

RMTD 404 - Online
Introduction to Educational Statistics

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Office hour: By appointment

School of Education Conceptual framework (www.luc.edu/education/mission/)

Our School's conceptual framework is "social action through education". This course contributes to this framework by equipping students with knowledge and experience in statistics used in quantitative research. Through conducting, interpreting, and reporting reliable social science studies, researchers can help further the scholarly understanding of the events and practices that influence the field of education. The ultimate outcome of this understanding is to ensure that all individuals, no matter their ability, race, religion, socioeconomic status, age or gender benefit from effective research.

Course Goals

This course provides an introduction to data investigation, basic data analysis, and statistical inference. Specifically, students learn to:

- describe data (quantitatively and graphically),
- formulate a research hypothesis,
- conduct hypothesis tests using different statistical approaches,
- use SPSS to compute appropriate statistics, and
- interpret and write about the results of the estimates and tests.

Knowledge of basic algebra is required, as is an understanding of the fundamental principles of descriptive statistics and hypotheses; knowledge of higher mathematics (e.g., trigonometry, calculus) is not required.

Required text

The following book is required for all the students. The lectures in this class are centering around the content in this book.

Howell, D.C. (2012). *Statistical Methods for Psychology* (8th ed.) Pacific Grove, CA: Duxbury. ISBN-10: 1111835489; ISBN-13: 978-1111835484.

Recommended text

The following book is highly recommended for those students who are not familiar with SPSS or would need extra assistance in running SPSS. It is also a great book to learn more about the topics covered in this and other advanced research methods courses as the author used plain English to write this text.

Field, A. (2017). *Discovering statistics using IBM SPSS* (5th ed.) Thousand Oaks, CA: SAGE Publications. ISBN-10: 1526436566; ISBN-13: 978-1526436566.

*You can preview this book (Chs. 1 & 2) at: <https://us.sagepub.com/en-us/nam/discovering-statistics-using-ibm-spss-statistics/book260423#preview>

Technological knowledge and skills

Students use SPSS (*Statistical Package for the Social Sciences*) to analyze the NELS (*National Education Longitudinal Study*) dataset in this class. NELS is one of the largest and most important datasets collected by the U.S. government, including extensive measurements of students' beliefs, aspirations, attitudes, and background, as well as related information from teachers, parents, and schools. Students are expected to be able to graphically summarize data (e.g., using histograms) and perform hypothesis tests (e.g., *t*-tests, chi-square tests, correlations, and regression).

Study materials and weekly quizzes/assignments

You learn a new topic each week. A chapter in the required text is assigned to you (see the "Schedule" on p. 6), and a recorded PowerPoint presentation is provided to elaborate the concepts introduced each week. A quiz or an assignment associated with the assigned reading and recording is given each week unless another activity is provided. Make sure you finish reading and watching the recording before you start the quiz.

I understand that many of you are working full time, and the weekend might be the best time for you to catch up on school work. Therefore, the study materials and the assignment for the week are made available to you *on Saturday at 6 am Central Standard Time (CST) prior to the start of each week.*

Example: Week 1 starts on 8/27 (Monday) as shown in the schedule. The materials for Week 1 are available to you on 8/25 (Saturday) at 6 am CST.

The quiz/assignment of the week is due *on Monday at 11:55 pm CST in the following week.*

Example: The quiz for "Week 1 (8/27)" is due on 9/3 (Monday) at 11:55 pm CST.

You are welcome to submit the quiz/assignment prior to the due date. However, late work is not acceptable unless prior arrangements have been made with the instructor. Please pay attention to the due date for the quizzes as they will not be available after they are due.

Final examination

The final exam is given at the end of the semester. More details will be provided.

Evaluation

Grades will be based on points accumulated on quizzes/assignments and a final examination. The accumulated points will be converted into a 100-point scale, and the distributions of the points for quizzes and final exam (for calculating the final grade) are:

Quizzes & Assignments	80%
Final exam	20%

The grade ranges in terms of percentage are:

100.0-90.0 = A	84.9-80.0 = B+	69.9-65.0 = C+	54.9 and below = F
89.9-85.0 = A-	79.9-75.0 = B	64.9-60.0 = C	
	74.9-70.0 = B-	59.9-55.0 = C-	

Online course requirements

To ensure learning occurs in the online environment, there are certain requirements for this class:

Required Access

Stable Internet connection

Loyola Email Account with reliable access

Sakai – We post all the materials for this class in Sakai

Access to SPSS - Most of the computers on Water Towers Campus equip with the latest version of SPSS.

For home use, you can rent the “**IBM® SPSS® Statistics Standard GradPack 25**” from [e-academy](#); [Studica](#); and [Studentdiscounts](#). More information can be found in “Student Home Use” section at:

<https://www.luc.edu/itrs/researchcomputing/home-use.shtml>.

Required Familiarity

Be able to download and attach files

Be able to use Microsoft Office Package, especially Microsoft Word and Microsoft PowerPoint

In addition to hardware access and software utilization, the following represent factors that facilitate a productive and effective online learning experience. (Material adapted from the University of Wisconsin Online website on Online Etiquette.

<http://online.uwc.edu/technology/Etiquette.asp>)

- *Tone down your language.* Given the absence of face-to-face clues, written text can easily be misinterpreted. Avoid the use of strong or offensive language and the excessive use of exclamation points. If you feel particularly strongly about a point, it may be best to write it first as a draft and then to review it, before posting it, in order to remove any strong language.
- *Keep a straight face.* In general, avoid humor and sarcasm. These frequently depend either on facial or tone of voice cues absent in text communication or on familiarity with the reader.
- *Be forgiving.* If someone states something that you find offensive, mention this directly to the instructor. Remember that the person contributing to the discussion is also new to this form of communication. What you find offensive may quite possibly have been unintended and can best be cleared up by the instructor.
- *The recorder is on.* Think carefully about the content of your message before contributing to it. Once sent to the group, there is no taking it back. Also, although the grammar and spelling of a message typically are not graded and they do reflect on you; your audience might not be able to decode misspelled words or poorly constructed sentences. It is a good practice to compose and check your comments in a word processor before posting them.
- *Test for clarity.* Messages may often appear perfectly clear to you as you compose them, but turn out to be perfectly obtuse to your reader. One way to test for clarity is to read your message aloud to see if it flows smoothly. If you can read it to another person before posting it, then even better.

- *Netspeak*. Although electronic communication is still young, many conventions have already been established. DO NOT TYPE IN ALL CAPS. This is regarded as shouting and is out of place in a classroom. Acronyms and emoticons (arrangements of symbols to express emotions) are popular, but excessive use of them can make your message difficult to read.

Dispositions

Each course in the School of Education focuses on one or more professional dispositions. Students are offered opportunities to receive feedback on their dispositional growth in the areas of professionalism, fairness and/or the belief that all students can learn. The evaluation of SOE student's disposition will be recorded in LiveText. The expected behaviors for specific dispositions for this class and the evaluation rubrics are listed at the end of this syllabus.

IDEA Objectives

IDEA is an evaluation system that our School uses to assess whether a class reaches the major goals at the end of the semester. The essential objectives for this course are:

- Gaining a basic understanding of the subject (e.g., factual knowledge, methods, principles, generalizations, theories)
- Developing specific skills, competencies, and points of view needed by professionals in the field most closely related to this course
- Learning appropriate methods for collecting, analyzing, and interpreting numerical information

Please see Syllabus Addendum below for more information.

Loyola University Chicago School of Education Syllabus Addendum

IDEA Course Evaluation Link for Students

Each course you take in the School of Education is evaluated through the IDEA Campus Labs system. We ask that when you receive an email alerting you that the evaluation is available that you promptly complete it. To learn more about IDEA or to access the website directly to complete your course evaluation go to: <http://luc.edu/idea/> and click on **STUDENT IDEA LOGIN** on the left hand side of the page.

Dispositions

All students are assessed on one or more dispositional areas of growth across our programs: **Professionalism, Inquiry, and Social Justice**. The instructor in your course will identify the dispositions assessed in this course and you can find the rubrics related to these dispositions in LiveText. *For those students in non-degree programs, the rubric for dispositions may be available through Sakai, TaskStream or another platform.* Disposition data is reviewed by program faculty on a regular basis. This allows faculty to work with students to develop throughout their program and address any issues as they arise.

LiveText

All students, *except those who are non-degree*, must have access to LiveText to complete the benchmark assessments aligned to the Conceptual Framework Standards and all other accreditation, school-wide and/or program-wide related assessments. You can access more information on LiveText here: [LiveText](#).

Syllabus Addendum Link

- www.luc.edu/education/syllabus-addendum/

This link directs students to statements on essential policies regarding *academic honesty, accessibility, ethics line reporting* and *electronic communication policies and guidelines*. We ask that you read each policy carefully.

This link will also bring you to the full text of our conceptual framework that guides the work of the School of Education – ***Social Action through Education***.

Schedule

The week of		Topics	Readings
1	8/27	Introduction & measure scales	Ch.1
2	9/3	Describing data & introduction to SPSS	Ch.2
3	9/10	Basic concepts of normal distribution	Ch.3
4	9/17	Sampling distribution & hypothesis testing	Ch.4
5	9/24	Hypothesis tests applied to means: Variance known (z-test)	Ch.7
6	10/1	Hypothesis tests applied to means: Variance unknown (one-sample <i>t</i> -test)	Ch.7
7	10/8	Fall break. No new material – time to catch up!	
8	10/15	Hypothesis tests applied to means: Variance unknown (two-sample <i>t</i> -test)	Ch.7
9	10/22	Power	Ch.8
10	10/29	Correlation	Ch.9
11	11/5	Simple regression I	Ch.9
12	11/12	Simple regression II	Ch.9
13	11/19	Thanksgiving break. No new material <i>(The class materials for the last week weeks will be made available)</i>	
14	11/26	Chi-square I	Ch.6
15	12/3	Chi-square II	Ch.6
	12/10	Final exam	

Evaluation of Disposition in RMTD 404

Rubric

Disposition for evaluation	Target	Acceptable	Unacceptable
Systematic Inquiry	Candidate communicates effectively and appropriately with faculty and peers.	Candidate is working on communicating effectively and appropriately with faculty and peers.	Candidate is unable to communicate effectively and appropriately with faculty and peers.
Responsibilities for General and Public Welfare	Candidate's written work is appropriate and effective for the course.	Candidate's written work is sometimes appropriate and effective for the course.	Candidate's written work is inappropriate and ineffective for the course.
Timeliness	Candidate is able to meet all deadlines.	Candidate is sometimes able to meet all deadlines.	Candidate is unable to meet all deadlines.
Integrity/Honesty	Candidates appropriately represent procedures, data, and findings – attempting to prevent misuse of their results.	Candidates represent procedures, data, and findings in a manner that is likely to allow the misuse of their results.	Candidates misrepresent procedures, data, and findings. There is minimal attempt to prevent misuse of their results.