

**RMTD 404 Online**  
**Introduction to Educational Statistics**  
**(Fall 2021)**

**Instructor:** Ken A. Fujimoto, Associate Professor

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**Phone:** (312) 915-6852

**Class Meetings:** Tuesdays (5:30 to 6:30); attendance optional

**Zoom link for office hours:** <https://luc.zoom.us/j/83970941714>

**Office:** Lewis Towers, Room 1136

**Online Office hours:** By appointment

**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 being 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**

King, B. M., Rosopa, P. J., & Minium, E. W. (2018). *Statistical Reasoning in the Behavioral Sciences* (7<sup>th</sup> ed.). Belmont, CA: Wiley.

**Recommended Text** (Only need one—The first option is online and free; the second 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](https://stat.utexas.edu/images/SSC/documents/SoftwareTutorials/SPSS_GettingStarted.pdf)

OR

- 2) Field, A. (2018). *Discovering statistics using SPSS* (5<sup>th</sup> ed.). Thousand Oaks, CA: SAGE Publications. ISBN-13: 978-1526419521

### **Technological Knowledge and Skills**

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

### **Class Structure**

This class will be part asynchronous and synchronous, although more weighted to the former and attendance in the synchronous portion will be options. Each week (on Tuesday), you will be assigned a topic or two. Readings from the required text is assigned to you, and you will also be provided an audio lecture elaborating on the readings. There will also be an assignment associated with each week's material (which will be due the Thursday of the following week—see the class schedule below for the due dates). This will allow you to ask questions during the synchronous portion of the class (which we will be meeting on Tuesday from 5:30 to 6:30 Central Time).

An e-mail will be sent to everyone when the material is made available each week. Please pay attention to the due date for the assignments. Late work will receive at most only half the total possible points unless prior arrangements have been made with me.

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

### **Examinations**

There will be two exams in this course. Exam 1 will take place around the middle of the semester (you will be expected to work on the exam by yourself). Exam 2 will be during the final exam week. The exams are open book and open notes, and you may use calculators during the exam. However, books, notes, and calculators may not be shared or circulated during exams. You will have a week to complete each exam.

### **Evaluation**

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

Assignments	60%
Exam 1	20%
Exam 2	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/ibmpsstatistics/> (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. You can also access SPSS through Aporto (you can also access Aporto through the link provided right above).

#### *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.

- 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/](http://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	Dates	Topics	Readings	Assignment Due
1	8/31	• Introduction	Ch.1	9/9
2	9/7	• Describing data • Central tendency	Ch.3 Ch.4	9/16
3	9/14	• Variability and standard scores	Ch. 5	9/23
4	9/21	• Standard scores and Normal curve	Ch.6	9/30
5	9/28	• Sampling distributions • Testing hypotheses about a single mean: Variance known (z-test)	Ch. 11 Ch. 12	10/7
6	10/5	• Testing hypotheses about a single mean: Variance unknown (one-sample $t$ -test)	Ch.13	10/21
7	10/12	• ...Fall Break		
8	10/19	~~~~~ Exam 1 ~~~~~		10/28
9	10/26	• Testing hypotheses about the difference between two independent groups (two-sample $t$ -test)	Ch.15	11/4
10	11/2	• Testing hypotheses about the difference between two independent groups (two-sample $t$ -test) • Power, Type I Error, and Type II Error	Ch.16 Ch.14	11/11
11	11/9	• Correlation	Ch.7, Ch.17	11/18
12	11/16	• Simple regression I	Ch.8	11/29*
13	11/23	• Simple regression II	Ch.8, Ch.17	12/3*
14	11/30	• Chi-square I	Ch.21	12/9
15	12/7	• ...Review for exam—no new material		
16	12/14	~~~~~ Exam 2 ~~~~~		12/17

Note. Each week, you will be assigned one to two topics. You will be provided material (readings from the required textbook, audio lectures, and assignments) that help you learn about the topic(s) assigned to you. The assignments will not be due until the Thursday of the following week. For instance, Week 1's material will be provided to you on 8/31, and the assignments associated with that week will due by the end of the day on 9/9. This way, you can ask questions about Week 1's material on Tuesday (9/9) during the synchronous portion of the class if you have questions. Attendance at the synchronous portion of the class is optional. \*These assignment due dates break away from the pattern of assignments being due the Thursday of the following week. This is to accommodate Thanksgiving holiday.

Evaluation of Dispositions in RMTD 404

	<b>Exceeds Standard</b>	<b>Meets Standard</b>	<b>Partially Meets Standard</b>	<b>Does Not Meet Standard</b>
<b>Professional Domain</b>	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.
<b>Management: Time and Responsibilities</b>	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.
<b>Management: Interpersonal</b>	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.
<b>Context</b>	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>