

**RMTD 404: Introduction to Educational Statistics**  
**Monday and Wednesdays, 5-8 pm, Room 710, Corboy Law Center**  
**Summer 2018**

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**Course Description**

**Course Goals and Content**

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

- Describe data (quantitatively and graphically),
- Formulate a research hypothesis and conduct hypothesis tests,
- Select and compute appropriate statistical estimates,
- Use SPSS to accomplish these tasks, 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.

**Technological Knowledge and Skills**

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

**Text**

*Required*

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

*Recommended/Optional Text*

Field, A. (2013). *Discovering statistics using IBM SPSS* (4<sup>th</sup> ed.) Thousand Oaks, CA: SAGE Publications. ISBN-10: 1446249182; ISBN-13: 978-1446249185.

**Study Materials and Weekly Homework**

You will learn a new topic each week. Please review the chapters that are assigned for that week before the class. We will have in-class practice questions for most of the classes, which in turn will help you to prepare for the homework. Practice questions will not be counted toward your final grades. Homework assignments in this class will involve the

analyses of research designs as well as data analyses using SPSS. For the assignments that require SPSS, students are encouraged to pair with another student in the class and work as a group to discuss the questions and the direction of analysis. Students are also allowed and encouraged to discuss with other groups. However, students should write up the answers independently and turn it in by the due date. Do not circulate your homework.

An e-mail will be sent to students ahead of time when the study materials are available so you do not need to check Sakai regularly. Please pay attention to the due date for the homework, as late work is not acceptable unless prior arrangements have been made with the instructor. Late assignments will automatically be worth half of their original point value.

### **Examination**

There will be one final exam for this course. The exam is open-book and open-note, and you may use your calculator during the exam. However, books, notes, and calculators may not be shared or circulated during exams, so be sure to bring your own materials.

### **Participation**

Class participation includes but is not limited to attending class on time; actively participating in class activities and discussions; asking and answering questions; and listening to and respecting the views, thoughts, and opinions of your classmates. If you must be absent from class because of illness or emergency, notify the instructor as early as possible.

### **Grades**

Grades will be based on points accumulated on homework and examinations. There will be 100 total possible points, distributed as follows:

- Homework assignments: 60%
- Final exam (scheduled time only): 30%
- Participation (attendance and discussion): 10%

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-	

### **Technology Requirements**

#### *Required Access*

- Loyola email account with reliable access
- Sakai – All materials for this class will be posted in Sakai
- Access to SPSS 23 – Most computers on Water Towers Campus have the latest version of SPSS. For home use, you can *purchase* or *rent* the SPSS Graduate Package. More information can be found in “Student Home Use” section in: <http://www.luc.edu/itrs/researchcomputing/home-use.shtml>. For the purposes of

this class, the “**IBM SPSS Statistics Base GradPack**” suffices. The latest version is 23, but version 20 and beyond will work just fine.

*Required Familiarity*

- Be able to download and attach files in emails
- Be able to use Microsoft Office Package, especially Microsoft Word and Microsoft PowerPoint

**Tentative Schedule**

<b>Date</b>		<b>Topics</b>	<b>Readings</b>
1	5/21	Introduction and measure scales	Howell (2012), Ch.1
2	5/23	Describing data and introduction to SPSS	Howell (2012), Ch.2
	5/28	Memorial Day – No classes	
3	5/30	Basic concepts of normal distribution	Howell (2012), Ch.3
4	6/4	Sampling distribution and hypothesis testing	Howell (2012), Ch.4
5	6/6	Hypothesis tests applied to means: Variance known (z-test)	Howell (2012), Ch.7
6	6/11	Hypothesis tests applied to means: Variance unknown (one-sample <i>t</i> -test)	Howell (2012), Ch.7
7	6/13	Hypothesis tests applied to means: Variance unknown (two-sample <i>t</i> -test)	Howell (2012), Ch.7
8	6/18	Correlation and simple regression	Howell (2012), Ch.9
9	6/20	Chi-square	Howell (2012), Ch.6
10	6/25	Power	Howell (2012), Ch.8
11	6/27	<b>Final exam</b>	

**Loyola University Chicago  
School of Education**

➤ **IDEA Objectives for the Objectives Selection Form**

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

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

➤ **IDEA Course Evaluation**

The link to the IDEA Campus Labs website is <http://luc.edu/idea/> and this will direct you to the *Student IDEA Log In* on the left side of the page. Please be sure to use this link to complete the course evaluation at the end of the course.

➤ **Conceptual Framework and Conceptual Framework Standards**

Our School’s conceptual framework is “*Social Action through Education*”. This course contributes to this framework by equipping students with knowledge and experience for conducting valid 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 that all individuals, no matter their ability, race, religion, socioeconomic status, age or gender benefit from effective social science research.

[www.luc.edu/education/mission/](http://www.luc.edu/education/mission/)

➤ **Dispositions**

Each course in the School of Education focuses on one or more professional dispositions. These dispositions, *Professionalism, Inquiry, and Social Justice*, are indicators of growth for our programs. Students are offered opportunities to receive feedback on their dispositional growth in the areas of professionalism, inquiry, and social justice. The expected behaviors for the specific dispositions for this class and the evaluation rubric are listed below in this syllabus.

**Evaluation of Disposition in RMTD 404 Rubric**

Area	Target	Acceptable	Unacceptable
<b>Systematic Inquiry AEA A.3</b>	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.

<b>Responsibilities for General and Public Welfare AEA E.3</b>	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.
<b>Timeliness</b>	Candidate is able to meet all deadlines.	Candidate is sometimes able to meet all deadlines.	Candidate is unable to meet all deadlines.
<b>Integrity/Honesty AEA C.5</b>	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.

➤ **LiveText**

The required texts and materials are also included in 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. The following hyperlink offers you some additional information about [LiveText](http://www.luc.edu/education/admission/tuition/course-management-fee/)  
<http://www.luc.edu/education/admission/tuition/course-management-fee/>

➤ **Diversity**

The School of Education is committed to diversity including but not limited to race, gender, sexual orientation, social class, ethnicity, and ability. Through this course, students will learn how to interpret and critique fundamental research methods used in the social sciences. The course is designed to provide students with the knowledge necessary to evaluate research concerning the social dimensions mentioned above.

➤ **SOE Academic Policies**

This link directs you to the following required statements and can be used in place of adding each individual statement to the syllabus. [www.luc.edu/education/syllabus-addendum/](http://www.luc.edu/education/syllabus-addendum/)

**Academic Honesty**

Academic honesty is an expression of interpersonal justice, responsibility and care, applicable to Loyola University faculty, students, and staff, which demands that the pursuit of knowledge in the university community be carried out with sincerity and integrity.

The School of Education's Policy on Academic Integrity can be found at:

[www.luc.edu/education/resources/academic-policies/academic-integrity/](http://www.luc.edu/education/resources/academic-policies/academic-integrity/)

For additional academic policies and procedures refer to:

[www.luc.edu/education/resources/academic-policies/](http://www.luc.edu/education/resources/academic-policies/)

### **Accessibility**

Students who have disabilities which they believe entitle them to accommodations under the Americans with Disabilities Act should register with the Services for Students with Disabilities (SSWD) office. To request accommodations, students must schedule an appointment with an SSWD coordinator. Students should contact SSWD at least four weeks before their first semester or term at Loyola. Returning students should schedule an appointment within the first two weeks of the semester or term. The University policy on accommodations and participation in courses is available at: [www.luc.edu/sswd/](http://www.luc.edu/sswd/)

### **Conceptual Framework**

SOE's Conceptual Framework –*Social Action through Education* – is exemplified within the context of each particular course. Conceptual Framework standards are referenced in the specific course syllabus if applicable. Our conceptual framework is described here: [www.luc.edu/education/mission/](http://www.luc.edu/education/mission/)

### **EthicsLine Reporting Hotline** [www.luc.edu/ethicsline](http://www.luc.edu/ethicsline)

Loyola University Chicago has implemented EthicsLine Reporting Hotline, through a third party internet & telephone hotline provider, to provide you with an automated and anonymous way to report activities that may involve misconduct or violations of Loyola University policy. **You may file an anonymous report here [on-line](#) or by dialing 855-603-6988. (within the United States, Guam, and Puerto Rico).** The University is committed to the highest ethical and professional standards of conduct as an integral part of its mission of expanding knowledge in the service of humanity through learning, justice and faith. To achieve this goal, the University relies on each community member's ethical behavior, honesty, integrity and good judgment. Each community member should demonstrate respect for the rights of others.

### **Electronic Communication Policies and Guidelines**

The School of Education faculty, students and staff respect each other's rights, privacy and access to electronic resources, services, and communications while in the pursuit of academic and professional growth, networking and research. All members of the university community are expected to demonstrate the highest standards of integrity, communication, and responsibility while accessing and utilizing technology, information resources, and computing facilities. A link to the Loyola University Chicago and School of Education official policies and guidelines can be found at:

[www.luc.edu/media/lucedu/education/pdfs/SOE\\_Cyberbullying\\_Policy.pdf](http://www.luc.edu/media/lucedu/education/pdfs/SOE_Cyberbullying_Policy.pdf)

[www.luc.edu/media/lucedu/education/pdfs/SOE\\_Netiquette\\_Guidelines.pdf](http://www.luc.edu/media/lucedu/education/pdfs/SOE_Netiquette_Guidelines.pdf)

[www.luc.edu/its/itspoliciesguidelines/index.shtml](http://www.luc.edu/its/itspoliciesguidelines/index.shtml)