

RMTD 421 Online
Educational Research II:
Building a Body of Evidence Using Quantitative Methods
(Spring 2021)

Instructor: Ken A. Fujimoto, Associate Professor

E-mail: kfujimoto@luc.edu

Phone: (312) 915-6852

Office: Lewis Towers, Room 1136

Virtual Office Hour: By appointment (<https://luc.zoom.us/j/83334299660>)

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.

Teaching Assistant: Wenya Chen, Doctoral Student
in the Research Methodology Program

E-mail: wchen7@luc.edu

Course Description

This course explores the discipline and practice of quantitative research. It introduces students to theories, traditions, and components of this form of inquiry. The course will integrate basic design principles of quantitative research with commonly used statistical methods for analyzing data from these designs. The designs covered in the course include experimental and quasi-experimental studies, observational studies, and basic survey sample principles. This course focuses on the inferential statistical methods of ANOVA, ANCOVA, linear modeling, and nonparametric statistics. The concepts and applications of statistical power are also introduced. Students are expected to have successfully completed a graduate-level introductory statistics course that covered hypothesis testing and basic inferential statistics. You are also required to have basic knowledge of how to use SPSS.

Required Texts

- (1) Adams, K. A. & Lawrence, E. K. (2018). Research Methods, statistics, and applications. Thousand Oaks, CA: Sage.

- (2) The statistics textbook (Howell, 2013) used in the pre-required course (e.g. RMTD 404). You will rely on it for the statistical part of this class (weeks 5-14).
Howell, D.C. (2013). Statistical Methods for Psychology (8th ed.). Belmont, CA: Wadsworth, Cengage Learning.

Suggested Text (If you feel like you need something other than Howell or need a book that provides more SPSS instruction)

The Field (2018) book is highly recommended not only for those who may need more assistance with the usage of SPSS but also for those who would like to pursue advanced statistics. It contains explanations of complicated concepts and clear descriptions of how to use SPSS to perform various analyses:

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

Course Objectives

In this class, students are expected to

1. Understand the components of quantitative research
2. Understand the concept of causation
 - a. How does it relate to research design
 - b. What are the three conditions that are needed for causation
3. Understand generalized causal inference and how experiments should be designed to facilitate this kind of inference
4. Understand different types of reliability and primary dimensions of validity for research
5. Understand the definition of randomized experiments
6. Understand the major quasi-experimental designs
7. Understand the design of observational research
8. Be able to do the following for each of the designs introduced in the class:
 - a. Explain the logic of the design
 - b. Explain how each design addresses causation
 - c. Describe the strengths and weaknesses of each design
 - d. Understand and implement analyses using SPSS, analyses such as multiple regression (MR), analysis of variance (ANOVA), analysis of covariance (ANCOVA), and analysis of repeated measures.
 - e. Understand the link between the analytical methods mentioned above and the general linear model
 - f. Calculate the power of statistical tests
 - g. Interpret statistical results

Course Requirements

Students will complete the following work for this class:

Quizzes: Four quizzes (based on Chapters 3, 4, 5, 6, 8 & 14—some quizzes cover multiple chapters) will be given online. These quizzes will be mainly multiple-choice questions. They will be designed to evaluate content knowledge. Students are expected to work on the quizzes independently. The answer key for each quiz will be available to you upon submission.

Short questions: Some weeks, short questions related to a real-world study will be posted for you to respond to. You will read the article and answer the questions. Usually, fewer than five sentences will be needed to answer each question.

Assignments: Assignments in this class will involve the examination of research designs and data analysis using SPSS. You can pair with another student in the class and work as a two-person group. *Only one person from each group has to upload the assignment to the account. But please put both of your names on the assignment.*

*Please note that late work is not acceptable unless prior arrangements have been made with the instructor. Late assignments will automatically be worth only half of their original point value unless prior arrangements are made with the instructor. **No extra credits/work will be given to make up points that are taken off.*

Final exam: The final exam will be open book and open notes, and you will be allowed to use calculators during the exam. You will not need to use SPSS on the final exam. The exam will be conducted online, and *you will be expected to work independently.* You will have four hours to work on it even though it is designed to be finished within 1.5 hours.

Grades

Grades will be based on points accumulated from quizzes, short answers, assignments, and a final exam. There will be 100 total possible points and distributed as follows:

Quizzes	17.5%
Assignments	50%
Short questions	10%
Final exam	22.5%

The grade ranges in terms of percentage are:

100.0-92.0 = A	85.9-80.0 = B+	69.9-65.0 = C+	54.9 and below = F
91.9-86.0 = A-	79.9-74.0 = B	64.9-60.0 = C	
	73.9-70.0 = B-	59.9-55.0 = C-	

Online Requirements

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

Required Access

- At least a DSL Internet connection
- Loyola Email Account with reliable access
- Sakai – all material for this class will be posted 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/researchtechnologies/home-use.shtml> (see the “IBM SPSS Statistics” section under the “Student Home Use” heading). 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.

<http://online.uwc.edu/technology/etiquette>)

- 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.

Responsible Conduct in Research and Scholarship (RCRS)

Loyola University Chicago is committed to ensuring that all its faculty and students have the opportunity to be properly trained in the ethical and responsible conduct of research and scholarly integrity and are held to the highest possible ethical standards. In order to ensure each faculty and student at Loyola has the basic foundation needed to learn and apply the ethical standards of their discipline/profession, he or she is encouraged to complete or register for the no-credit Responsible Conduct in Research and Scholarship course (UNIV 370) prior to involvement in funded research activity involving the NSF, NIH, or any other federal agency requiring training. Beginning Fall 2011, the Graduate School is requiring RCRS training for all matriculating Ph.D. students and master's students enrolled in thesis-oriented programs. Graduate Program Directors in non-thesis master's programs may recommend RCRS training for their students. For purposes of applying this policy, research means a systematic investigation, including research development, testing, and evaluation, designed to develop or contribute to generalizable knowledge. Activities which meet this definition constitute research for purposes of this policy, whether or not they are conducted or supported under a program which is considered research for other purposes. For example, some demonstration and service programs may include research activities. Typically, thesis and dissertation projects required by an academic program to receive a degree are considered research activities. School of Education master's students who have completed RMTD 400 – Introduction to Research Methodologies and received a grade of B or higher have fulfilled the requirement for RCRS training. School of Education doctoral students who have completed the two-course sequence, RMTD 420 and RMTD 421, and received a grade of B or higher in both courses have fulfilled the requirement for RCRS training. School of Education students who do not meet these requirements will need to complete the UNIV 370 course. More information about the RCRS policy can be found here: <http://www.luc.edu/ors/RCRHome.shtml>.

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 of this course are:

- Gaining a basic understanding of the subject (e.g., factual knowledge, methods, principles, generalizations, theories)
- Learning to apply course material (to improve thinking, problem-solving, and decisions)
- 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
[Spring 2021 RETURN to CAMPUS Checklist](#)

[Spring 2021 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/studentlife/resources/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	Date	Topics	Reading	Due the Wednesday of the week the Quiz or Assignment is listed (see notes at below the table for more details)
1	1/19	Introduction <ul style="list-style-type: none"> • Postpositivism • Ethical issues • Scientific approach/method 	Ch. 1** (see note below about which book to look in when only a chapter number is provided)	
2	1/25	Reliability & validity	Ch. 3	<ul style="list-style-type: none"> • Introduce yourself in the Forum
3	2/1	<ul style="list-style-type: none"> • Sample and description of sample in quantitative research • Quick review of hypothesis testing 	Quick review of Chs. 4 & 5 & 6	<ul style="list-style-type: none"> • Ch. 3 Quiz • Short question
4	2/8	<ul style="list-style-type: none"> • Causal relationship • Concepts of experimental designs & Quasi-experimental designs 	Ch. 9	<ul style="list-style-type: none"> • Chs. 4-6 Quiz • Short question
5	2/15	Independent-groups designs <ul style="list-style-type: none"> • multiple independent groups (ANOVA) 	Ch. 10 & Stats Text	Ch 9. Quiz
6	2/22	Factorial designs <ul style="list-style-type: none"> • 2* 2 designs: Interaction 	Ch. 12 & Stats Text	
7	3/1	Factorial designs <ul style="list-style-type: none"> • 2* 2 designs: Model building 	Ch. 12 & Stats Text	Assig # 1: ANOVA
8	3/8	~*~*~ Spring break ~*~*~		
9	3/15	Factorial designs <ul style="list-style-type: none"> • Covariates & other complicated designs 	Ch. 12 & Stats Text	Assig # 2: two-way ANOVA
10	3/22	Dependent-groups designs <ul style="list-style-type: none"> • Two dependent groups • Dependent samples ANOVA 	Ch. 11 & Stats Text	Assig # 3: ANCOVA
11	3/29	Correlational designs <ul style="list-style-type: none"> • Correlation & Multiple regression I 	Ch. 8 & Stats Text	Assig # 4: Dependent sample
12	4/5	Correlational designs <ul style="list-style-type: none"> • Multiple regression II (Logistic Regression) 	Ch. 8 & Stats Text	
13	4/12	Power	Stats Text	Assig # 5: Regression

14	4/19	Nonparametric statistics	Ch. 13	Assig # 6: Power
15	4/26	RCRS – Ethic Guideline for dissertation	RCRS ^a : Forward, Preface, Chapters 7 and 10	Ch. 13 Quiz
16	5/3	Final exam		

Note. **All readings that has “Ch. #” refers to the chapters in Adams & Lawrence (2018). “Stats Text” refers to Howell (2013). The corresponding pages in Howell’s book are listed in each week’s folder in Sakai.

Quizzes and assignments are due on the Wednesday of the week the quizzes and assignments listed. For example, the quiz for Chapter 3 and the short questions that go with Chapter 3 are due by 11:59pm on 2/3 (Wednesday).

a. ORI Introduction to the Responsible Conduct of Research:

<http://ori.dhhs.gov/education/products/RCRintro/index.html>

Disposition Assessment

Course: RMTD 421 – Educational Research II

	Exceeds Standard	Meets Standard	Partially Meets Standard	Does Not Meet Standard
Professionalism (professional domain)	The candidate engages in and models ethical practice and on-going learning to promote personal growth.	The candidate engages in ethical practice and on-going learning to promote personal growth.	The candidate engages in some ethical practice and on-going learning to promote personal growth.	The candidate does not engage in ethical practice and on-going learning to promote personal growth.
Professionalism (management domain)	The candidate manages time and responsibilities to meet deadlines and expectations, making adjustments as appropriate and assist others to meet the standard.	The candidate 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 responsibilities to meet deadlines and expectations, making	The candidate does not manage time and responsibilities to meet deadlines and expectations, making adjustments as appropriate.

	Exceeds Standard	Meets Standard	Partially Meets Standard	Does Not Meet Standard
			adjustments as appropriate.	
Professionalism (management domain)	The candidate always communicates effectively and appropriately with faculty and peers.	The candidate usually communicates effectively and appropriately with faculty and peers.	The candidate sometimes communicates effectively and appropriately with faculty and peers.	The candidate does not communicate effectively and appropriately with faculty and peers.
Social Justice (context domain)	The candidate always 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.	Most of the time candidate 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.	The candidate sometimes 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.	The candidate does not 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.
Inquiry (methodology domain)	The candidate is able to carry out an inquiry process, including asking questions, designing studies, sampling, collecting and analyzing data, interpreting results, and reporting findings outside of the classroom setting.	The candidate is able to carry out an inquiry process, including asking questions, designing studies, sampling, collecting and analyzing data, interpreting results, and reporting findings.	The candidate sometimes is able to carry out an inquiry process, including asking questions, designing studies, sampling, collecting and analyzing data, interpreting results, and reporting findings.	The candidate is not able to carry out an inquiry process, including asking questions, designing studies, sampling, collecting and analyzing data, interpreting results, and reporting findings.