Course Description

This introductory statistics course is designed for students who wish to master some very important tools used by contemporary social work practitioners to better understand the world of practice. The primary purpose of the course is to enable students to gain an understanding of the basic principles that guide statistical reasoning, especially as they relate to making informed decisions about the quantitative aspects of their practice. Students will learn how to collect and organize data, examine it for patterns and relationships, and analyze it for purposes of drawing plausible and defensible conclusions. We do not “prove” in social work research, but look for relationships between variables.

The basic philosophy upon which this course is grounded is the belief that statistical reasoning (i.e., thinking, meaning, and interpretation) should precede statistical methods. It is assumed that, for most beginning students, many of the concepts and principles used by statisticians are likely to be experiences as foreign and confusing. Complex computational formulas and mathematical notations have been known to intimidate many students, and when that occurs, it can interfere with learning. Therefore, the course is based on pedagogy of active learning that engages students in a problem solving process that enables them to gain an understanding of the kinds of questions in relation to which statistics can help. It emphasizes the use of statistics in the real life situations. It attempts to engender in students an understanding of basic statistical concepts and the ability to synthesize the components of their statistical efforts in ways that will enable them to communicate their results in a clear and convincing manner.

It should be noted that this course meets the prerequisite requirement for students wishing to apply for admission to the IU MSW program. It is classified as a BSW elective, and as such, it may be taken as either a graded or as a pass/fail option. **If this course is taken for the BSW Math/Physical Science requirement, it should be taken as a graded course.**

Course Competencies

Council on Social Work Education (CWSE) 2015 EPAS Competencies addressed by this course.

**Primary**

- **4: Engage in Practice-informed Research and Research-informed Practice**

  Social workers understand quantitative research methods and their respective roles in advancing a science of social work and in evaluating their practice. Social workers understand the processes for translating research findings into effective practice (CSWE, 2015 EPAS, p. 8).
Course Objectives

**S372-01:** Understand basic statistical concepts.

**S372-02:** Think statistically in everyday situations.

**S372-03:** Pose questions that lend themselves to statistical analysis.

**S372-04:** Select appropriate statistical methods to address questions relevant to clinical and community practice.

**S372-05:** Use SPSS to create and manipulate data files.

**S372-06:** Conduct meaningful bivariate analyses using descriptive and inferential statistical methods.

**S372-07:** Synthesize the various components of a statistical analysis and communicate the results in a clear manner.

Required Texts


Recommended Texts:


[IBM SPSS Statistics Base 23 manual](#)

Course Content

This course presents important tools used by contemporary social work practitioners to better understand the world of practice. Social workers understand quantitative research methods and their respective roles in advancing a science of social work and in evaluating their practice. Furthermore, social workers understand the processes for translating research findings into more effective practice. This course examines the use of statistical analysis in the real life situations.

A variety of teaching and learning methods and experiences will be used in an effort to help students meet the course objectives. Activities will include reading, videos, lectures, discussion, practice examples, homework, quizzes, and exams. Students will learn how to use statistical analysis software. In addition, students are encouraged to work in small groups to foster discussion and depth of understanding. The signature assignment developed to measure competency for this course is a data paper and presentation.

Resources

- **Canvas email** will also be used a way to communicate between instructor and students. You are expected to check the course announcements on Canvas before each class.
- **Study Groups:** Peers can often be an excellent resource. Studying Statistics in a group can help you to better understand difficult concepts. Students are strongly encouraged to review course materials weekly with their peers and to study for quizzes and exams in groups to facilitate understanding.
- **SPSS:** After the mid-term, this course will use Statistical Package for the Social Sciences (SPSS) computer software. Students should use SPSS to complete homework assignments. Students should be able to access to SPSS through IUanyWare Access ([IUanyWare website](#)).
- Additional readings will be assigned throughout the semester and be posted on Canvas (Resource tab).
Course Outline

We will meet in Classroom from Module 1 through Module 8!

Module 1: Welcome to the World of Statistics
Dates:

Overview
A. What is Statistics?
B. Evidence-based practice and statistics
C. Statistics and Social Work

Assignments
Readings
Weinbach & Grinnell, Ch. 1.

Module 2: Statistical Reasoning
Dates: Aug

Overview
A. Conceptualization and operationalization
B. Measurement
C. Variables
D. Research hypotheses

Assignments
Readings
Weinbach & Grinnell, Ch. 1

Assignment
• In-class quiz 1

Module 3: Frequency Distribution & Graphs
Dates:

Overview
A. Frequency distribution
B. Graphs

Assignments
Readings
• Weinbach & Grinnell, Ch. 2
• Salkind, Ch.2 & Ch. 3

Assignment
• In-class quiz 2

Module 4: Central Tendency & Variability
Dates:
Overview
A. Measures of Central Tendency
B. Measures of Variability

Assignments
Readings
Weinbach & Grinnell, Ch. 3

Assignment
• In-class quiz 3

Module 5: Normal Distributions
Dates:
Overview
A. Normal distribution
B. Skewness
C. Kurtosis
D. Z-score

Assignments
Readings
• Weinbach & Grinnell, Ch. 4
• Salkind, Ch. 8

Assignment
• In-class quiz 4

Module 6: Hypothesis-Testing
Dates:
Overview
A. Statistical significance
B. P-value
C. Type I and Type II error

Assignments
Readings
• Weinbach & Grinnell, Ch. 5
• Salkind, Ch. 2 & Ch. 9

Assignment
• In-class quiz 5

Module 7: Sampling Distribution
Dates:
Overview
A. Sampling distribution
B. Central limit theorem
C. Confidence interval

Assignments
Readings
Weinbach & Grinnell, Ch. 6

Assignment
• In-class quiz 2

Module 8: Mid-term
Dates:

We will meet in Computer lab from Module 9 through Module 13 (TBA)!!

Module 9: Descriptive Statistics using SPSS
Dates:

Overview
A. What is SPSS?
B. Open SPSS through IUanyware
C. Explore SPSS
D. Run descriptive statistics

Assignments
Readings
• Weinbach & Grinnell, Ch. 7
• SPSS. Ch. 9

Individual Assignment
• Homework assignment 1

Module 10: T-test
Dates:

Overview
A. Key vocabularies
B. What t-tests are?
C. Types of t-tests
D. Data analysis
E. Interpretation

Assignments
Readings
• Weinbach & Grinnell, Ch. 7
• SPSS. Ch. 9

Individual Assignment
• Homework assignment 2
Module 11: ANOVA

Dates:

Overview
A. Key vocabularies
B. What ANOVA is?
C. Data analysis
D. Interpretation

Assignments
Readings
- Weinbach & Grinnell, Ch. 7
- SPSS. Ch. 10

Individual Assignment
1. Homework assignment 3

Module 12: Chi-Square test

Dates:

Overview
A. Key vocabularies
B. What Chi-square test is?
C. Data analysis
D. Interpretation

Assignments
Readings
- Weinbach & Grinnell, Ch. 8
- SPSS. Ch. 5

Individual Assignment
- Homework assignment 4

Module 13: Correlation analysis and Regression analysis

Dates:

Overview
A. Key vocabularies
B. What Correlation tests is?
C. Data analysis
D. Interpretation
E. Regression analysis

Assignments
Readings
- Weinbach & Grinnell, Ch. 9 and Ch. 10
- SPSS. Ch. 12
Individual Assignment
- Homework assignment 5

_We will meet in Computer lab from Module 14 through Module 16!!_

**Module 14: Application of Statistics and Course wrap-up**

Dates:

*Overview*
- A. Application of Statistics to journal articles
- B. Journal critique

*Assignments*
- Individual Assignments
  - Journal critique

**Module 15: Course wrap-up:**

Dates:

*Overview*
- A. Evidence-based practice and statistics
- B. Decision tree for statistics

*Assignments*
- Readings
  - Weinbach & Grinnell, Ch. 13

**Module 16: Presentation:**

Dates:

*Overview*
- A. Presentations delivery

*Assignments*
- Group Assignment
  - Submit the power point slides on 12/18

**Assignments and Grading**

The final grade for this course will be based upon the measures of five components: In-class pre-quizzes, homework assignments, journal critique, and data paper and presentation. More specific instructions for each assignment will be posted on Canvas. Instructor also will discuss details or answer any questions related to assignment during the class and office hours. Below are brief description about each assignment and its weight toward final grade.

**Assignments**

1. In-Class Quizzes
   - a. DUE: ..................................[date]
   - b. Final Grade Percentage: .......18%
2. Homework Assignments
   a. DUE: .................................................
   b. Final Grade Percentage: ......15%

3. Midterm
   c. DUE: ..............................................
   d. Final Grade Percentage: ......20%

4. Journal Critique
   e. DUE: ..............................................
   f. Final Grade Percentage: ......12%

5. Data Paper and Presentation (Signature Assignment)
   g. DUE: ..............................................
   h. Final Grade Percentage: ......30%

Assignment Details

**In-class quizzes (18%) = 6 quizzes * 3 pt**
In-class quizzes are scheduled in the beginning of class before mid-term. These quizzes are designed to check students’ readings and readiness to learn class materials before class. Students can work as a group to solve questions in class. All questions are from the required textbook, Weinbach & Grinnell (2014). There will be a total of 6 in-class quizzes and each quiz is worth 4 points. Students will not be able to make up the quizzes if they are late or miss class with no reasonable excuse.

**Homework assignments (15%) = 5 assignments * 3 pt**
Homework assignment will be given to students in each class after mid-term. Homework assignments are designed to apply the statistical tests learned in classes to real data analysis. There will totally 5 homework assignments and each is worth Homework assignments have the following requirements. Assignments must be submitted on time for full credit. Late assignments will not be accepted.

Any homework not following any of requirements below should not be graded: a) Should use SPSS, b) Should type your answers to each question and submit it via the designated Assignment tab in Canvas on time, and c) Should submit the output file as an attachment along with your assignment.

Please see below for the specific due dates for each homework assignment.

- HW #1: Descriptive statistics
- HW #2: T-test
- HW #3: ANOVA
- HW #4: Chi-square
- HW #5: Correlation test & Regression

Technical issues should NOT be accepted as the reason for the extension or late submission. If students have any technical issue, please contact University Information Technology Services (UI TS). The contact information of UITS is as follow:

- Help Desk: 317-274-Help (317-274-4357)
Mid-term (20%)
It is an in-class exam covering content from chapters 1-6. Some of questions will be drawn from review questions that students create. Crucial information and important study guidelines will be provided in the session of Mid-term review; do not miss it!

Journal critique (12%)
This is a written assignment where students should answer the list of questions about a research article. Students should select a research article out of multiple articles posted at Canvas and answer questions in the critique paper posted in Canvas. This assignment is designed to enhance students’ understanding of how statistics can apply to social work.

Data paper and Presentation (30%) (Signature Assignment)
This is a group assignment. Students will document their competence to Engage In Practice-informed Research and Research-informed Practice in a brief paper analyzing data from one of several sources. In addition to the paper, students will present their analysis in class. The paper will report on a bivariate or multivariate analysis of data of interest to the student. The student will distribute a summary paper (on a single sheet of paper, two sides, single spaced, no APA format) which contains at least one table or figure, and which also contains: (1) the variables of interest and why they are interesting, (2) how each variable is measured, including the level of measurement of each, (3) a question or hypothesis which drives the research, (4) the method of data analysis, (5) the results, and (6) a discussion. A variety of datasets are available for analysis.

Grading Standards
Papers are graded on the quality of the final product not on the effort you extended completing them. The grade of A is reserved for truly outstanding work that goes beyond basic requirements.

Grades of A reflect Excellence. Excellent scholarly products and academic or professional performances are substantially superior to the “good,” “the high quality,” “the competent,” or the “satisfactory.” They are unusual, exceptional, and extraordinary. Criteria for assignments are not only met, they are exceeded by a significant margin. Excellence is a rare phenomenon. As a result, relatively few BSW students earn A grades.

Grades of B signify good or high quality scholarly products and academic or professional performance. Grades in the B range reflect work expected of a conscientious student in a professional program. Criteria for assignments are met in a competent, thoughtful, and professional manner. However, the criteria are not exceeded and the quality is not substantially superior to other good quality products or performances. There is a clear distinction between the good and the excellent. We expect that most BSW students will earn grades in the B range—reflecting the good or high quality work expected of competent future helping professionals.

Grades of C and C+ signify work that is marginal in nature. The scholarly products or professional performances meet many but not all of the expected criteria. The work approaches but does not quite meet the standards of quality expected of a student in a professional school. Satisfactory in many respects, its quality is not consistently so and cannot be considered of good or high quality. We anticipate that a minority of BSW students will earn C and C+ grades.
Grades of C- and lower reflect work that is unsatisfactory. The products or performances do not meet several, many, or most of the criteria. The work fails to approach the standards of quality expected of a student and a future BSW-level professional. We anticipate that a small percentage of BSW students will earn unsatisfactory grades of C-, D, and F.

**Grading scale**

Grade minimums are as follows [Note: grades below a C are Unsatisfactory in the BSW Program]:

- **A** 93%  Excellent, Exceptional Quality
- **A-** 90%  Superior Quality
- **B+** 87%  Very Good, Slightly Higher Quality
- **B**  83%  Good, High Quality (expected of most BSW students)
- **B-** 80%  Satisfactory Quality
- **C+** 77%  Marginal, Modestly Acceptable Quality
- **C**  73%  Marginal, Minimally Acceptable Quality
- **C-** 70%  Unsatisfactory Quality
Appendix: Related Resources

Related Readings


Web Resources

[Bill Trochim’s Center for Social Research Methods](#)

[HyperStat Online](#)

[PsychStat Online](#)

[Statistics Resources Online](#)