

RMTD 404 Online
Introduction to Educational Statistics
(Summer 2021)

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Virtual Office Hour: Wednesday (6:00 to 7:30 Central time) and by appointment

Zoom link for office hours: <https://luc.zoom.us/j/84449637732>

Class Meetings: None (asynchronous online class)

Responsiveness: Emails will usually be responded to within 24 hours for emails received Mondays through Thursdays. Emails received on Fridays and on weekends will be treated as received on Monday.

Course Description

This course provides an introduction to data analysis and statistical inference. Specially, students will learn to

- describe data (quantitatively and graphically)
- formulate research hypothesis and conduct hypothesis tests
- select and compute statistical estimates
- use computer packages to accomplish these tasks
- interpret and write about the results of the estimates and tests
- make sure that all conclusions are justified given the results

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

Howell, D.C. (2013). *Statistical Methods for Psychology* (8th ed.). Belmont, CA: Wadsworth, Cengage Learning.

Recommended Text (Only need one—The first two options are online and free; the third option is for those who prefer to have a physical book as a resource)

- 1) Basic information about using SPSS from University of Texas Statistics Department:
https://stat.utexas.edu/images/SSC/documents/SoftwareTutorials/SPSS_GettingStarted.pdf
- 2) Howell, D.C. (2013). *Fundamental Statistics for the Behavioral Sciences* (8th ed.):
<https://www.uvm.edu/~dhowell/fundamentals8/SPSSManual/SPSSLongerManual/SPSSLongerManual.html>

OR

- 3) Field, A. (2018). *Discovering statistics using SPSS* (5th ed.). Thousand Oaks, CA: SAGE Publications. ISBN-13: 978-1526436566

Technological Knowledge and Skills

Students will use SPSS (Statistical Package for the Social Sciences) to analyze data using 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, and regression).

Study Materials and Quizzes

Please see the "Class Learning Material Structure" note in the announcement tab of the class Sakai site for a more in-depth explanation of how the materials will be organized and how to proceed in completing the quizzes. In short, each class will cover at least one topic (please be aware that each of the first two classes will cover two topics—the remaining classes will cover one topic each class). In each class, you will be assigned a chapter (or two chapters) in the required text, and you will also be provided recorded PowerPoint presentations that elaborate on the readings. You will then complete quizzes associated with the assigned material for that class.

An e-mail will be sent to students when the materials are available each class day. Please pay attention to the due date for the quizzes (also noted in the schedule of classes at the end of the syllabus). This class will be moving very fast, as we will be covering 15 weeks of material (when taught in fall or spring) in six weeks. Late work will receive at most only half the total possible points unless prior arrangements have been made with the instructor.

Also, if you turn in work late, you may not get feedback from me right away. I grade all quizzes that require manual grading on the day after the due date. If you turn your quiz in late, I will not be able to get to your quiz until the next time I am grading quizzes. Of course, you will receive electronic feedback (e.g., explanations of why certain answers are the correct answers) right after you submit your quizzes, as there will be comments or answer keys made available to you after you submit quizzes. So you will know how you did even before I grade your quizzes (for quizzes that require manual grading).

Final Exam

One exam is given at the end of the semester/summer session. More details will be provided on Sakai.

Evaluation

Grades will be based on the accumulation of points related to the quizzes and final exam. There will be 100 total possible points, with the points distributed as follows:

| | |
|------------|-----|
| Quizzes | 80% |
| Final exam | 20% |

The grade ranges in terms of percentages 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

- At least a DSL 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 are equipped with the latest version of SPSS. Students can also obtain a copy of IBM SPSS Statistics for home use free of charge. For details about obtaining a copy of the software for home use, please go to <https://www.luc.edu/its/itrs/academicresearchtechnologies/ibmspssstatistics/> (scroll halfway down and you will see instructions on how to obtain a copy from ITS). The version available from ITS will be sufficient for this class.

Required Familiarity

- Be able to download and upload 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:

<https://kb.wisc.edu/ei/resources/page.php?id=50548>)

- Tone down your language. Given the absence of face-to-face cues, 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 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 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, they do reflect on you. Your audience might not be able to decode misspelled words or poorly constructed sentences. It is 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.

SOE Vision

The School of Education of Loyola University Chicago is a community that seeks to transform members to impact local and global communities through the principles of social justice.

School of Education Mission

The School of Education at Loyola University Chicago, a Jesuit Catholic urban university, supports the Jesuit ideal of knowledge in the service of humanity. We endeavor to advance professional education in service of social justice, engaged with Chicago, the nation, and the world. To achieve this vision, the School of Education participates in the discovery, development, demonstration, and dissemination of professional knowledge and practice within a context of ethics, service to others, and social justice. We fulfill this mission by preparing professionals to serve as teachers, administrators, psychologists, and researchers who work across the developmental continuum, and by conducting research on issues of professional practice and social justice.

School of Education Conceptual Framework

Our School's Conceptual Framework – ***Social Action through Education*** – guides the curricula of School of Education programs in the preparation of carrying out the mission of social justice.

These dimensions of the conceptual framework also serve as the foundation to the School of Education – standards that are explicitly embedded in major benchmarks across all SOE programs. Our conceptual framework is described here: www.luc.edu/education/mission/. Social inequities exist for many subgroups within the population (including but not limited to subgroups based on race, gender, sexual orientation, social class, ethnicity, and ability). This course will help students develop the foundational knowledge needed to carry out quantitative research that could offset social inequities that exist in our society for one, some, or all groups.

Objectives

The essential objectives for this course are:

1. Gaining a basic understanding of the subject (e.g., factual knowledge, methods, principles, generalizations, theories)
2. Learning to apply course material (to improve thinking, problem solving, and decisions)
3. Learning appropriate methods for collecting, analyzing, and interpreting numerical information

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 2020-2021 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.

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. We know this will be a semester like none other, but through collaboration, communication, and shared responsibility, we will not only get through this difficult time; we will thrive.

KEY COVID-19 Resources for your Spring – 2021 Return

[RETURN to CAMPUS Checklist](#)

[RETURN to CAMPUS Guidance](#)

[Required Personal Safety Practices](#)

COVID-19 Testing and Reporting Protocol
COVID-19 Campus Updates

Loyola University Chicago
School of Education
Syllabus Addendum

Smart Evaluation

Towards the end of the course, students will receive an email from the Office of Institutional Effectiveness as a reminder to provide feedback on the course. Students will receive consistent reminders throughout the period when the evaluation is open, and the reminders will stop once the evaluation is completed.

- 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.

Special Circumstances--Receiving Assistance

Students are urged to contact me should they have questions concerning course materials and procedures. If you have any special circumstance that may have some impact on your course work, please let me know so we can establish a plan for assignment completion. If you require assignment accommodations, please contact me early in the semester so that arrangements can be made with Services for Students with Disabilities (SSWD) (<http://www.luc.edu/sswd/>).

Dispositions

All courses in the SOE assess student dispositions. As a result, your syllabus is required to have a statement describing which SOE dispositions will be assessed in the course: ***Professionalism, Inquiry, and Social Justice***. Full transparency is critical to ensure that students are able to meet the expectations in this area. *Please be sure to state the disposition or dispositions that are assessed in the course and direct students to where they can locate the rubric on LiveText.* A description of how we use disposition data in the SOE is included in the SOE syllabus addendum.

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

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

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

| Week | Tuesday | Thursday |
|------|--|---|
| 1 | <p><u>5/25</u> Topics to begin reviewing:</p> <ul style="list-style-type: none"> • Topic 1. Introduction & scales of measurement (Ch. 1) • Topic 2. Describing data & introduction to SPSS (Ch. 2) | <p><u>5/27</u> Topics to begin reviewing:</p> <ul style="list-style-type: none"> • Topic 3. The normal distribution (Ch. 3) • Topic 4. Sampling distribution & hypothesis testing (Ch. 4) <p><u>Due</u> on this day (by midnight): Complete the quizzes for the following topics</p> <ul style="list-style-type: none"> • Topic 1 • Topic 2 |
| 2 | <p><u>6/1</u> Topic to begin reviewing:</p> <ul style="list-style-type: none"> • Topic 5. Hypothesis tests applied to means: Variance known (z-test; Ch. 7) <p><u>Due</u> on this day (by midnight): Complete the quizzes for the following topics</p> <ul style="list-style-type: none"> • Topic 3 • Topic 4 | <p><u>6/3</u> Topic to begin reviewing:</p> <ul style="list-style-type: none"> • Topic 6. Hypothesis tests applied to means: Variance unknown (one-sample t-test; Ch. 7) <p><u>Due</u> on this day (by midnight): Complete the quizzes for the following topics</p> <ul style="list-style-type: none"> • Topic 5 |
| 3 | <p><u>6/8</u> Topic to begin reviewing:</p> <ul style="list-style-type: none"> • Topic 7. Hypothesis tests applied to means: Variance unknown (two-sample t-test; Ch. 7) <p><u>Due</u> on this day (by midnight): Complete the quizzes for the following topics</p> <ul style="list-style-type: none"> • Topic 6 | <p><u>6/10</u> Topic to begin reviewing:</p> <ul style="list-style-type: none"> • Topic 8. Power (Ch. 8) <p><u>Due</u> on this day (by midnight): Complete the quizzes for the following topics</p> <ul style="list-style-type: none"> • Topic 7 |
| 4 | <p><u>6/15</u> Topic to begin reviewing:</p> <ul style="list-style-type: none"> • Topic 9. Correlation (Ch. 9) <p><u>Due</u> on this day (by midnight): Complete the quizzes for the following topics</p> <ul style="list-style-type: none"> • Topic 8 | <p><u>6/17</u> Topic to begin reviewing:</p> <ul style="list-style-type: none"> • Topic 10. Simple linear regression I (Ch. 9) <p><u>Due</u> on this day (by midnight): Complete the quizzes for the following topics</p> <ul style="list-style-type: none"> • Topic 9 |
| 5 | <p><u>6/22</u> Topic to begin reviewing:</p> <ul style="list-style-type: none"> • Topic 11. Simple linear regression II (Ch. 9) <p><u>Due</u> on this day (by midnight): Complete the quizzes for the following topics</p> <ul style="list-style-type: none"> • Topic 10 | <p><u>6/24</u> Topic to begin reviewing:</p> <ul style="list-style-type: none"> • Topic 12. Chi-square (Ch. 6, pg. 138 to 143) <p><u>Due</u> on this day (by midnight): Complete the quizzes for the following topics</p> <ul style="list-style-type: none"> • Topic 11 |

(Schedule continues on the next page)

| | | |
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| 6 | <p><u>6/29</u></p> <ul style="list-style-type: none"> • No new topics to review • Study for the final exam <p><u>Due</u> on this day (by midnight): Complete the quizzes for the following topics</p> <ul style="list-style-type: none"> • Topic 12 | <p><u>7/2 (This is a Friday)</u></p> <ul style="list-style-type: none"> • <u>Due by this day</u>: Final exam—You technically have until 4 p.m. (Central Time) of Friday (7/2) to complete the final exam |
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Note. Each class, you will be assigned material and then complete a quiz (or quizzes) related to the material. The quiz (or quizzes) associated with the material is (are) due by end of the day of the next class period. For example, the quizzes for Topic 1 and Topic 2 (both released to you on the first day of class, 5/25) are due by end of the day on 5/27.

Evaluation of Dispositions in RMTD 404

| | Exceeds Standard | Meets Standard | Partially Meets Standard | Does Not Meet Standard |
|---------------------------------------|---|--|--|--|
| Professional Domain | Candidate engages in and models ethical practice and on-going learning to promote personal growth. | Candidate engages in ethical practice and on-going learning to promote personal growth. | Candidate engages in some ethical practice and/or on-going learning to promote personal growth. | Candidate rarely engage in ethical practice and on-going learning to promote personal growth. |
| Management: Time and Responsibilities | Candidate consistently manages time and responsibilities to meet deadlines and expectations, making adjustments as appropriate. | Candidate usually manages time and responsibilities to meet deadlines and expectations, making adjustments as appropriate. | More than 2/3 of the time throughout the course candidate manages time and/or responsibilities to meet deadlines and expectation. Candidate may struggle to make adjustments as appropriate. | Candidate rarely manages time and responsibilities to meet deadlines and expectations. Candidate is not able to make adjustments as appropriate. |
| Management: Interpersonal | Candidate always communicates effectively and appropriately with faculty and peers. | Candidate usually communicates effectively and appropriately with faculty and peers. | Candidate occasionally communicates effectively and/or appropriately with faculty and peers. | Candidate rarely communicate effectively and appropriately with faculty and peers. |
| Context | Candidate thoroughly understands, respects, and appropriately responds to the context(s) (i.e., environment, structure, culture, history, values, politics, economics, power, privilege) within which the candidate is working. | Candidate usually understands, respects, and appropriately responds to the context(s) (i.e., environment, structure, culture, history, values, politics, economics, power, privilege) within which the candidate is working. | Candidate occasionally understands, respects, and/or appropriately responds to the context(s) (i.e., environment, structure, culture, history, values, politics, economics, power, privilege) within which the candidate is working. | Candidate rarely understand, respect, and appropriately respond to the context(s) (i.e., environment, structure, culture, history, values, politics, economics, power, privilege) within which the candidate is working. |

| | | | | |
|--------------------|--|---|---|---|
| <p>Empathy</p> | <p>Candidate always shows empathy by listening and respecting the experiences and viewpoints of others, particularly those whose cultural experiences are different than their own. Candidate recognizes potential conflicts and handles them appropriately.</p> | <p>Candidate usually shows empathy by listening and respecting the experiences and viewpoints of others, particularly those whose cultural experiences are different than their own. Candidate usually recognizes potential conflicts and handles them appropriately.</p> | <p>Candidate sometimes shows empathy by listening and/or respecting the experiences and viewpoints of others, particularly those whose cultural experiences are different than their own. Candidate sometimes recognizes potential conflicts and/or handles them appropriately.</p> | <p>Candidate does not show empathy by listening and respecting the experiences and viewpoints of others, particularly those whose cultural experiences are different than their own. Candidate does not recognize potential conflicts or handle them appropriately.</p> |
| <p>Methodology</p> | <p>Candidate thoroughly understands and is independently able to carry out an inquiry process, including asking questions, designing studies, sampling, collecting and analyzing data, interpreting results, and reporting findings.</p> | <p>Candidate usually understands and needs a little assistance to carry out an inquiry process, including asking questions, designing studies, sampling, collecting and analyzing data, interpreting results, and reporting findings.</p> | <p>Candidate somewhat understands and needs extensive assistance to carry out an inquiry process, including asking questions, designing studies, sampling, collecting and analyzing data, interpreting results, and reporting findings.</p> | <p>Candidate does not understand and is not able to carry out an inquiry process, including asking questions, designing studies, sampling, collecting and analyzing data, interpreting results, and reporting findings.</p> |