

## **AHS Modular Research Methods Course Descriptions (rev 09/29/2015)**

*Proposed primary faculty are listed in uppercase and bold.*

*Potential alternate faculty (people who have been suggested as having some expertise in this area as back-up instructors or guest speakers, etc.) are in parentheses.*

*TBD faculty are to be determined.*

### **AHSC 902 Philosophical Foundations (1 credit)**

**Instructor(s) (suggested names of faculty from AHS PhD programs):**

**HUMPHRY** (others TBD)

**Catalog description of course (25-30 word maximum):**

This seminar explores philosophical dispositions found in natural and social sciences. Students examine stands on different types of knowledge shapes research questions, methodology, and research procedures.

**Mini Syllabus:**

- **Long Course Title (max 100 characters incl. spaces)**  
Philosophical Foundations: Assumptions Guiding Research Methodologies
- **2-3 course objectives**
  1. Students will discuss epistemological assumptions (paradigm & theories) implicit in research in their discipline.
  2. Students analyze the associated perspectives (ways of looking at the world) and methodologies used to gain an understanding of the people as discussed in their disciplines.
  3. Students connect the different research assumptions to research questions that might be asked in their discipline.
- **List of topics covered in 5 weeks, meeting once a week for 3 hours**
  1. Philosophy of natural and social science & issues in trying to understand or theorize peoples' behaviors
  2. Assumptions implicit in the hierarchy of evidence for practice
  3. Methodology and issues related to internal and external validity
  4. Critique of evidence-based practices & where knowledge falls short in prediction
  5. Postmodernism
  6. Research assumptions to gain a deeper understanding of experiences of individuals & groups (families, classrooms, & teams)

## **AHSC 903 Qualitative Foundations (1 credit)**

### **Instructor(s) (suggested names of faculty from AHS PhD programs):**

**HUMPHRY** (Bagatell, Bailliard, Williams, Zhang)

### **Catalog description of course (25-30 word maximum):**

This seminar explores qualitative methods used to understand what people do and their situated experiences. Students learn about assumptions surrounding forms of social constructionism and interpretative research.

### **Mini Syllabus:**

- **Long Course Title (max 100 characters incl. spaces)**  
Qualitative Foundations: Understanding people and practices
- **2-3 course objectives**
  1. Students will compare and contrast different qualitative approaches and recognize the types of questions researchers ask that lead them to selecting one approach over another.
  2. Students will apply a guide to critique qualitative research.
  3. Students will propose a qualitative study that would answer questions in their disciplines.
- **List of topics covered in 5 weeks, meeting once a week for 3 hours**
  1. Philosophy of phenomenology and study of life experiences
  2. Ethnography and studying situations & practices
  3. Critical approaches for understanding issues of power, oppression and the nature of being disadvantaged
  4. Grounded theory: methods to propose concepts, models and theories from data
  5. Preparing your IRB: ethical considerations; researcher position; interviewer/observer bias; power & privilege; consent & confidentiality

## **AHSC 904 Quantitative Foundations (1 credit)**

### **Instructor(s) (suggested names of faculty from AHS PhD programs):**

**ERICKSON & FALDOWSKI** (Yu): first year

**FALDOWSKI** (Erickson, Yu): subsequent years

### **Catalog description of course (25-30 word maximum):**

This seminar introduces basic concepts employed to test hypotheses, describe behavior, and find associations. The importance of different designs, reliability and internal/external validity are explored.

### **Mini Syllabus:**

- **Long Course Title (max 100 characters incl. spaces)**  
Quantitative Foundations: alternative designs, types of knowledge, generalization
- **2-3 course objectives**
  1. Students will discuss how their discipline tests hypotheses and evaluate designs and studies for generalization (external validity).
  2. Students will evaluate research methods for evaluating the validity and reliability of variables measured in a study.
- **List of topics covered in 5 weeks, meeting once a week for 3 hours**
  1. Correlation and descriptive designs
  2. Experimental designs
  3. Quasi experimental designs and group comparisons
  4. Measuring abilities, behaviors and actions
  5. IRB (also in AHSC 903 - Qualitative Foundations)

## **AHSC 905 Designing Mixed Methods Research (1 credit)**

### **Instructor(s) (suggested names of faculty from AHS PhD programs):**

**ZHANG** (Bagatell)

### **Catalog description of course (25-30 word maximum):**

This seminar provides an overview of mixed methods research, which includes the basic designs available for mixed methods research, their main features, steps in the process of using them, and the reasons for choosing one over the others.

### **Mini Syllabus:**

- **Long Course Title (max 100 characters incl. spaces)**  
Designing Mixed Methods Research in Allied Health Sciences
- **2-3 course objectives**
  1. Describe mixed methods research, including when it should be used and its value as an approach to research.
  2. Explain the basic mixed methods research design types, their main features, steps in using them, and reasons for choosing one type over the others.
  3. Given a journal article in which a mixed methods design was used, provide a detailed critique, including identification of major strengths and weaknesses of the study.
- **List of topics covered in 5 weeks, meeting once a week for 3 hours**
  1. Understanding mixed methods research
  2. Choosing a mixed methods design
  3. Reviewing mixed methods studies
  4. Designing mixed methods studies
  5. Analyzing and interpreting data in mixed methods research
  6. Writing and evaluating mixed methods research

## **AHSC 906 Single Subject Design I (1 credit)**

### **Instructor(s) (suggested names of faculty from AHS PhD programs):**

**HALEY** (Boyd, Jacks)

### **Catalog description of course (25-30 word maximum):**

The first module of the single subject design (SSD) sequence covers the basic logic of SSD. Discussion will include the most common designs and criteria for inferring causality from study results.

### **Mini Syllabus:**

- **Long Course Title (max 100 characters incl. spaces)**  
Single Subject Design and Methods 1
- **2-3 course objectives**
  1. Describe the basic history and logic of single subject design.
  2. Recognize basic single subject design types.
  3. Analyze simple single subject designs for achievement of experimental control.
- **List of topics covered in 5 weeks, meeting once a week for 3 hours**
  1. Observation systems and behavior coding
  2. Philosophic/historic foundation of single subject designs
  3. ABAB/withdrawal/reversal designs
  4. Multiple baseline designs
  5. Alternating treatment/multi-element/comparative treatment designs
  6. Construction of graphs and basic criteria for visual inspection

## **AHSC 907 Single Subject Design II (1 credit)**

### **Instructor(s) (suggested names of faculty from AHS PhD programs):**

**HALEY** (Boyd, Jacks)

### **Catalog description of course (25-30 word maximum):**

The second module of the single subject design (SSD) sequence covers somewhat more complex designs, quantitative methods for guiding analysis, and effect size estimation. Students will learn to evaluate published research articles.

### **Mini Syllabus:**

- **Long Course Title (max 100 characters incl. spaces)**  
Single Subject Design and Methods 2
- **2-3 course objectives**
  1. Describe logic for more complex and mixed designs.
  2. Critique published single subject design articles.
  3. Apply basic quantitative methods to guide visual inspection and express effect size.
- **List of topics covered in 5 weeks, meeting once a week for 3 hours**
  1. Analysis of single subject design articles
  2. Changing criterion and other less common designs
  3. Mixed designs
  4. Social validity
  5. Quantitative decision criteria
  6. Effect size estimation and interpretation

## **AHSC 908 Measurement & Psychometrics (1 credit)**

**Instructor(s) (suggested names of faculty from AHS PhD programs):**

**FALDOWSKI** (McCulloch)

**Catalog description of course (25-30 word maximum):**

This seminar will provide students with an applied introduction to analytic approaches useful in instrument development, addressing measurement and psychometric questions and validating clinical applications.

**Mini Syllabus:**

- **Long Course Title (max 100 characters incl. spaces)**  
Measurement, Instrument Development, & Psychometrics
- **2-3 course objectives**
  1. Appreciate the psychometric properties of measures and their adequacy for specified purposes.
  2. Make informed decisions about using a measure with a particular population for a designated purpose.
  3. Apply psychometric analyses to address routine psychometric questions.
- **List of topics covered in 5 weeks, meeting once a week for 3 hours**
  1. Developing measures, constructing and evaluating items
  2. Assessing the reliability & validity of measures based on classical test theory perspectives
  3. Addressing the influence of multiple measurement factors on scale reliability through generalizability theory, including universes of generalization, inter- and intra-rater reliability, and asking “what-if” psychometric questions
  4. Applying measures in clinical practice by setting diagnostic cutoffs, establishing gold standards, and assessing sensitivity/specificity tradeoffs
  5. (Time & student interest permitting) Item operating characteristics of individual items and what they tell us about respondent characteristics – Item Response Theory in practice

## **AHSC 909 Grant Writing (3 credits)**

### **Instructor(s):**

**BRIAN BOYD and MICHAEL LEWEK (co-taught)**

### **Catalog description of course (25-30 word maximum):**

This seminar provides an applied introduction to proposal and grant writing. Students will learn to independently seek external funding to support their graduate studies and future success as academics.

### **Mini Syllabus:**

- **Long Course Title (max 100 characters incl. spaces)**  
Proposal and Grant Writing
- **2-3 course objectives**
  1. Demonstrate the ability to produce effective scientific writing
  2. Demonstrate knowledge of the structure, content, and appropriate formatting for research proposals.
  3. Demonstrate knowledge of the importance of extramural grant funding in today's academic environments.
  4. Demonstrate knowledge of the political and ethical issues associated with the preparation, review, and management of funded projects.
  5. Demonstrate knowledge of a variety of types and sources of grants and contracts as well as the unique features of each.
  6. Identify the most common reasons that individual grants are not funded.
  7. Identify appropriate funding sources for project ideas.
  8. Use an RFP or PA to:
    - Identify and explain the key information required for proposal planning.
    - Prepare an estimated budget, incorporating all appropriate direct and indirect (F&A) costs.
    - Write a complete grant proposal for a project developed independently by the student, including specified supplemental documents (i.e., NIH biosketch & budget)
  9. Demonstrate skills in reviewing and providing constructive feedback to peers relative to the criteria provided by a funding agency and standards of effective academic writing.
- **List of topics covered in 1 semester, 15 weeks, meeting once a week for 3 hours**
  1. Developing a research topic/conceptual model
  2. Organizing ideas to ensure logic and flow
  3. Finding funding opportunities
  4. Various funding mechanisms and grant reviews
  5. How to be successful at grant writing as a young investigator



6. What do grant reviewers look for?
7. What do methodologists look for when reviewing grants?
8. Overview of budget development/supplemental sections
9. Personnel preparation/training grant development
10. Students will develop a grant proposal over the course of the semester and will finish with a review panel evaluation of their finished products.

## **AHSC 910 Participatory Qualitative Methods: Advanced Application (1 credit)**

### **Instructor(s):**

**NANCY BAGATELL**

### **Catalog description of course (25-30 word maximum):**

This seminar provides an overview of the following qualitative methods aimed at capturing the lived experience: participant observations, interviews, and focus groups.

### **Mini Syllabus:**

- **Long Course Title (max 100 characters incl. spaces)**  
Application and Implementation of Qualitative Methods: Advanced Application
- **2-3 course objectives**
  1. Students will demonstrate an understanding of the philosophical underpinnings and rationale for conducting interviews/focus groups/participant observations to explore the lived experience.
  2. Students will develop an initial proposal to explore the lived experience of a population, group, or individual of their choice.
  3. Students will analyze a small qualitative data set.
- **List of topics covered in 5 weeks, meeting once a week for 3 hours**
  1. Introduction to interviews, participant observations and focus groups: rationale, types, and philosophical underpinnings; reading/assessing qualitative research using these methods
  2. Design: choosing participants; developing interview guides: selecting type, drafting questions; planning for participant observations: who, what, where, when to observe; focus group design: question development; types/number of questions; preparing your IRB: ethical questions, researcher position, interviewer/observer bias, power & privilege, consent & confidentiality
  3. Data collection & practical considerations: recruitment & retention; interviews: maximizing participant disclosure, building rapport, practical issues; participant observation: participation vs. observation, building rapport, effective field notes; focus groups: how to run them, different roles, data gathering, alternative strategies; using interviews, participant observations, and/or focus groups with other methods
  4. Analysis & interpretation: different analytic methods: available software, coding, memos, narrative approach; interview & focus group transcription; participant observation, incorporating data; findings: enhancing validity, developing themes, member checking & participant collaboration
  5. Funding & dissemination: making the case in grant writing; presenting findings

## **AHSC 911 Fundamentals of Group-Based Intervention Trial Design I (Experimental Studies) (1 credit)**

### **Instructor(s) (suggested names of faculty from AHS PhD programs):**

**DEBBY GIVENS (Debby Givens will appoint an instructor), co-taught with  
RICHARD FALDOWSKI**

### **Catalog description of course (25-30 word maximum):**

This seminar focuses on applications of experimental group-based research designs commonly used in Allied Health Sciences.

### **Mini Syllabus:**

- **Long Course Title (max 100 characters incl. spaces)**  
Fundamentals of Group-Based Intervention Trial Design 1
- **2-3 course objectives**
  1. Make informed choices among randomized group-based intervention trial study designs based on their strengths and limitations and suitability for addressing specific research questions.
  2. Balance clinical and pragmatic design considerations against ideal design characteristics in sampling, recruitment, control condition(s), blinding, protocol standardization, and outcome selection.
  3. Perform power/sample size calculations and key analyses for major types of group-based experimental intervention trial designs.
- **List of topics covered in 5 weeks, meeting once a week for 3 hours**
  1. Introduction to major types of experimental designs: simple randomized controlled trials, repeated measure trials, longitudinal randomized trials, and cluster-randomized trials, including their comparative strengths and limitations
  2. Key design choices including selection of control group(s), randomization methods, and blinding, as well as how they are implemented in practice
  3. Power and sample size considerations, including power calculations and factors that influence it (e.g., stratification/blocking, multiple sites, unbalanced sample allocation, and baseline covariates)
  4. Standardization of intervention protocols, designation of primary/secondary outcomes, and methods to control Type I error rates
  5. Analyses of experimental intervention trial data under the *intent-to-treat* principle. Students should be able to implement analyses for various types of outcome variables under the intent-to-treat principle, while accounting for missing data and other study-compromising sources of bias
  6. Conducting appropriate secondary and exploratory follow-up analyses, including analyses under the *as-treated* principle
  7. Integrating mixed methods into experimental group-based designs

## **AHSC 912 Fundamentals of Group-Based Intervention Trial Design II (Non-Experimental Studies) (1 credit)**

**Instructor(s) (suggested names of faculty from AHS PhD programs):**

**DEBBY GIVENS (Debby Givens will appoint an instructor), co-taught with  
RICHARD FALDOWSKI**

**Catalog description of course (25-30 word maximum):**

This seminar focuses on applications of non-experimental group-based research designs commonly used in Allied Health Sciences.

### **Mini Syllabus:**

- **Long Course Title (max 100 characters incl. spaces)**  
Fundamentals of Group-Based Intervention Trial Design 2
- **2-3 course objectives**
  1. Choose the strongest possible non-experimental intervention trial design compatible with both the research question and the contextual, logistic, or ethical concerns that preclude randomization.
  2. Learn a set of analytic tools for identifying and circumventing major sources of bias in non-experimental group-based trials.
  3. Perform power/sample size calculations and key analyses for major types of outcomes in group-based non-experimental intervention trials.
- **List of topics covered in 5 weeks, meeting once a week for 3 hours**
  1. Key limitations of non-experimental group-based intervention trial designs compared to experimental studies, and choices for employing the strongest possible quasi-experimental or non-experimental design to address intervention research questions when randomization is precluded by contextual, logistic, or ethical concerns.
  2. Design alternatives, including regression discontinuity designs, single-case designs, quasi-experimental designs, and observational studies. (This ordering, by design strength, is based on IES WWC criteria.)
  3. Analytic strategies for identifying potentially important sources of bias (compromises to a study's internal and/or external validity) and analytic tools for mitigating them (e.g., covariate adjustment, matching, propensity scores, pattern mixture or selection modeling, weighting, or sensitivity analyses)
  4. Review of key design choices such as selection of comparison group(s) and blinding, standardization of intervention protocols, designation of primary/secondary outcomes, and methods to control Type I error rates from group-based experimental designs and how they pertain to non-experimental designs

5. Power and sample size considerations, including power calculations and factors that influence it (e.g., stratification/blocking, multiple sites, unbalanced sample allocation, and baseline covariates)
6. Implementation of analyses, for various types of outcome variables, that both compensate for potential bias and address specified research questions
7. Conducting appropriate secondary and exploratory follow-up analyses, including analyses under the *as-treated* principle
8. Integrating mixed methods into non-experimental group-based designs

## **AHSC 913 Survey Design and Methods (1 credit)**

### **Instructor(s):**

**DEBBY GIVENS (Debby Givens will appoint an instructor)**

### **Catalog description of course (25-30 word maximum):**

This seminar will cover the elements applicable to four types of survey design: mail, telephone, internet, and face-to-face as a methodology to inform research question(s). An essential component of survey design is to precisely define the sample frame so information randomly collected from individuals who represent that sample can be used to describe the larger population. The sources of error and questionnaire development will two primary foci of the module.

### **Mini Syllabus:**

- **Long Course Title (max 100 characters incl. spaces)**  
Survey Design and Methods
- **2-3 course objectives**
  1. Describe appropriate uses of survey research.
  2. Identify sampling errors that degrade validity and reliability of the method.
  3. Develop well-focused and analyzable questions.
  4. Identify the strengths and weaknesses of various types of survey methods.
  5. Demonstrate and relationship between survey and quantitative design.
- **List of topics covered in 5 weeks, meeting once a week for 3 hours**
  1. Methodological characteristics
    - Rational for selection survey design, advantages-disadvantages
    - Types of surveys and rational for the use of one versus another
  2. Sampling
    - Sampling frame – group from which sample is drawn
    - Sampling pitfalls
    - Nonrandom sampling
    - Random sampling (simple, stratified, cluster)
    - Sampling error (frame error, non-response bias, self-selection, etc.)
  3. Construct validity and reliability
  4. Maximizing response rates
  5. Question development
    - Clearly identification of research questions
    - Selecting question formats
    - Response paradigms
    - Stems and branches

## **AHSC 914 Academic Writing (1 credit)**

### **Instructor(s) (suggested names of faculty from AHS PhD programs):**

**ERICKSON** (Gross)

### **Catalog description of course (25-30 word maximum):**

This seminar will focus on different types of academic and scientific writing and the shifts that are required to meet the demands of different audiences, outlets, and purposes.

### **Mini Syllabus:**

- **Long Course Title (max 100 characters incl. spaces)**  
Academic and Scientific Writing
- **2-3 course objectives**
  1. Read, write, analyze, and respond to a variety of texts.
  2. Adapt own writing style, voice, and content according to the audience, outlet, and purpose.
  3. Develop confidence in writing and revision skills required to improve own writing on an on-going basis.
- **List of topics covered in 1 semester, 15 weeks, meeting once a week for 1 hour**
  1. Summarizing and synthesizing the literature: Understanding the differences in style, voice and content
  2. Crafting an argument: writing that asserts a point of view supported by the literature
  3. Transitions, conclusions, openings, and abstracts: Focusing on cohesion, brevity, and clarity
  4. Research proposals: addressing the audience and other requirements
  5. Writing research reports: traditional (introduction, methods, results, discussions, implications, and conclusions) and other formats

## **AHSC 896 Independent Study: Research Methodology (1-3 credits, variable)**

**Instructor(s) (suggested names of faculty from AHS PhD programs):**

**ZHANG and FALDOWSKI**

**Catalog description of course (25-30 word maximum):**

This seminar involves directed study through readings, projects, and papers on research methodology. It is designed for students who have completed basic methods courses and who want to pursue training in specific research methods.

**Mini Syllabus:**

- **Long Course Title (max 100 characters incl. spaces)**  
Independent Study: Research Methodology in Allied Health Research
- **2-3 course objectives**
  1. Establish a task/goal for each independent researcher/individual.
  2. Contribute original scholarship of the topics in allied health sciences research.
- **List of topics covered, meeting either for 5 weeks (once a week for 3 hours) or 15 weeks (once a week for 1 hour) for 1 credit. Can be repeated for up to 3 credits with either instructor.**
  1. Developing research questions
  2. Choosing a research design
  3. Identifying a conceptual framework within a design type
  4. Designing a research study or proposal
  5. Preparing a scholarly paper or proposal