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PT 561.01: Research Methods in Physical Therapy

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PT 561 – Research Methods in Physical Therapy

Doctoral Physical Therapy Students

(Fall, 2008)

- I. **Instructor:** Chuck Leonard, PT, PhD
 - Phone 243- 2710
 - Email: charles.leonard@umontana.edu
 - Office Hours: By appointment

- II. **Credits:** 2

- III. **Clock Hours:** 30

- IV. **Meeting Time:** Monday 10:10-Noon

- V. **Required Textbooks (recommended) and Materials:** Portney LG, Watkins MP, Foundations of Clinical Research, Applications to Practice, 2nd Ed, Appleton & Lange, 2000.

Or any statistical text with similar material

- VI. **Course Description:** Basic principles of research design and statistical analysis, investigation and analysis of published research. Application of statistical analysis to clinical settings.

VII. Course Objectives:

Code for Objectives:

1 - Knowledge and Comprehension

2 - Application

3 - Psychomotor

4 - Synthesis

5 - Affective

Content Area (indicated by capital letters)

A. Research Design and Process (CC-2)

- 1.1 Describe the various types of research design to include: descriptive, associational, experimental, single-subject, and epidemiological studies.(CC-2; EXO-1)
- 1.2 Given a research article, determine the type of design. .(CC-2; EXO-1)
- 1.3 Discuss ethical issues in the research process. (CC-2; EXO-5,8,13)
- 4.1 Demonstrate knowledge of the components of a published research manuscript by successful completion of critiques of research articles. (CC-2; EXO-5,8,13)
- 4.2 Given a research article, critique the article in terms of design, method, analysis, and discussion. (CC-2; EXO-5,8,13)
- 5.1 Demonstrate appropriate professional behaviors during class discussions. (CC-2; EXO-8,13)

B. Sampling and Surveys (CC-2)

- 1.1 Describe the various methods of sampling. (CC-2; EXO-1)
- 1.2 Discuss the process of designing a survey. (CC-2; EXO-1)
- 4.1 Given a research question, determine the appropriate sampling technique. (CC-2; EXO-1)
- 4.2 Given a research article using a survey instrument, critique the survey instrument. (CC-2; EXO-1,13)
- 4.3 Given a project, design an appropriate survey instrument. (CC-2; EXO-1)
- 4.4 Given the results of a survey, determine the appropriate statistical analysis (CC-2; EXO-1).

C. Statistical Analysis (CC-2)

- 1.1 Describe the various levels of measurement. (CC-2; EXO-1)
- 1.2 Describe when various statistical analyses would be performed to include measures of central tendency, variation, frequency analysis, graphs and tables, analysis of differences, analysis or relationships, and non-parametric analyses. (CC-2; EXO-1)
- 1.3 Describe the meaning of the results of various statistical analyses. (CC-2; EXO-1)
- 1.4 Describe the statistical analysis that can be done with selected statistical packages to include Excel and SPSS. (CC-2; EXO-1)
- 2.1 Given data, determine the level of measurement. (CC-2; EXO-1)
- 2.2 Given a data set, determine the appropriate statistical analysis. (CC-2; EXO-1)
- 3.1 Apply statistical analysis to clinical settings including setting up data sets, satisfaction surveys, and collective outcome data sets. (CC-2; EXO-1)
- 4.1 Given a research design and data set, determine the appropriate statistical analysis. (CC-2; EXO-1)
- 4.2 Given a statistical analysis, interpret the output in terms of relevance to the research question. (CC-2; EXO-1)

D. Evidence-based Practice (CC-1,2,3,4,5)

1.1 Describe elements of Patient Intervention Comparison Outcomes (PICO) (C-1-5; EXO-1,2,3)

1.2 Describe elements of a Critically Appraised Topic (CAT) (C-1-5; EXO-1,2,3)

2.1 Perform a PICO (C-1-5; EXO-1,2,3)

2.2 Perform a CAT (C-1-5; EXO-1,2,3)

E. Ethics (CC-5.1, 5.3, 5.7, 5.10, 5.13, 5.17, 5.18, 5.19, 5.20)

1.1 Student will take on-line ethics and receive University certification. (EXO-8,9,12,13)

1.2 2.1 Student will be able to list the steps toward making an ethical decision (EXO-1,8,9,12,13)

4.1 Given a case study, student will be able to discuss ethics involved (EXO-1,8,9,12,13)

5.1 Given a case study student will be able to make an ethically-based decision. (EXO-1,8,9,12,13)

VIII. Teaching Methods and Learning Experiences:

The course will be administered as follows:

- 4 hours research design
- hours student research project discussion
- hours evidence-based practice
- 2 hours ethics
- hours xcel spreadsheets and graphing
- hours SPSS basics
- 12 hours statistical analysis

IX. Methods of Student Evaluation/Grading:

Written examination	50%
Written and computer assignments	40%
Classroom participation	10%

Grading Scale:	70-79% C	
	80-89% B	
	90-100%	A

At the end of the course, the student will, as demonstrated in written and computer assignments and written examination demonstrate competency with at least 70% accuracy.

X. Professional Behaviors

Professional behaviors are expected in the course. These include (but are not limited to): responsibility for one's own learning, completion of group and individual assignments in a timely manner, on time attendance unless excused, coming to class prepared, treating fellow students, staff, and faculty with respect, receiving and giving constructive criticism if appropriate. Please refer to the "Generic Abilities" section in your student handbook.

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All student need to be familiar with the Student Conduct Code. The Code is available for review online at <http://www.umt.edu/SA/VPSA/index.cfm/page/1321>.

Plagiarism is to be avoided. For information on plagiarism please visit these links:

http://www.calstatela.edu/centers/write_cn/plagiarism.htm

<http://www.lib.umt.edu/services/plagiarism/index.htm>

PT-561

- Wk 3 9/8 Organization of IPS etc.
Research Design
- Wk 4 9/15 Research Process
IRB
NIH or UM Ethics Certification
- Wk 5 9/22 How to prepare for and write a Research Proposal
Assign and review process for Research Article Discussions
- Wk 6 9/29 Student reports on research or IPS.
Validity/Reliability; independent variables; graphing variables
Evidence-based Practice
- Wk 7 10/6 Descriptive Statistics
Intro SPSS and Xcel
- Wk 8 10/13 Continue SPSS and Xcel
Graphing assignment
- Wk 9 10/20 Inferential Statistics/Non-parametrics
- Wk 10 10/27 Correlation/Regression Analyses
- Wk 11 11/3 Research Article Discussions

Wk 12 11/10 Research Article Discussions
Research Proposal Presentations (3-5 PM) Research groups only

Wk 13 11/17 No Class
3rd Year Student Poster Presentations (Skaggs Lobby 3-5 PM)

Wk 14 11/24 Ethics in Research

Wk 15 12/1 Review and catch-up
Sample Final questions
Student Evaluations