

RMTD 404 - Online
Introduction to Educational Statistics

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Virtual 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. By 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 is an introductory graduate course that focuses on using quantitative methods for inquiry in the social and behavioral sciences. Students will be exposed to the fundamental concepts and procedures of descriptive and inferential statistics. The course also includes an introduction to the use of SPSS.

Students will develop competence in reading and understanding statistics. Specifically, students will be able to

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

Knowledge of basic algebra is required to understand 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. There are great examples in this book that enhance the understanding of the topics introduced each week.

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

Recommended text

Free resource:

The author of the required textbook has a resourceful website that provides a manual of using SPSS:

<https://www.uvm.edu/~statdhtx/fundamentals8/SPSSManual/SPSSLongerManual/SPSSLongerManual.html>

The following book is highly recommended for those students who are not familiar with SPSS or need extra assistance in running SPSS. It is also an excellent book to learn more about the topics covered in this class and other (advanced) quantitative methods courses. You can preview this book (Chs. 1 & 2) at <https://us.sagepub.com/en-us/nam/discovering-statistics-using-ibm-spss-statistics/book260423#preview>

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

Technological knowledge and skills

Students will 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 will learn 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

Students will learn a new topic each week. The chapter that relates to the topic in the required textbook is assigned in the "Schedule" (see the later section). A recorded PowerPoint presentation will be provided to elaborate on the concepts introduced each week. A quiz/an assignment associated with the assigned reading and recording will be given each week. **[!!!]** *Make sure you finish reading and watching the lecture recording before you start the quiz.*

I understand that many of you are working full time and/or have family members that may require tons of your time and attention, so 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 5 am Central Standard Time (CST) before the start of each week.*

Example: Week 1 starts on 8/30 (Monday), as shown in the schedule. The materials for Week 1 are available to you on 8/28 (Saturday) at 5 am CST.

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

Example: The quiz for Week 1 (starts on Monday 8/30) is due on Monday 9/6 at 11:55 pm CST.

[!!!] It is welcomed and encouraged to submit the quiz/assignment before the due date/time. Please note that *late work is not acceptable unless prior arrangements have been made with the instructor. It is important to pay attention to the due date of the quizzes/assignments as the submission will not be available after they are due.*

[!!!] *You are encouraged to discuss the quizzes/assignments and run the analyses with other students. However, you are expected to write/type your own answers for the weekly work. Do not email your finished work to other students to avoid plagiarism.*

Final examination

The final exam is given at the end of the semester. It will be available to you for a week, and you can pick up the best time to work on it **independently**. More details will be provided.

Evaluation

Grades are based on points accumulated on quizzes/assignments and a final examination. Most of the points are on the weekly work you submit. The accumulated points will be converted into a 100-point scale. 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

There are several requirements for this class to ensure learning occurs in the online environment:

- Required reliable access to
 - Stable Internet connection
 - Loyola Email Account
 - Sakai – We post all the materials for this class in Sakai
 - SPSS - Registered students are eligible to obtain a free copy of IBM SPSS Statistics to install on one personal device upon signing the IBM SPSS End-User Agreement. Please see <https://www.luc.edu/its/itrs/academicresearchtechnologies/ibmspssstatistics/> Follow the instruction in the "Instructions for locating the ITS Service Desk's **SPSS Statistics Home Use** Self Service Request (SSR)" to make a request in the Service Portal. You also have the option of using IBM SPSS Statistics 27 via Apporto (web-based) if you do not wish to install it on a personal computer or if your home device does not meet the software or hardware requirements to run SPSS Statistics. Note that SPSS Statistics will not run on a Chrome OS.
- 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 Netiquette Guidelines from <https://kb.wisc.edu/ei/resources/page.php?id=50548>)

- Use your campus email account. When sending an email specific to a course, include the course name in the subject line of the email message.
- Assume communication on the internet is not secure. Never put anything in an email message that you would not put on a postcard.
- If you are forwarding or re-posting a message you've received, do not change the wording. If the message was a personal message to you and you are re-posting to a group, you should first ask permission of the original sender. You may shorten the message and quote only relevant parts, but be sure you give proper attribution.
- A good rule of thumb is be conservative in what you send and liberal in what you receive. You should not send or respond to heated messages even if you are provoked. Wait overnight to send emotional responses to messages.
- Be especially careful with sarcasm. Be professional and use care when interacting online; you don't have the ability to gauge emotions or reactions to your comments.
- Use mixed case lettering. UPPER CASE LOOKS AS THOUGH YOU ARE SHOUTING. Capitalize words only to highlight a point or for titles.
- Use smileys ("emoticons") to indicate tone of voice, but use them sparingly. :-) is an example of a smiley (sideways view). Do not assume that the inclusion of a smiley will make the recipient happy with what you say or wipe out an otherwise insulting comment.
- Personalize your question or response. Address your message to the person by using their name.
- Be specific and identify what issue, topic, or specific statement you are asking about/responding to.
- Refer to the topic/message you are replying to by including the topic in your message.

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, inquiry, and social justice. 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.

Loyola University Chicago
School of Education

**Additional information provided by the School*

School of Education Commitment - COVID-19

Loyola's School of Education (SOE) recognizes that this is an unprecedented time. We understand that moving into the 2021-2022 academic year while living in the context of the COVID-19 pandemic may stir feelings of uncertainty, fear, or anxiousness. We want you to know that your safety, health, and well-being, as well as that of our faculty and staff, remain our primary concern. We want to be able to support you in any way that we can. We ask you to embody the Jesuit value of [Cura Personalis](#), or care for the whole person, as we prepare to learn together. We ask that you consider your way of being in this community, to act with care, and treat all with dignity to keep yourself and others safe. If you are not feeling well, please use Loyola's SYMPTOM Checker. It can be found on the webpage or APP [Loyola Health](#) under the **COVID -19 Related Information Tab** at the top of the page.

The University understands that you may encounter obstacles that make reaching academic goals more difficult. We strongly encourage you to access the Student Resources on [Loyola's COVID-19 Response webpage](#) for information, supports, and resources on basic needs such as housing, food, financial aid, and medical and mental health. This web page also offers information on official University communications, access to technology, and student services. All Loyola University Chicago administrators, faculty, and advisors are also here for you.

The SOE is committed to working with all students to address any challenges that may arise during the semester. Please reach out to your professor as early as possible to discuss any accommodations you think may be necessary in order for you to successfully complete your coursework. Active and engaged communication with all of your professor is encouraged. We know the FALL 2021 Return to Campus will be like no other, but through collaboration, communication, and shared responsibility, we will not only get through this difficult time; we will thrive.

COVID-19 Required Personal Safety Practices

We all have a part to play in preventing the spread of COVID-19. Following a simple set of required personal safety practices can lower your own risk of being infected and can help protect others. All members of the Loyola community are expected to follow these practices while on any of the University's campuses. **Face masks or face coverings must be worn by all students, faculty, and staff while on any of Loyola's campuses, when in the presence of others, in classrooms, and in public settings where other social distancing measures are difficult to maintain.** Appropriate use of face masks or coverings is critical in minimizing the risks to others around you, as you can spread COVID-19 to others even if you do not feel sick. Please be sure to review all [LUC REQUIRED Safety Protocols](#).

COVID-19 Reporting Protocol

In preparation for our upcoming semester, Loyola University Chicago's Emergency Response Management team has been working to develop [protocols](#) in accordance

with Centers for Disease Control and Prevention (CDC) guidelines that help ensure the health and safety of our community. Given the rising number of COVID-19 cases across our country, it is very likely that incidence within our community will occur in the fall. Students, faculty, and staff who have tested positive for COVID-19 must report their case to the University as soon as possible. **If you have tested positive for the virus, please contact us at covid-19report@LUC.edu or by calling 773-508-7707. All COVID-19-related questions or feedback should continue to be sent to covid-19support@LUC.edu, not the new case reporting email address.**

Syllabus Addendum

1. Smart Evaluation

Towards the end of the course, students will receive an email from the Office of Institutional Effectiveness reminding them to provide feedback on the course. They will receive consistent reminders throughout the period when the evaluation is open, and the reminders will stop once they have completed the evaluation.

- The evaluation is completely anonymous. When the results are released, instructors and departments will not be able to tell which student provided the individual feedback.
- Because it is anonymous and the results are not released to faculty or departments until after grades have been submitted, the feedback will not impact a student's grade.

The feedback is important so that the instructor can gain insight in to how to improve their teaching and the department can learn how best to shape the curriculum.

2. 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.

3. LiveText and Digication

All students, *except those who are non-degree*, may 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](#).

[Digication](#) is Loyola's ONLINE portfolio platform. Many of the School of Education programs utilize Digication for Assessment and data collection to manage accreditation and licensure requirements. Your professor and Program chair will work with you to better understand submission requirements that are specific to courses and programs.

4. Privacy Statement

Assuring privacy among faculty and students engaged in online and face-to-face instructional activities helps promote open and robust conversations and mitigates concerns that comments made within the context of the class will be shared beyond the classroom. As such, recordings of instructional activities occurring in online or face-to-face classes may be used solely for internal class purposes by the faculty member and students registered for the course, and only during the period in which the course is offered. Students will be informed of such recordings by a statement in the syllabus for the course in which they will be recorded. Instructors who wish to make subsequent use of recordings that include student activity may do so only with informed written consent of the students involved or if all student activity is removed from the recording. Recordings including student activity that have been initiated by the instructor may be retained by the instructor only for individual use.

5. Student Support

Students are urged to contact the instructor should they have questions concerning course materials and procedures. If students have any special circumstance that may have some impact on your course work, please let the instructor know so a plan can be established. In addition, if students require assignment accommodations, please contact the instructor early in the semester so that arrangements can be made with [Student Accessibility Center](http://www.luc.edu/sac/) (SAC) (<http://www.luc.edu/sac/>).

6. Center for Student Access and Assistance (CSAA)

Should you encounter an unexpected crisis during the semester (e.g., securing food or housing, addressing mental health concerns, managing a financial crisis, and/or dealing with a family emergency, etc.), you are strongly encouraged to contact the Office of the Dean of Students by submitting a CARE Referral for yourself or a peer in need of support: www.LUC.edu/csaa. If you are uncomfortable doing so on your own, please know that your instructor can submit a referral on your behalf.

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***.

7. Syllabus Addendum Link

<https://www.luc.edu/education/academics/syllabi/>

Schedule

The week of		Topics	Readings
1	8/30	Introduction & measure scales	Ch.1
2	9/6	Describing data & introduction to SPSS	Ch.2
3	9/13	Basic concepts of normal distribution	Ch.3
4	9/20	Sampling distribution & hypothesis testing	Ch.4
5	9/27	Hypothesis tests applied to means: Variance known (z-test)	Ch.7
6	10/4	Hypothesis tests applied to means: Variance unknown (one-sample <i>t</i> -test)	Ch.7
7	10/11	Mid-semester break. No new material – time to catch up!	
8	10/18	Hypothesis tests applied to means: Variance unknown (two-sample <i>t</i> -test)	Ch.7
9	10/25	Power	Ch.8
10	11/1	Correlation	Ch.9
11	11/8	Simple regression I	Ch.9
12	11/15	Simple regression II	Ch.9
13	11/22	Chi-square I	Ch.6
14	11/29	Thanksgiving break. No new material (The class materials for the last week will be made available for those who want to work ahead of time)	
15	12/6	Chi-square II	Ch.6
	12/13	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.