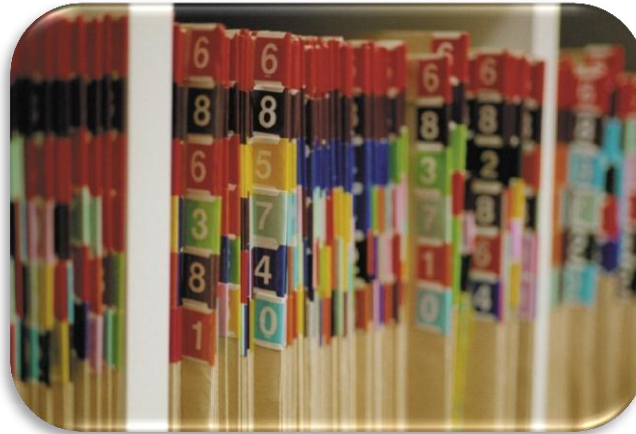


HHP 364

Research Methods in Health and Human Performance



Images from Microsoft.com

Taught by:

Kathe A. Gabel, PhD, RD, CSSD
Department of Health and Human Performance

Significance Test

Null: population $\mu = 0$

Alternative: population $\mu > 0$

		In truth, the null is...	
Decision		True	False
Accept Null H_0	Correct!	Type II predict zero but nonzero	
	Type I predict nonzero but zero	Correct!	

Image from: <http://www.bionicturtle.com/>

Spring Semester, 2012
College of Allied Health Professions
Montana State University – Billings

MSU – Billings
College of Allied Health Professions
Department of Health and Human Performance
Spring, 2012

Course Rubric & Title: HHP 364 – Research Methods in Health and Human Performance

Instructor: Kathe A. Gabel, PhD, RD, CSSD
Office/Hours: PE 117, MW at 9:00 – 10:00, by apptmt
Phone: 406-657-2927
E-mail: kgabel@msubillings.edu
Website: <http://www.msubillings.edu/CAHPFaculty/Gabel/>
Class Times: TR 12:10 – 1:40 p.m.
Location: PE 121
Website for dept. information: <http://www.msubillings.edu/hhp/>

Required Text: Thomas, J.R., Nelson, J.K., & S.J. Silverman. 2011. *Research Methods in Physical Activity*. Champaign, IL: Human Kinetics

Required Course Packet: Gabel, K.A., (2012) *Course Materials for HHP 364*
MSU-Billings Bookstore.

Catalog Description: **HHP 364 – 3 credits**
Research Methods in Health and Human Performance

This course provides students with experience and knowledge which will allow them to critically analyze and evaluate completed research in health and human performance. Students will examine methods of assessment, prescription, and evaluation in health and human performance activities.

Course Prerequisites: HHP 100 – Foundations of Exercise Science
Statistics 216 or equivalent statistics course
Junior or Senior level

Course Goals:

Upon successful course completion, you will be able to:

Module 1

- Explain the purpose of research in Health and Human Performance.
- Successfully pass the *National Institutes of Health* on-line exam for research.
- Explain and demonstrate ethical behavior, including safe and respectful treatment of participants, honesty in data collection, authorship and data presentation.

Module 2

- Use a mind map to develop research questions for potential research projects.
- Identify and define a research problem, including associated hypotheses, limitations, delimitations and underlying assumptions.
- Search available computer data bases to obtain scientific, peer-reviewed literature related to a selected research project.
- Critically analyze published literature in the discipline of Health Promotion and Human Performance (HHP).

Module 3

- Demonstrate an understanding of selected basic statistical and research concepts.
- Correctly interpret basic descriptive and inferential statistics.
- Discuss factors that affect the sensitivity of an experiment, including statistical power.
- Explain and evaluate validity (internal, external, statistical, clinical) and reliability.

Module 4

- Evaluate the strengths and weaknesses of research designs:
 - experimental,
 - quasi-experimental,
 - survey,
 - historical,
 - qualitative,
 - and epidemiological
- Review, select and use research designs appropriate to specific research questions.
- Correctly format, cite, and reference scientific research reports and manuscripts.
- Demonstrate initial professional skill in
 - proposing,
 - conducting and
 - presenting an original research project.

Course Content:

Please see specific course topics listed in your **Overview of Course Content** and tentative **Semester Schedule**.

Class Policies:

Your conduct is to be consistent with the Code of Student Conduct in the current *MSUB Student Handbook*, pages 49-50. This is found on-line:

<http://www.msubillings.edu/studenthandbook/StudentHandbook0809.pdf>

Academic dishonesty includes cheating, plagiarism, fabrication, and misrepresentation. A student **will fail the course** if he or she participates in academic dishonesty, i.e. cheating, plagiarism, dishonesty, inappropriate use of electronic devices, or any violation of expectations listed in the *MSUB Student Handbook*.

At this level of your education, you are expected to demonstrate professionalism in all behavior, i.e.

- respect for others,
- presentation & completion of projects,
- respect for diverse opinions,
- depth of inquiry,
- punctuality and participation in class discussions and activities.

Class Attendance:

Attendance to each class is expected. Any missed information is your responsibility.

Class Accommodations:

If you have a documented disability, please contact the office of Disability Support Services (657-2283) during the first week of the course. They can assist you.



Course Evaluation: Grades will be assigned according to the following criteria

Grade	Percent	Points
A	93 – 100	465 – 500
A-	90 – 92	450 – 464
B+	87 – 89	435 – 449
B	83 – 86	415 – 434
B-	80 – 82	400 – 414
C+	77 – 79	385 – 399
C	73 – 76	365 – 384
C-	70 – 72	350 – 364
D+	67 – 69	335 – 349
D	63 – 66	315 – 334
D-	60 – 62	300 – 314
F	<60	<300

Evaluative Components:		
Exam 1		75 points
Exam 2		75
Exam 3		75
Quizzes (n=5)		25
Critique of Research article		25
Research Proposal		25
Research Presentation		50
Research Project and Paper		150
Total		500 points

Late Policy: 25% of possible points are deducted each day late. After 4 days, the assignment receives zero credit.

Required for class completion:

1. NIH certification – Certificate will be submitted for departmental file.
2. Your research project can only begin after successful passage of this exam.



Record of Course Performance

Evaluative Components	Possible Points	Earned Points
Exam 1	75	_____
Exam 2	75	_____
Exam 3	75	_____
Quizzes (n=5)		
Q1	5	_____
Q2	5	_____
Q3	5	_____
Q4	5	_____
Q5	5	_____
Critique of Research Paper	25	_____
Research Proposal	25	_____
Research Presentation	50	_____
Research Project and Paper	150	_____
 Total	 500	 _____ / _____ = _____ %



HHP 364 – Research Methods in HHP Overview of Course Content and Evaluation

- Module 1:** Introduction and Ethics
- Module 2:** Research problems, Literature Review and Critique
- Module 3:** Statistics
- Module 4:** Research Designs and Presentations

Overview of Required Course Components:

1. **Exams and quizzes:** Exam material is taken from class lecture, discussion and related readings from text. Types of exam questions include short essay, definitions, multiple-choice, true/false, fill in the blank, matching, and calculations. Quiz material is taken from assigned reading in your text.
2. **Research Proposal:** Your typed 4-page **paper** will contain a title, abstract, introduction (background, research problem, purpose, questions, hypotheses, assumptions, delimitations and limitations), methods (research design, population, sampling method, instruments, procedures, and statistics), budget and timeline.
3. **Critique of Research Paper:** This typed 2 page **paper** will present evaluative statements on a peer-reviewed and self-selected article related to your **Research Proposal**. The article will represent either descriptive or experimental research. Required paper components will depend upon the type of research, i.e., descriptive, experimental.
4. **Research Presentation:** This will be a 12 minute **presentation** complete with *PowerPoint* slides and components of introduction/literature review, research problem/hypothesis, methodology, results, discussion and conclusion. Following each presentation, questions will be asked for about 2 minutes. Presentations will occur during regular class time and graduate students will be in attendance to evaluate the presentations and provide constructive feedback.
5. **Research Project:** The final assignment is a typed 10-page **paper** discussing your completed research. Components include: Introduction, problem statement, literature review, justification, research problem/questions and related hypotheses, operational definitions, delimitations, methodology (subject selection, research instruments, equipment, procedures, research design and statistics), data analysis, results, discussion, limitations, conclusion, references and appendices.
6. **NIH Certification:** Before completing any research with human subjects, successful completion of the *National Institutes of Health* certification is required.

Important Dates to Note



- 12.1.12 First day of class
- 24.1.12 Locate and print a minimum of 3 research articles for your proposal.
- 26.1.12 Draft your problem statement.
- 31.1.12 Submit your research critique.
- 2.2.12 Draft your methods section.
- 7.2.12 Exam 1**
- 14.2.12 Submit an electronic and a hard copy of your research proposal.
- 15.3.12 Exam 2**
- 10.4.12 Research presentations begin.
- 19.4.12 Submit your research paper and supporting materials (send electronic copy and a hard copy.)
- TBA Exam 3**



Tentative Schedule for Spring 2012

Date	Topics	Related Reading	Preparation and/or Activity
12.1.12	<ul style="list-style-type: none"> • Introduction • Course requirements • Types of research • Overview of the research process 	Chapter 1	<p>Goals: Purchase text and course packet.</p> <p>Please read Chapter 1, highlighting <i>Types of research</i> and <i>Steps in the research process</i>.</p>
17.1.12	<ul style="list-style-type: none"> • Ethical Issues in Research and Scholarship <ul style="list-style-type: none"> ○ Copyright issues ○ Informed consent ○ NIH Certification 	Chapter 5	<p>Goal: Please read Chapter 5, highlighting <i>Scientific Dishonesty</i> and <i>Protecting Human Participants</i>.</p> <p>Goal: Complete the certification. Please print two copies (one for the Department and one for your Professor).</p> <p>Goal: Develop a consent form for an experimental study.</p>
19.1.12	<ul style="list-style-type: none"> • Introduction to Mind maps • Choice of research problem • Literature Review 	Chapter 2	<p>Goal: Please read Chapter 2, highlighting the <i>Literature search</i> and <i>Critique</i> of a research paper.</p>
24.1.12	<ul style="list-style-type: none"> • Literature search strategies • MSUB Library resources 	Chapter 2	<p>12:10 – Preparation for Literature Review.</p> <p>12:45 - Visit to MSUB Library.</p> <p>Locate and print a minimum of three research articles for your proposal.</p>

26.1.12	<ul style="list-style-type: none"> • Critique of research articles • Continuation of Mind maps • Stating the research problem • Identification of variables • Research designs 	Chapter 3	<p>Goals: Items to bring to class:</p> <ul style="list-style-type: none"> • your text, • research articles, and • Mind map. <p>Please read Chapter 3, highlighting <i>Stating the research problems</i>.</p> <p>Draft your problem statement.</p>
31.1.12	<ul style="list-style-type: none"> • Stating your hypothesis • Operational definitions, assumptions, delimitations, and limitations 	Chapter 3	<p>Goal: Write your statement of hypothesis, operational definitions, assumptions, delimitations, and limitations.</p> <p>Submit the Critique of your selected research article.</p>
2.2.12	<ul style="list-style-type: none"> • Methodology: <ul style="list-style-type: none"> ○ participants, ○ instruments, ○ procedures, ○ design, and ○ analysis 	Chapter 4	<p>Goals: Please read Chapter 4, highlighting <i>Describing participants, instruments, procedures, design, and analysis</i>.</p> <p>Draft a preliminary list of methods.</p>
	○		
7.2.12	<p>Exam 1 (75 pt) Modules 1 & 2 Introduction, Ethics & Research process</p>	Chapters 1 - 5	<p>Goal: At least 80% achievement on exam</p>

9.2.12	<ul style="list-style-type: none"> • Sample selection • Descriptive terms 	Chapter 6	<p>Goals: Please read Chapter 6, highlighting <i>Sampling and Measures of Central Tendency and Variability</i>. Apply to research projects.</p>
14.2.12	<ul style="list-style-type: none"> • Probability • Effect Size • Type I and II errors • Power 	Chapter 7	<p>Goals: Please read Chapter 7, highlighting <i>Probability, Meaningfulness, and Power</i>. Apply to research projects.</p> <p>Goal: Please submit 2 copies of your proposal in class – one electronic for Department and one hard copy for grading.</p>
16.2.12	<ul style="list-style-type: none"> • Correlation and regression 	Chapter 8	<p>Goals: Please read Chapter 8, highlighting <i>Understanding the nature of correlation, Coefficient of correlation, and working with regression equations</i>. Apply to research projects</p>
21.2.12	<ul style="list-style-type: none"> • T-tests and ANOVA 	Chapter 9	<p>Goal: Please read Chapter 9, highlighting type of t tests, Interpreting t, and Analysis of Variance. Apply to research projects or data sets.</p>

23.2.12	<ul style="list-style-type: none"> • Repeated Measures ANOVA 	Chapter 9	Goal: Apply to research projects.
28.2.12	<ul style="list-style-type: none"> • Nonparametric techniques <ul style="list-style-type: none"> ○ Chi Square ○ Contingency tables 	Chapter 10	Goal: Please read Chapter 10, highlighting <i>Chi square and Procedures for rank-order data</i> . Apply to research projects.
1.3.12	<ul style="list-style-type: none"> • Validity <ul style="list-style-type: none"> ○ Threats to internal validity ○ Threats to external validity • Reliability • SEM 	Chapters 11 & 18	Goal: Please read Chapter 11, highlighting <i>Validity, Reliability, and Standard error of measurement</i> . In Chapter 18, focus on <i>Threats to internal and external validity</i> . Apply to research projects.
5.3.12 – 9.3.12	Spring Break – No classes!		
13.3.12	<ul style="list-style-type: none"> • Standard scores • Scales for Measuring Affective Behavior 		Goal: Please read Chapter 11, highlighting <i>Standard scores and Measuring affective behavior</i> . Apply to research projects.
15.3.12	Exam 2 (75 pt) Module 3 Statistics	Chapters 6 - 11	Goal: At least 80% achievement on exam

20.3.12	<ul style="list-style-type: none"> • Research Designs • Type of Research: Survey • Software: <i>SurveyMonkey and Epi Info</i> 	Chapter 15	<p>Goal: Please read Chapter 15, highlighting <i>Questionnaires, Dephi method, and interviews.</i></p> <p>Report on project progress.</p>
22.3.12	<ul style="list-style-type: none"> • Application of survey design • Presentation of results 		<p>Goal: Develop, distribute, and analyze a survey for a HHP issue.</p>
27.3.12	<ul style="list-style-type: none"> • Experimental Research <ul style="list-style-type: none"> ○ True experimental design 	Chapter 18	<p>Goal: Please read Chapter 18, highlighting <i>types of designs.</i></p> <p>Please read provided article for discussion in class.</p> <p>Goal: Critique selected research classified as experimental.</p>
29.3.12	<ul style="list-style-type: none"> • Developmental Research <ul style="list-style-type: none"> ○ Longitudinal designs ○ Cross-sectional designs • Case studies • Observational Research • Qualitative research – focus groups 	Chapters 16 & 19	<p>Goal: Please read Chapter 16, highlighting <i>Developmental research, Case studies, and Observational research.</i></p> <p>Focus on <i>Procedures</i> in Chapter 19.</p> <p>Critique selected research classified as developmental, case or observational.</p>

	<ul style="list-style-type: none"> • Epidemiology Research <ul style="list-style-type: none"> ○ Designs 	Chapter 17	Goal: Please read Chapter 17, highlighting <i>Physical Activity measurement definitions, assessment of physical activity, and epidemiologic study designs.</i>
3.4.12	Presentation protocols		
10.4.12	<ul style="list-style-type: none"> • Presentation, n= 5 • Required class attendance 		Deduction of points will result if not present.
12.4.12	<ul style="list-style-type: none"> • Presentations, n= 5 • Required class attendance 		Deduction of points will result if not present.
17.4.12	<ul style="list-style-type: none"> • Presentations, n = 5 • Required class attendance 		Deduction of points will result if not present.
19.4.12	<ul style="list-style-type: none"> • Presentations, n = 5 • Required class attendance 		Your project paper is due today. Please submit 2 copies – one electronic copy for the Department and one hard copy for grading.
TBA 10:00 – 11:50 a.m.	Exam 3 (75 pt) Module 4 Research Designs and Presentations	Chapters 15 – 19, and presentations	