptual Foundations of Logical Empiricism.
(3) The Structure and Process of Scientific Method: Inductive and deductive pathways and

their interrelationship.

(4) Objectivity and Subjectivity: Perspectives on Truth.

LAB SESSION (September 14) Conducting a Literature Review

(1) Where and how to find information?
(2) What to include and what not to include?
(3) What are the best sources of information?
(4) Writing the "Background and Significance Section."

WEEK 4

CLASS SESSION (September 19) Posing and Finding the Right Question

(1) Where do research ideas come from?
(2) What makes a good question?
(3) How to ask the right question.

LAB SESSION (September 21) Specific Aims Workshop

Discussion and Critique of Specific Aims.

Assignment due: Specific Aims (bring copy on overhead for discussion)

PART II: RESEARCH DESIGN

WEEK 5

CLASS SESSION (September 26) Quantitative Approaches to Aging Research

(1) Experimentation Research Design
(2) Non-Experimental Designs
(3) Reliability, Validity, & Generalizability

LAB SESSION (September 28) How to Critique Research

(1) What to look for
(2) How to write up critique
(3) What not to do and say

Assignment Due: Independent/Dependent Variables (IV/DV) Exercise

WEEK 6

CLASS SESSION (October 3) Designs for Disentangling Age, Period and Cohort Effects

(1) Threats to non-experimental designs.
(2) Distinguishing Age, Period and Cohort Effects.
(3) Cross-Sequential Designs.

Assignment Due: R03 Background and Significance

LAB SESSION (October 5) Experimental and Non-experimental Lab

(1) Identifying independent and dependent variables.
(2) Designing a study.
(3) How to avoid major pitfalls.

Assignment due: ACT exercise

WEEK 7

CLASS SESSION (October 10) Biomedical Research Designs

Guest Faculty Member: Dr. Rodney Guttmann

Assignment due: Article Critique: Quantitative Method

LAB SESSION (October 12) Biomedical Lab Tour

WEEK 8

CLASS SESSION (October 17) Qualitative Methods
Guest Faculty Member: Dr. Graham Rowles

(1) What is qualitative research?
(2) Philosophical Foundations of Qualitative Research.
(3) Methodological Implications.
(4) Life Course Research.

Assignment Due: Article Critique: Biomedical Methods

LAB SESSION (October 19) Qualitative Methods

Qualitative Field Exercise

WEEK 9

CLASS SESSION (October 24) Mixed Method Designs:
Guest Lecture: Heidi Ewen, PhD
(1) What are mixed methods?
(2) The Role of Mixed Methods in Aging Research.
(3) Issues in Mixed Method Research

Assignment Due: Article Critique: Qualitative Methods

LAB SESSION (October 26) Conducting and Designing Mixed Method Research and Interdisciplinary Research
(1) How to design a mixed method study?
(2) Determine who will do what?
(3) How to select the team?
(4) Issues in Interdisciplinary Research.

WEEK 10:

CLASS SESSION (October 31). NIA Study Section

Assignment Due: NIA Study Section Reviews Due

LAB SESSION (November 2). NIA Study Section: Outcomes and Discussion

PART III: INTO THE FIELD

WEEK 11

CLASS SESSION (November 7) Sampling and Generalizability
(1) Statistical Sampling
(2) Biomedical Sampling (Rodney Guttmann)
(3) Sampling in Qualitative Research (Graham Rowles)

LAB SESSION (November 9) Statistics Lab I: Power Analysis
(1) How to conduct power analysis?
(2) What does design have to do with power?
(3) How can I increase power without "breaking the rules"?

Assignment Due: R03 Design and Methodology

WEEK 12

CLASS SESSION (November 14) Answering the Question: Data Collection
(1) How do we collect data?
(2) What design to we select?

LAB SESSION (November 16) NO LAB GSA

WEEK 13

TBA: JMJL
Assignment due: Abstracts (bring on an overhead to discuss)

WEEK 14

CLASS SESSION (November 28) Answering the Questions: Analysis of Quantitative and Qualitative Data

Guest Faculty Member: Amy Hosier
(1) How do I analyze data?
(2) Preparing and Coding the data
(3) What programs can I use?

(4) Do I need help?

LAB SESSION (November 30) Statistics Lab II

(1) Picking the right analysis exercise
(2) Problems and things to look for

Assignment Due: IRB Training for both Social and Biomedical Sciences must be completed by this date.

WEEK 15

CLASS SESSION (December 5) Ethical obligations of being a scientist

(1) Basic Ethical Principles.
(2) Ethical Issues and Research Participants.
    i. The Ethics of Intervention.
    ii. Informed consent (issues of cognitive impairment, the use of proxies)
(3) Protecting the Innocent (and the guilty?): Ethical Guidelines and Institutional Review Boards.
(4) **Course Wrap Up: How good were the stories we told?**
(5) **What kinds of research identities have we developed?**

LAB SESSION (December 7) Ethical Dilemmas in the Conduct and Publication of Research

(1) On Being a Scientist: Responsible Conduct of Research.
(2) Intellectual and Personal Integrity.
(3) Publication and Use of Findings.
(4) Authorship.

Assignment Due: Send in the Clones

PLEASE BE ADVISED THAT THE CONTENT OF THIS COURSE AND SEQUENCE OF CLASSES IS SUBJECT TO MODIFICATION AS THE COURSE PROCEEDS

R03 PROPOSAL SUBMISSION: FRIDAY, DECEMBER 8, 5:00 PM

NO EXTENSIONS!

GRN 650: RESEARCH DESIGN IN GERONTOLOGY

MAJOR ASSIGNMENT I

NIH R03 Grant Application

The major assignment in this course is the development of a NIH R03 grant application for submission to the National Institute on Aging. This will take considerable time and effort but we anticipate that the exercise will provide you with an invaluable learning experience.

An R03 application is a standard NIH application for a pilot research project. Detailed instructions on the development and submission of grants to NIH, including the special requirements for R03 applications, are available on the NIH web site. You will need to complete an application that conforms to these guidelines (follow the guidelines **to the letter**). We will not accept a submission that does not conform precisely to the guidelines.*

This assignment is designed as a semester long project. It is not a project that can be deferred to the end of the semester. The assignment will require you to develop your own research project and may provide an opportunity to do some work in an area that could become the domain of your dissertation research. Throughout the semester we will hold sessions within the class schedule to discuss elements of proposal development as you build toward completion of this assignment. For example, early in the semester we will discuss the development of Specific Aims. We will also conduct a simulation of an NIH Study Section in which you will be introduced to the review process for federal grants and will learn about some of the criteria for developing a well designed, well presented, and fundable project. In addition, we will be available throughout the semester to answer specific questions and provide ongoing feedback. Please be advised that this is **your** project. It is our expectation that you will define the content of the project. We have decided to avoid giving you lengthy additional instructions at this point. Materials will be handed out during the first laboratory session. We expect you to grapple with and solve the various problems and issues that arise during the development of a proposal.

The due date for final submission of your R03 application is **Monday December 12, 2005, by the close of the business day (5:00 p.m.).** No extensions are possible--**this is a firm deadline**. Please submit two copies of the final proposal.

Grading: This assignment will comprise 35% of the grade for the course.

* The following modifications of the guidelines are in effect:

(1) It is not necessary to provide a Resources and Environment section.
(2) Preparation of a project budget is not necessary.
(3) A modified version of the Preliminary Studies section is required. This will be based on material generated in a class assignment that will focus on your presentation of self as a researcher.
(4) It is not necessary to prepare a Protection of Human Subjects section.

GRN 650: RESEARCH METHODS IN GERONTOLOGY

R03 ASSIGNMENT (1)

Biographical Sketch and Preliminary Studies

Obtaining funding to conduct research requires that we are able to convince possible sponsors that we have the experience and the qualifications to complete the projects we are proposing. This entails telling our professional story in a manner that presents our history and credentials in the best possible light. In this assignment (which is linked to your NIH R03 application assignment) you are asked to undertake two tasks.

(1) Complete a NIH Biographical Sketch (using the appropriate form). This is essentially a resume that is restricted to a maximum of four pages. Be sure to follow the specific guidelines given on the form.

(2) Complete the biographical component of the "Preliminary Studies" section of your NIH proposal. In this component of an NIH research proposal you are given the opportunity to describe your credentials and the experience you have obtained that makes you qualified to undertake your project. Essentially, this is where you are selling yourself to the sponsor. It is important to emphasize any previous work you have completed that makes you especially qualified to complete the study proposed in this research application. The intent is to convince the reviewers that funding your project would be a good investment because of your ability to complete the research.

Grade: Ungraded—part of Major Assignment I Due: September 7

GRN 650: RESEARCH METHODS IN GERONTOLOGY

R03 ASSIGNMENT (2)

Specific Aims

The most important component of developing any research project is the concise statement of the problem to be addressed. Indeed, some would argue that the most important question in any research is "What is the question?" Acknowledging this truism, the National Institutes of Health have developed a standardized protocol that includes a requirement within all applications for the investigator to clearly state the "specific aims" of the project on the first page. Consequently, the first page of most NIH proposals customarily includes a paragraph or two that outlines the context of the problem to be addressed followed by a numbered listing of three (3) to five (5) specific aims.

Your task in this assignment is to prepare this Specific Aims page for your R03 application (Major Assignment I). Your submission should be no more than a single page (single spaced). It should include both an introductory context-setting paragraph and concisely stated specific aims. In addition to your written submission, you are required to make an overhead of this material that may be used in class discussion during the lab session in Week 4.

Grading: Ungraded—part of Major Assignment I Due: September 21

GRN 650: RESEARCH METHODS IN GERONTOLOGY
R03 ASSIGNMENT (3)

Background and Significance

A key component of any research proposal is presentation of a concise comprehensive review of pertinent literature that sets a context for the proposed research, provides a rationale for the specific research questions to be addressed, and explains the significance of the project.

Your task in this assignment is to prepare this component of the proposal for your R03 application (Major Assignment I). Your submission should include three components. First, it should include a carefully crafted summary of the literature in the domain of your study that is constructed in such a way that clear justification is provided for your proposed inquiry. Here is where you demonstrate how your proposal arises out of what has already been accomplished. Thus, your review might focus on gaps in the literature or identify new areas of exploration that you posit will enrich the field. A common error in such literature reviews is to make them overly repetitive, boring to read, and unfocused. This is not the place where you provide a summary of every article you have ever read on the topic! The purpose is not only to convey to the reviewers of the proposal that you are familiar with the literature in the filed. Beyond this, it is to convey the impression that you have carefully synthesized this literature, that you have thought about it, and that you have integrated it in a manner that naturally leads to the study you are proposing.

A second component of this section of your proposal should be a clear statement of the research questions you plan to address. These specific questions should flow naturally from your literature review which provides an underlying rationale. The questions should also be seen as relating directly to the achievement of the Specific Aims you have identified at the outset.

Finally, this segment of the proposal should provide information on the significance and innovativeness of the proposed study. What gap will it fill? Will it lead to a specific theoretical advance? Will it help address a major economic or social problem? Will it provide methodological innovation? Here is where you emphasize the importance of the study. Remember, two of the key criteria involved in the evaluation of proposals are "significance" and "innovation." Indeed, to directly quote two of NIH's five criteria for the review of proposals:

Significance: Does this study address an important problem? If the aims of the application are achieved, how will scientific knowledge be advanced? What will be the effect of these studies on the concepts or methods that drive this field?

Innovation: Does the project employ novel concepts, approaches or method? Are the aims original and innovative? Does the project challenge existing paradigms or develop new methodologies or technologies?

Grading: Ungraded—part of Major Assignment I Due: October 3

GRN 650: RESEARCH METHODS IN GERONTOLOGY

R03 ASSIGNMENT (4)

First Full Draft Including Design and Methods

Your task in this assignment is to develop the Design and Methods component of your proposal and to integrate this with an up-to-date revised version of the material you have already prepared in a first draft of the overall proposal. The Design and Methods section of a proposal is where you provide detailed explanation of how you will conduct the research. The format of this section is likely to vary considerably depending on the nature of your project.

It is customary to begin this section with a brief summary paragraph outlining the design of the research and the general characteristics of the methodology you will be employing. This may be followed by sections on specific hypotheses to be tested, study site/s, sample/s or animal populations to be employed, measures/tests/experiments to be conducted, procedures to be followed in collecting data, means of storing and coding information, procedures for analysis (including examples of how specific analyses will be employed in answering your research questions), a chart/timetable showing the flow of each of the activities to be undertaken in the research, and explanation of the potential limitations of the study and problems that may be encountered..

In developing your Design and Methods section, it is important to:

(1) Make sure that your research design and analyses relate specifically to the Specific Aims of your study. A useful device here is to list each specific aim and to explain how it will be addressed.

(2) Make sure that your proposed analysis is as comprehensive as is possible. A common flaw in many otherwise good proposals is failure to provide sufficient information on analysis. "Data will be analyzed using appropriate statistics" is not sufficient; you need to go into detail regarding the manner in which you will process your data. It is sometimes helpful to include a chart showing the research questions, measures to be employed for gathering information on each question, and analytical methods (statistical procedures) to be employed in answering each question.

Grading: Ungraded—part of Major Assignment I Due: November 9

GRN 650: RESEARCH METHODS IN GERONTOLOGY

R03 ASSIGNMENT (5)

Abstract

The saying that "One never has a second chance to make a first impression," is nowhere more valid than in the case of submitting a research proposal. Remember, the people who review proposals are your peers. They will do all they can to be fair and impartial. However, they are human. Often, they are confronted with the need to review multiple proposals in preparation for a Study Section. The first thing they will read about your project will be your abstract. This is a crucial part of the proposal. An informative, clearly written abstract will serve to generate the sympathy and support of a reviewer whereas an ambiguous poorly written one is likely to generate a level of irritation and provoke a more critical response. Too often, the abstract is the final component of a proposal to be written. Sometimes, a lack of time means that it is thrown together at the last minute, almost as an afterthought. This can be the proverbial kiss of death.

The purpose of this assignment is to provide you with feedback and critique on the abstract you prepare for your R03 application. You are required to bring a draft of your abstract to class on December 2 (please be sure to follow NIH Guidelines). In addition to your written submission, you are required to make an overhead of this abstract that can be used in class discussion.

Grading: Ungraded—part of Major Assignment I Due: November 17

GRN 650: RESEARCH METHODS IN GERONTOLOGY
MAJOR ASSIGNMENT II
Review of a Research Proposal

August 31, 2004

Dear Colleague:

Your name and scientific expertise has surfaced several times in conversation with colleagues about peerless candidates for the review of grant applications related to Gerontology. Proposals have been referred to a new R03 Study Section dealing with pilot projects having an integrative focus on social/behavioral and biomedical aspects of Gerontology. I am writing to ask if you are able to attend the November, 2004, meeting of the Gerontology Study Section. We will meet at the Gerontology Ph.D. Program Offices at the University of Kentucky in Room 304E. At this time you will be expected to have reviewed, written a critique, and be prepared to discuss one application as primary reviewer and one application as secondary reviewer. The honorarium has been raised slightly to $200.00 per day and of course the NIH will cover your expenses. We have been extremely fortunate to be able to recruit Dr. Graham Rowles, a respected research Gerontologist from the University of Kentucky to serve as the Chairman of this Study Section.

I realize how very busy you are. However I would be delighted if you would consider joining us for this fall meeting.

Thank you for your consideration.

Sincerely,

Joy M Jacobs-Lawson

Joy M. Jacobs-Lawson, Ph.D.,SRA

Instructions for Reviewers

Reviewers will be instructed to

(a) Address the five review criteria below and
(b) Assign a single, global score for each scored application.

The score should reflect the overall impact that the project could have on the field based on consideration of the five criteria, with the emphasis on each criterion varying from one application to another, depending on the nature of the application and its relative strengths.

The goals of NIH-supported research are to advance our understanding of biological systems, improve the control of disease, and enhance health. In the written comments reviewers will be asked to discuss the following aspects of the application in order to judge the likelihood that the proposed research will have a substantial impact on the pursuit of these goals. Each of these criteria will be addressed and considered in assigning the overall score, weighting them as appropriate for each application. Note that the application does not need to be strong in all categories to be judged likely to have major scientific impact and thus deserve a high priority score. For example, an investigator may propose to carry out important work that by its nature is not innovative but is essential to move a field forward.

(1) Significance: Does this study address an important problem? If the aims of the application are achieved, how will scientific knowledge be advanced? What will be the effect of these studies on the concepts or methods that drive this field?

(2) Approach: Are the conceptual framework, design, methods, and analyses adequately developed, well-integrated, and appropriate to the aims of the project? Does the applicant acknowledge potential problem areas and consider alternative tactics?

(3) Innovation: Does the project employ novel concepts, approaches or method? Are the aims original and innovative? Does the project challenge existing paradigms or develop new methodologies or technologies?

(4) Investigator: Is the investigator appropriately trained and well suited to carry out this work? Is the work proposed appropriate to the experience level of the principal investigator and other researchers (if any)?

(5) Environment: Does the scientific environment in which the work will be done contribute to the probability of success? Do the proposed experiments take advantage of unique features of the scientific environment or employ useful collaborative arrangements? Is there evidence of institutional support?

In addition to the above criteria, in accordance with NIH policy, all applications will also be reviewed with respect to the following:

- The adequacy of plans to include both genders, minorities, and their subgroups as appropriate for the scientific goals of the research. Plans for the recruitment and retention of subjects will also be evaluated.
- The reasonableness of the proposed budget and duration in relation to the proposed research
- The adequacy of the proposed protection for humans, animals or the environment, to the extent they may be adversely affected by the project proposed in the application.

SUGGESTED VOTING SCALE FOR RO3 APPLICATIONS

Priority Score	Percentile	Descriptor
1.0	Absolute best	
1.1		
1.2	5th percentile	
1.3		
1.4	10th percentile (top tenth)	
1.5		Outstanding
1.6	15th percentile	
1.7		
1.8	20th percentile (top fifth)	
1.9		
2.0	25th percentile (top quarter)	Excellent
2.1		
2.2	30th percentile	
2.3		
2.4	35th percentile	
2.5		Good
2.6	40th percentile	
2.7		
2.8	45th percentile	
2.9		
3.0	50th percentile MEDIAN – use as anchor for "average" application	

Below average applications (usually UNSCORED)

3.1 to 5.0

Grading: This assignment will comprise 15% of the grade for the course. Due: October 31

GRN 650: RESEARCH METHODS IN GERONTOLOGY

CLASS ASSIGNMENT (1)

Independent/Dependent Variables (IV/DV) Exercise

"There are many natural social settings in which the research person can introduce something like experimental design into his or her scheduling of data collection procedures (e.g., the when and to whom of measurement), even though he or she lacks the full control over the scheduling of experimental stimuli (the when and to whom of exposure and the ability to randomize exposures) which makes a true experiment possible. Collectively, such situations can be regarded as quasi-experimental designs. ... But just because full experimental control *is* lacking, it becomes imperative that the researcher be thoroughly aware of which specific variables his particular design fails to control." Donald T. Campbell & Julian C. Stanley (1963). *Experimental and quasi-experimental designs for research*, Boston: Houghton Mifflin.

1. Read the 10 abstracts provided with this assignment.

2. Determine whether the design is experimental, non-experimental (or neither).

3. Identify the independent variable(s) and ascertain whether they have been experimentally manipulated or whether the researcher(s) lacks full control.

4. Identify the dependent variable(s).

5. If the variable has not been experimentally controlled, delineate some of the weaknesses of the quasi-experimental design and comment on the strengths of the researcher's choice.

Materials

10 abstracts

Grading: This assignment will comprise 5% of the grade for the course. Due: September 28

GRN 650: RESEARCH METHODS IN GERONTOLOGY

CLASS ASSIGNMENT (2)

Age, Cohort & Time: Disentangling the ACT

For this assignment, you will use the different designs used to examine developmental data that you have been exposed to in class. For the assignment, you are too use your grant idea or another research topic that you find interesting and **describe** how you would explore the topic using each of the following designs (a) cross-sectional, (b) longitudinal, (c) time lagged, (d) cross-sequential, (e) cohort-sequential.

For each of the designs be sure to include specific details as to when "measurements" will be made. To supplement this material, you may want to draw a picture of design. In addition, you also need to include the strengths and weaknesses of each of designs. Finally, once you have described all the design options and discussed the strength and weakness, you will need to select the design that you think is best and justify its use.

Grading: This assignment will comprise 5% of the grade for the course. Due: October 5

GRN 650: RESEARCH METHODS IN GERONTOLOGY

CLASS ASSIGNMENT (3)

Send in the Clones – Ethical Considerations in a Brave New World

During the past 25 years molecular biology has transformed basic research and revolutionized the pharmaceutical and agricultural industries. The cloning of livestock and other animals is now a reality and human cloning is potentially well within the capability of even the most basic research facility. The sequence of the human genome is close to completion promising the eradication life-threatening illnesses. Diseased cells will be treated by gene therapies and diseased organs will be replaced with robust tissues grown in the laboratory. While it would be hard to overstate the relevance of this new technology to Gerontology, these scientific advances raise fundamental ethical and moral issues. In preparation for Lab Session 15 we would like you to:

Draft a two page statement identifying and stating your position on ethical issues **pertaining to the conduct of research using animal models** raised by the following scenario: You are the head of a research team at the University of Kentucky studying an inherited neurological disorder of older people. While the disease is rare, the syndrome shares features with other more common neurodegenerative conditions such as Alzheimer's disease (AD). Like AD, this disease is fatal and there is currently no cure. Certain forms of the disorder are caused by mutations in a gene that your team has recently discovered and cloned, paving the way for genetic testing. Cloning of the gene opens the possibility of generating an animal model for this disease that may help to determine the mechanism of pathogenesis and ultimately lead to a cure for this fatal disease.

The following web resources may be useful starting points:

http://altweb.jhsph.edu/
http://www.nhgri.nih.gov/HGP/
http://genome.wellcome.ac.uk/

Grading: This assignment will comprise 5% of the grade for the course. Due: December 6

GRN 650: RESEARCH METHODS IN GERONTOLOGY
RESEARCH ARTICLE CRITIQUE (1)
Quantitative Article Critique

For this assignment you will need to prepare a 2-4 page single spaced critique of the article (Yes, we know that APA style is double spaced but humor us with this one. The reason for asking for single space is because when reviewers review manuscripts they submit their review in single spaced format). You should be critical in your evaluation but also be positive when you like something about it or see something that is well written, or has a good design. In this assignment it is important to justify your comments. Simply saying, yes the theories are appropriate is not sufficient. You need explain why they are or why they are not. At a minimum, you should address the following issues:

- What is the research topic of the article and why do the authors think it is important to study?
- Is the question significant and the work original?
- Is the literature review appropriate?
- What theory or theories does the research rely on? Are these theories appropriate?
- What are the hypotheses?
- What type of study is this? What design is used? Is this the best way to conduct the study?
- What variables are investigated? You should identify the independent (subject variables/grouping variables that you cannot manipulate like age, sex…) and dependent variables.
- Who are the participants? How generalizable are the findings of the study? Are there details about the sample that are not included that are important for understanding the study?
- How did the experimenters collect their data? Is this the best way? Are there issues/concerns that relate to how the data were collected? Are there concerns about the measures used? Have the researchers provided sufficient information to permit replication of the study?
- Is the treatment of the participants ethical? Can you see any problems?
- What are the results of the study; are the statistics appropriate?
- Is the discussion of the findings appropriate? Do the findings support the hypotheses?
- What, if any, are some potential confounds in the study? Do the authors address these?
- What are your thoughts on the strengths and weaknesses of the study? Do the authors adequately address the limitations?
- Are there sections in the manuscript that could be shortened or lengthened?
- Are the sections of the manuscript well connected?
- Based on your critique, if you were the reviewer, would you recommend that the paper be published, revised and resubmitted, or rejected?

*Note: You do not need to answer these questions in this order. It may be best to reorganize them in a manner that gives a flow and coherence to your critique.

Resource: Locke, L. F., Silverman, S. J. & Spirduso, W. W. (2004). Reading reports of quantitative research—critically. In *Reading and understanding research (*pp.171-207). Thousand Oaks: Sage.

Grading: This article critique will comprise 10% of the grade for the course. Due: October 10

GRN 650: RESEARCH METHODS IN GERONTOLOGY
RESEARCH ARTICLE CRITIQUE (2)
Qualitative Article Critique

For this assignment prepare a 2-4 page single-spaced critique of the article. Whereas quantitative research seeks replicability and generalizability, qualitative inquiry tends to be more concerned with detailed description of context and data collection and with transferability. Where quantitative research is assessed in relation to universally shared protocols and conventions (often statistical) for acceptance of findings, qualitative research is assessed in terms of a detailed recounting of the "natural history" of the research—what happened—and assessment in terms of face validity. It is recommended that you commence with a description of the strengths of the article, follow this with your critical comments, finish your critique with some summary positive comments and conclude with your overall assessment. At a minimum, you should address the following issues:

- What is the underlying philosophical rationale for the article?
- What is the research topic of the article and why do the authors think it is important to study?
- Is the question posed significant and does it need to be addressed using a qualitative approach? Why?
- Do the authors provide sufficient information on the context of the study?
- In what way is theory involved in this study? Is the focus on generating theory or critiquing theory?
- Who are the participants? How transferable are the findings of the study? Are there additional details about the participants that are necessary for full understanding of the study?
- How were the data collected? Was this the best way? What limitations arise from the manner of data collection? Have the researchers provided sufficient information on the data collection to allow for adequate appraisal of the findings?
- Was the data appropriately coded and interpreted? What procedures did the authors use?
- Was the treatment of the participants ethical? Was entry and departure from the field handled appropriately?
- What are the primary findings of the study? Is there adequate discussion and interpretation of the findings?
- Do the authors address biases and limitations in the study and the influence of their own involvement?
- What are the overall strengths and weaknesses of the study?
- Are there sections in the manuscript that should be shortened or merit further elaboration?
- Are the sections of the manuscript well connected?
- Is this article well written and is it sufficiently evocative and informative?
- Based on your critique, if you were the reviewer, would you recommend that the paper be published, revised and resubmitted, or rejected?

*Note: You do not need to answer these questions in this order. It may be best to reorganize them in a manner that gives a flow and coherence to your critique.

Resource: Locke, L.F., Silverman, S.J. & Spirduso, W.W. (2004). Reading reports of qualitative research—critically. In *Reading and understanding research* (pp. 209-226). Thousand Oaks: Sage.

Grading: This article critique will comprise 10% of the grade for the course. Due: October 24

GRN 650: RESEARCH METHODS IN GERONTOLOGY
RESEARCH ARTICLE CRITIQUE (3)
Biomedical Article Critique

IN PREPARATION: Guidelines will be provided prior to assignment of the article

Grading: This article critique will comprise 10% of the grade for the course. Due: October 19

Grading: This article critique will comprise 10% of the grade for the course.