SW 430: Research Methods in Social Work I

I. NUMBER OF CREDITS: 4

II. PREREQUISITES

Completion of University Mathematics Requirement: MTH 104 or MTH 132 or MTH 110 or MTH 201 or MTH 116 or STT 200 or MTH 124 or MTH 120 or STT 201 or MTH 152H

III. COURSE DESCRIPTION

This course is the first in a two-part sequence that is designed to provide foundation knowledge of research methods used in social work. This course will cover research processes employing quantitative methods as applicable to the measurement of outcomes of social work interventions.

Methods of Instruction

Skills and knowledge will be imparted via assigned readings and exercises, lecture, and class discussion. There will be material presented in class that will not be covered in the assigned readings. Similarly, there will be material presented in the assigned readings that will not be covered in class.

You will be responsible for all material.

IV. TEXTS AND OTHER MATERIALS

A. Required


Part 1*: Available now
Part 2*: Available September 7

* At the College Bookstore, Hannah Plaza
4790 S. Hagadorn Road, East Lansing, MI 48823
Phone: 517-333-0505

Calculator: At a minimum, the calculator should be able to carry out basic arithmetic, square root, and power functions.

It would be useful to you if the calculator were also capable of computing basic statistical functions (mean, variance, and standard deviation).
A. Required (continued)

**On-Line Reserve:** Available on line at class Web site:

<http://www.msu.edu/course/sw/430/stocks/>

**Adobe Acrobat Reader:** Freeware available on line at


V. COURSE OBJECTIVES

This course is designed to provide foundation knowledge of quantitative research methods used in social work. A student who successfully completes this course should be able to demonstrate the following:

- the ability to use inductive and deductive methods in evaluation of theory and practice;
- an understanding of and the ability to apply the principles for the ethical conduct of research;
- an understand of the impact of research on participants and relevant groups, especially oppressed populations.
- knowledge and skills needed to measure social work and other social science concepts;
- an understanding of the importance of and the ability to construct visual displays of data (tabulation, charting, graphing);
- the ability to describe univariate distributions in terms of shape, center, and spread;
- an understanding of and ability to use the basic principles of probability and sampling to make inferences;
- the ability to appropriately use data analytic techniques such as contingency tables, linear regression, and parametric and nonparametric statistical hypothesis tests for designs used in the evaluation of single samples, two dependent samples, and two or more independent samples (including crossed factor designs) to investigate practical and theoretical issues related to social work practice;
- the ability to carry out power analyses to determine appropriate sample sizes for parametric and nonparametric statistical hypothesis tests.
- the ability to read and interpret output from statistical software packages;
- the ability to reason statistically and to apply this skill to one’s practice and to the evaluation of the professional literature in social work and related disciplines.

VI. COURSE FORMAT

Skills and knowledge will be imparted via assigned readings and exercises, lecture, class discussion, and problem analysis. There may be material presented in class that will not be covered in the assigned readings. Similarly, there may be material presented in the assigned readings that will not be discussed in class.

You will be responsible for all material presented.
A. A Note on Readings and the Class Internet List

There are self-tests throughout each chapter. I expect you to take each of these self-tests and compare your answers with the answers at the end of each chapter. If you cannot answer a self-test or do not understand why your answer is incorrect, I expect you to post a question to the class Internet list (timhai@list.msu.edu) that clearly states the difficulty. If you do not understand content presented in the text, I expect you to post a question to the class Internet list (timhai@list.msu.edu) that identifies the specific content you do not understand.

I shall not answer questions about self-tests and textbook content in class unless you have first posted a question to the class list and found the answer not helpful.

VII. ASSIGNMENTS AND BASIS FOR GRADING

I shall evaluate how well you fulfill the course objectives by your performance on class quizzes, papers, and other assignments. Other behavior in class also will contribute to your grade.

A. Class Conduct

I expect students to behave as active members of a learning community. Since this class is part of your professional training as a social worker, the expectations placed upon you are higher than those that are outlined in the MSU publication *Spartan Life: Student Handbook and Resource Guide*. These expectations include, but are not limited to, those discussed in the MSU School of Social Work *Field Education Manual* with special emphasis on *Professional Expectations of Social Work Students*. This includes conformity to the *NASW Code of Ethics*.

Failure to abide by these expectations, including engaging in disruptive behavior, will result in lower grades or expulsion from the class.

Disruptive behavior includes, but is not limited to, carrying on conversations or engaging in activities other than class activities during class, use of computers unless explicitly instructed to, refusing to participate in class activities, using a class Internet discussion list or on-line forum to discuss issues other than class content, and other behavior that detracts from enhancing the learning community.

A minor disruption will result in a lower class participation grade for the week in which the disruption occurred.

More serious disruption or repeated minor disruption may result in exclusion from class for one session and/or lowering final grade for the course by one level (i.e., 4.0 to 3.5, 3.5 to 3.0, 3.0 to 2.5, 2.5 to 2.0, 2.0 to 1.5, 1.5 to 1.0, or 1.0 to 0.0) up to permanent exclusion and receiving a failing grade for the course (0.0).

I regard activity on a class Internet discussion list or on-line forum as behavior during class.
B. Instructions
Failure to follow instructions will result in lower grades for class work.
This includes failure to follow format instructions for written coursework and presentations.
Minor noncompliance with instructions will result in a lower grade for the particular task.
More serious noncompliance and/or persistent minor noncompliance may result in exclusion from class for one session up to permanent exclusion (expulsion from the class) and receiving a failing grade in the course.

C. Academic Integrity
The School of Social Work adheres to the policies on academic honesty as specified in General Student Regulations 1.0, Protection of Scholarship and Grades; the all-University Policy on Integrity of Scholarship and Grades; and MSU Ordinance 17.00, Examinations.
While you may discuss assigned class work with each other, each of you must turn in individual, original work. Students who violate academic integrity rules may receive a penalty grade. At my discretion, penalties may range from a failing grade on the particular piece of assigned class work to a failing grade for the course. Administrative sanctions may include dismissal from the program.

D. Late Work
Class work is due on the due date. I shall give work that is not handed in on time a score of zero unless you and I have reached some other agreement before the due date.
Exceptions to this are study questions and certain general assignments.
If you hand in study questions or designated assignments no later than two days (48 hours) after the due date, I shall grade them, but I shall assign the lesser of the following scores:
- Five points less than the lowest score in the distribution of scores for work received on time, or
- Twenty points less than your earned score.
After this grace period, I shall give overdue study questions and designated assignments a score of zero unless you and I have reached some other agreement before the end of the grace period.

E. Students with Disabilities
I wish to provide an environment that will enhance learning for all students. If you need accommodation for a disability, please let me know as well what accommodation you need. Also, contact the Resource Center for Persons with Disabilities to determine eligibility for accommodation.
Resource Center for Persons with Disabilities (RCPD)
120 Bessey Hall – Michigan State University
East Lansing, MI 48824-1033
(517) 353-9642   (517) 355-1293 (TTY)   http://www.rcpd.msu.edu
F. Other Requirements, Expectations & Weights

5% 1. Attendance: I expect you to attend all class sessions.

5% 2. Study Questions/Homework:
   When assigned, these will be due at the start of the next class session.

15% 3. Assignments:
   Some of these will require that you use SPSS for Windows (the program is on the computers in the MSU Microcomputer Labs).

10% 3. Class Participation:
   Your performance in the classroom as well as your participation in the class Internet discussion group – TIMHAI – will be evaluated.

25% 4. First Quiz

40% 4. Second Quiz (Cumulative)

G. Grade Assignment

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<th>Percent</th>
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<tbody>
<tr>
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<td>≥ 93</td>
</tr>
<tr>
<td>3.5</td>
<td>86 - &lt;93</td>
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<tr>
<td>3.0</td>
<td>79 - &lt;86</td>
</tr>
<tr>
<td>2.5</td>
<td>72 - &lt;79</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0</td>
<td>65 - &lt;72</td>
</tr>
<tr>
<td>1.5</td>
<td>58 - &lt;65</td>
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<td>1.0</td>
<td>51 - &lt;58</td>
</tr>
<tr>
<td>0.0</td>
<td>0 - &lt;51</td>
</tr>
</tbody>
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GRADES ARE FINAL. The exception to this is if there is instructor error in grading and/or instructor error in computation of grades. Thus, you are encouraged to hold on to all class work until after you have received your grade report from the University.

H. Posting of Grades
   I assign each of you a random identification number. Please indicate whether you want me to post your current grades at various times during the semester next to the random identifier (or if you do not want me to post them). I use a random identifier so that only you and I will know whose grades have been posted.

VIII. TOPICAL OUTLINE
   There will be some modifications to the reading assignments made over the course of the semester.

WEEK 1: AUG. 26, 28  Course Overview / Research, Ethics, and Argument

Required Reading:
Stocks (1):
1. The Construction of Knowledge: Evidence I
2. The Construction of Knowledge: Evidence II
3. The Construction of Knowledge: Causation and Theory

Recommended Reading:
Stocks (1):
Appendix I. Formal Argument
WEEK 2: SEP. 2, 4  Levels of Measurement / Frequency, Percentage & Cumulative Distributions / Tables and Charts / Types of Distributions

Required Reading:
5. Frequency Distributions: Tables
6. Frequency Distributions: Charts and Distribution Types
Appendix III. Mathematical Symbols and Operations

Reserve:  Formula Sheet (at class Web site)

WEEK 3: SEP. 9, 11  Probability: Mutually Exclusive and Exhaustive Events / Probability of Non-Occurence / Conjuntive Probability / Disjunctive Probability / Contingent Probability
Sampling: Probability Sampling/
Non-Probability Sampling

Required Reading:
Stocks (1):  7. Probability and Sampling
Reserve:  Formula Sheet (at class Web site)

Recommended Reading:
Stocks (1):  Appendix III. Mathematical Symbols and Operations

WEEK 4: SEP. 16, 18  Univariate Descriptive Statistics: Measures of Location / Measures of Variability / The Normal Distribution / Standard Scores

Required Reading:
Stocks (1):  8. Descriptive Statistics – I:
Sections I.A., I.B., I.C.1., I.E. through I.G.,
II.A. through II.D., II.E.1., II.E.2.a., II.F. through II.H.
9. Descriptive Statistics – II:
Sections II, III, & IV.
Reserve:  Formula Sheet (at class Web site)

Recommended Reading:
Stocks (1):  9. Descriptive Statistics – II:
Section I.
Appendix III. Mathematical Symbols and Operations
**WEEK 5: SEP. 23, 25**  
**Univariate Descriptive Statistics**: Measures of Location / Measures of Variability / The Normal Distribution / Standard Scores  
**Bivariate Descriptive Statistics**: Linear Regression / Prediction and Error / Proportion of Variance Explained (r²) and Effect Size / Standard Error of Estimate / Correlation Coefficients / Reliability and Validity

**Required Reading:**  
Stocks (1):  
Sections I.A., I.B., I.C.1., I.E. through I.G.,  
II.A. through II.D., II.E.1., II.E.2.a., II.F. through II.H.  
Sections II, III, & IV.  
Appendix IV. *Applied Measurement Theory*  
**Reserve:** Formula Sheet (at class Web site)

**Recommended Reading:**  
Stocks (1):  
Section I.  
Appendix III. *Mathematical Symbols and Operations*

**WEEK 6: SEP. 30, OCT. 2**  
**Bivariate Descriptive Statistics**: Linear Regression / Prediction and Error / Proportion of Variance Explained (r²) and Effect Size / Standard Error of Estimate / Correlation Coefficients / Reliability and Validity

**Required Reading:**  
Stocks (1):  
10. *Descriptive Statistics – III*  
Appendix IV. *Applied Measurement Theory*  
**Reserve:** Formula Sheet (at class Web site)

**Recommended Reading:**  
Stocks (1): Appendix III. *Mathematical Symbols and Operations*
WEEK 7: OCT. 7, 9  *Inferential Statistics*: Standard Error of the Mean / Confidence Interval for the Mean / Standard Error of Estimate / Confidence Interval for Bivariate Statistics  
*Hypothesis Testing*: Null And Alternative Hypotheses / Effect Size / $\alpha$ level, $\beta$ level, and Power / Type I and Type II Errors / Directional and Nondirectional Tests  
**FIRST QUIZ (October 9th)**

**Required Reading:**  
*Stocks (2):*  
11. *Univariate and Bivariate Inferential Statistics*: Sections I, II, III and IV.A.  
12. *The Rationale for Statistical Hypothesis Testing*  

**Reserve:**  
*Formula Sheet* (at class Web site)

**Recommended Reading:**  
*Stocks (1):*  
Appendix III. *Mathematical Symbols and Operations*  
Appendix VI. *Threats to the Validity of Conclusions*

WEEK 8: OCT. 14, 16  *Hypothesis Testing*: Null And Alternative Hypotheses / Effect Size / $\alpha$ level, $\beta$ level, and Power / Type I and Type II Errors / Directional and Nondirectional Tests  
*Single Sample Tests*: Goodness of Fit Chi Square Test; Kolmogorov-Smirnov Single Sample Test; Single Sample Student t Test

**Required Reading:**  
*Stocks (2):*  
12. *The Rationale for Statistical Hypothesis Testing*  
13. *Single Sample Tests*  

**Reserve:**  
*Formula Sheet* (at class Web site)

**Recommended Reading:**  
*Stocks (1):*  
Appendix III. *Mathematical Symbols and Operations*  
Appendix VI. *Threats to the Validity of Conclusions*

WEEK 9: OCT. 21, 23  *Two Dependent Samples Tests*: McNemar Change Test; Wilcoxon Matched-Pair Signed Rank Test; Dependent (Correlated) Samples Student t Test / Effect Size  
*Two Independent Samples Tests*: Chi Square Test of Independence; Wilcoxon/Mann-Whitney Test; Independent Samples Student t Test / Effect Size

**Required Reading:**  
*Stocks (2):*  
14. *Tests of Two Related Samples*  
15. *Tests of Two Independent Samples*  

**Reserve:**  
*Formula Sheet* (at class Web site)

**Recommended Reading:**  
*Stocks (1):*  
Appendix III. *Mathematical Symbols and Operations*
WEEK 10: OCT. 28, 30  Two Independent Samples Tests:
Chi Square Test of Independence; Wilcoxon/Mann-Whitney Test; Independent Samples Student t Test / Effect Size

Bivariate Correlation Tests: Chi Square Test of Independence; Student t Test for Correlation/ Effect Size

Required Reading:
Stocks (2):  15. Tests of Two Independent Samples
16. Tests of Correlation between Two Variables

Reserve: Formula Sheet (at class Web site)

Recommended Reading:
Stocks (1): Appendix III. Mathematical Symbols and Operations

WEEK 11: NOV. 4, 6  Bivariate Correlation Tests:
Chi Square Test of Independence; Student t Test for Correlation/ Effect Size

Screening Tests for More Than Two Independent Samples:
Chi Square Test of Independence; Kruskal-Wallis Test; One-Way Analysis of Variance (ANOVA) / Effect Size /
Multiple Pairwise Comparisons: Least Significant Difference Test; Scheffé's Test

Required Reading:
Stocks (2):  16. Tests of Correlation between Two Variables
17. Tests of More Than Two Independent Samples

Reserve: Formula Sheet (at class Web site)

Recommended Reading:
Stocks (1): Appendix III. Mathematical Symbols and Operations

WEEK 12: NOV. 11, 13  Screening Tests for More Than Two Independent Samples:
Chi Square Test of Independence; Kruskal-Wallis Test; One-Way Analysis of Variance (ANOVA) / Effect Size /
Multiple Pairwise Comparisons: Scheffé's Test; Least Significant Difference Test

Required Reading:
Stocks (2):  17. Tests of More Than Two Independent Samples
Reserve: Formula Sheet (at class Web site)

Recommended Reading:
Stocks (1): Appendix III. Mathematical Symbols and Operations
WEEK 13: NOV. 18, 20  Screening Tests for More Than Two Independent Samples: Chi Square Test of Independence; Kruskal-Wallis Test; One-Way Analysis of Variance (ANOVA) / Effect Size
Multiple Pairwise Comparisons: Scheffé’s Test; Least Significant Difference Test
Factorial ANOVA: Main Effects / Interaction Effects / Effect Size
Multiple Pairwise Comparisons: Scheffé’s Test

Required Reading:
Stocks (2)  17. Tests of More Than Two Independent Samples
            18. Factorial Analysis of Variance
Reserve:  Formula Sheet (at class Web site)

Recommended Reading:
Stocks (1):  Appendix III. Mathematical Symbols and Operations

WEEK 14: NOV. 25  Factorial ANOVA: Main Effects / Interaction Effects / Effect Size /
Multiple Pairwise Comparisons: Scheffé’s Test

Required Reading:
Stocks (2)  18. Factorial Analysis of Variance
Reserve:  Formula Sheet (at class Web site)

Recommended Reading:
Stocks (1):  Appendix III. Mathematical Symbols and Operations

NO CLASS NOVEMBER 27

WEEK 15: DEC. 2, 4  Factorial ANOVA: Main Effects / Interaction Effects / Effect Size /
Multiple Pairwise Comparisons: Scheffé’s Test

Required Reading:
Stocks (2)  18. Factorial Analysis of Variance
Reserve:  Formula Sheet (at class Web site)

Recommended Reading:
Stocks (1):  Appendix III. Mathematical Symbols and Operations

FINALS WEEK:     MONADAY, DEC. 8, 5:45 – 7:45 P.M.  FINAL QUIZ

RANDOM IDENTIFICATION NUMBER _____________________