



UNSW
A U S T R A L I A

Arts & Social
Sciences

School of Education

**EDST5101: Interventionist and Experimental
Design and Analysis**

Semester 1, 2017

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IMPORTANT:

For student policies and procedures relating to assessment, attendance and student support, please see website, <https://education.arts.unsw.edu.au/students/courses/course-outlines/>

The School of Education acknowledges the Bedegal and Gadigal people as the traditional custodians of the lands upon which we learn and teach.

1. LOCATION

Faculty of Arts and Social Sciences
School of Education
EDST5101 Interventionist and experimental design and analysis (6 units of credit)
Semester 1, 2017

2. STAFF CONTACT DETAILS

Course Coordinator: Associate Professor Jihyun Lee
Office Location: John Goodsell 112
Email: jihyun.lee@unsw.edu.au
Phone: 9385 1940
Availability: By appointment via email

3. COURSE DETAILS

Course Name	Interventionist and experimental design and analysis
Credit Points	6 Units of Credit (UOC)
Workload	Involves 150 hours including class contact hours, readings, class preparation, assessment, follow up activities, etc. Include 24 hours of class contact time.
Schedule	18 - 21 April 2017 (Tue-Fri) 09:00-16:00 Morven Brown 103

Summary of Course

This course covers data analytic strategies for evaluating group differences, involving small scale experimental to large-scale interventionist studies in educational settings. The focus of this course is to understand and apply experimental research designs, analyze and interpret statistical data, and report the results of studies. The course covers a number of basic descriptive statistical procedures, as well as inferential procedures including t-tests and ANOVA tests.

The main ways in which the course has changed since last time as a result of student feedback

- Students will have the opportunities to see more examples of data that are applicable for experimental design.
- Students will have the choice to bring their own datasets to use during the course.

Important Information

Attendance: Students are expected to give priority to university study commitments. Unless specific and formal permission has been granted, failure to attend 80% of classes in a course may result in failure.

Student Learning Outcomes

Outcome	Assessment/s
1 Analyse data by applying statistical techniques	2, 3
2 Design an experimental study	1
3 Interpret results of quantitative research	1, 2, 3
4 Report the method and results of an experiment	3

		Assessment/s
	Advanced disciplinary knowledge and practices	
1	Demonstrate an advanced understanding of the field of education as it relates to their specialist area of study, and the ability to synthesize and apply disciplinary principles and practices to new or complex environments.	1-3
	Research-based learning	
2	Demonstrate an in-depth understanding of research-based learning and the ability to plan, analyse, present implement and evaluate complex activities that contribute to advanced professional practice and/or intellectual scholarship in education	1-3
	Cognitive skills and critical thinking	
3	Demonstrate advanced critical thinking and problem solving skills	1-3
	Communication, adaptive and interactional skills	
4	Communicate effectively to a range of audiences, and be capable of independent and collaborative enquiry and team-based leadership	3
	Ethical and responsible professional practice	
5	Demonstrate an advanced capacity to recognise and negotiate the complex and often contested values and ethical practices that underlie education	1-3

4. RATIONALE FOR THE INCLUSION OF CONTENT AND TEACHING APPROACH

EDST5101 places an emphasis on understanding research designs, analysing and interpreting the data and writing research reports. This course is based on a learning philosophy that highlights individual as well as collaborative learning through understanding fundamental concepts and hands-on exercises.

5. TEACHING STRATEGIES

Student-centred activities will form the basis of the course, which will draw on the prior knowledge of the students and allow engagement in relevant, challenging and hands-on experiences. The lectures are designed to include meaningful realistic learning tasks as well as promote independent and collaborative study and enquiry.

Teaching strategies used during the course will include: small group learning to understand the importance of teamwork in an educational context and to demonstrate the use of group structures as appropriate to address teaching and learning goals; individualized learning that enables learners to function as individuals; explicit teaching including lectures and a range of teaching strategies to foster interest and support learning; structured occasions for reflection on learning to allow students to reflect critically on issues discussed; extensive opportunities for the whole group and small group dialogue and discussion, allowing students the opportunity to demonstrate their capacity to communicate. These activities will occur in a climate that is supportive and inclusive of all learners.

6. COURSE CONTENT AND STRUCTURE

Week Beginning	Lecture Topic	Reading
Pre-Session Wed 15 March	Introducing the course, informal evaluation of prior knowledge in statistics, understanding of the experimental design research,	Field (2013) Introduction (Chapter 1), The SPSS Environment (CHAPTER 3)

Note. Class will meet on:

16 March (Thursday) from 5 to 6 pm (room: TBA).

IN THIS PRE-SESSION, STUDENTS WILL DISCUSS WITH THE LECTURER ABOUT THEIR PRIOR STATISTICAL KNOWLEDGE RELATED TO THIS COURSE. SOME DISCUSSION WILL TAKE PLACE ABOUT THE PRE-ASSESSMENT WHICH WILL BE DUE ON 31ST OF MARCH.

Day 1 Tue 18 April	Introduction: Overview of research design, Experimental research design vs. Correlational research design, Various types of experimental research design Fundamentals: key statistics terms, concepts of statistical testing, and terminology & t-test	Field (2013) Introduction (Chapter 1), The SPSS Environment (Chapter 3), Comparing Two Means (Chapter 9)
Day 2 Wed 19 April	Research design and statistical testing using: Analysis of Variance (ANOVA)	Field (2013) Comparing Several Means: ANOVA (Chapter 11)
Day 3 Thurs 20 April	Research design and statistical testing using: Analysis of Variance (Two-way ANOVA)	Field (2013) Factorial ANOVA (Chapter 13)
Day 4 Friday 21 April	Research design and statistical testing using: Advanced Types of Analysis of Variance:	Field (2013) Factorial ANOVA (Chapter 12)

Note. John Goodsell Room 124 is booked:

- (a) for every day of the intensive classes Tuesday 18 April – Friday 21 April (from 4 till 8 pm)**
- (b) from 24 April to 27 of April (from 4 till 8 pm)**

7. RESOURCES

Readings

Field, A. (2013). *Discovering statistics using SPSS*. London; Sage.

Students are strongly encouraged to read the chapters in field (2013) prior to the first day of the course: introduction (chapter 1), the SPSS environment (chapter 3), comparing two means (chapter 9), comparing several means: ANOVA (chapter 11), and Factorial ANOVA (chapter 13)

Further Readings

Heiman, G. (2011). *Basic statistics for the behavioural sciences*. Belmont, CA: Wadsworth, Cengage Learning

Morgan, G., Leech, N., Gloeckner, G., & Barrett, K. (2011). *IBM SPSS for introductory statistics: Use and interpretation*. New York: Routledge.

Pallant, (2010). *SPSS Survival Manual: A Step by Step Guide to Data Analysis Using SPSS*. Allen & Unwin.

Copies of articles and book chapters will be provided during the lectures. Students are strongly advised to read other statistics books that are appropriate for their own prior knowledge level on statistics and mathematics.

8. ASSESSMENT

Assessment Task	Length	Weight	Student Learning Outcomes Assessed	Australian Professional Standards for Teachers	Program Learning Outcomes Assessed	Due Date
Pre-assessment	Online quiz: (7 items)	20%	2, 3	5.1.1; 5.2.1; 5.1.3. 5.4.1; 5.4.2; 5.4.3; 5.5.1; 5.5.2; 5.5.3.	1-3, 5	Friday 31 March 5:00 PM
Data Analysis	2 problems using statistics	20%	1, 3	5.1.1; 5.2.1; 5.1.3. 5.4.1; 5.4.2; 5.4.3; 5.5.1; 5.5.2; 5.5.3.	1-3, 5	Friday 21 April 5:00 PM
Research Report	1,500 words	60%	1, 3, 4	5.1.1; 5.2.1; 5.1.3. 5.4.1; 5.4.2; 5.4.3; 5.5.1; 5.5.2; 5.5.3.	1-5	Friday 28 April 5:00 PM

Students are required to follow their lecturer's instructions when submitting their work for assessment. All assessment will be submitted online via Moodle by 5pm. Student no longer need to use a cover sheet. Students are also required to keep all drafts, original data and other evidence of the authenticity of the work for at least one year after examination. If an assessment is mislaid the student is responsible for providing a further copy. Please see the Student Policies and Procedures for information regarding submission, extensions, special consideration, late penalties and hurdle requirements etc.

Pre-assessment: Online quiz (20 items)

Understanding different types of research design

- This online quiz is designed for students to get familiarized with basic statistical terminology and different types of research design.
- Step 1. Read Chapter 1 of the textbook, Field, A. (2013). *Discovering statistics using SPSS*. London; Sage.
- Step 2. Take an online quiz (20 items).
 - The quiz will consist of multiple-choice items (about 15 items) and items requiring constructed responses (short answers or answers requiring no more than 2-3 sentences).
 - The online quiz will be available in Moodle from 15th of March to 31st of March
 - Deadline to complete the online quiz is 31st of March

Data Analysis: Exercise and writing of statistics results

- Based on the content covered in class, a set of data analysis problems will be presented to students to analyze.
- This assessment task will require students to produce output and writing based on SPSS exercises.
- Assistance will be provided by the lecturer while students are analyzing the data.
- The tasks to be completed will not go beyond what is covered in class.
- This assessment tasks will include t-test and ANOVA testing and writing of the results.

Research Report

- Students will be presented with the data but not the problem.
- Students will need to formulate a set of research questions (2-3), utilizing the data given to them.
- Students will analyse the data using the statistical techniques covered in the class.
- The format of this research report should be:
 - Research questions to be addressed in the analysis
 - Conduct and present descriptive statistics (e.g., Means and Standard deviation)
 - Conduct and present inferential statistics (e.g., t-test, ANOVA)
 - Write inferential statistics results
- Students will be asked to write the results using a format that is similar to results sections in a journal article (take a look at journal articles that use experimental design methods will give you some idea of the format).
- Description and interpretation of the data should be accurate, appropriate, concise, and readable.
- The results should be presented in a couple of tables (in the APA style: American Psychological Association).

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FEEDBACK SHEET

EDST5101 Interventionist and experimental design and analysis

Student Name:

Student No.:

Assessment Task: Research report

SPECIFIC CRITERIA	(-) → (+)				
Understanding of the question or issue and the key concepts involved <ul style="list-style-type: none"> • Demonstrate a clear understanding of statistical testing • Demonstrate a clear understanding of the t-test • Demonstrate a clear understanding of the F-test • Use of appropriate statistical terminology 					
Depth of analysis and/or critique in response to the task <ul style="list-style-type: none"> • Demonstrate a well-thought-out analysis plan • Correct and appropriate analysis design • Alignment between the constructs, research design, and the analysis 					
Familiarity with and relevance of professional and/or research literature used to support response <ul style="list-style-type: none"> • Draws upon correct analysis techniques • Produces correct and appropriate analysis results (in numbers) • Produces correct and appropriate interpretations of the results (in words) 					
Structure and organisation of response <ul style="list-style-type: none"> • Present your ideas clearly • Present your ideas in logical and coherent order 					
Presentation of response according to appropriate academic and linguistic conventions <ul style="list-style-type: none"> • Use of language with clarity and coherence • Use of academic writing conventions (e.g., punctuation, spelling, grammar, use of full sentences, capitalization) • Appropriate sentence structure • Appropriate paragraph structure • Appropriate use of headings and subheadings • Appropriate use of tables • APA style: American Psychological Association (tables, references, texts) 					
GENERAL COMMENTS/RECOMMENDATIONS FOR NEXT TIME					

Lecturer

Date

Recommended: /20 (FL PS CR DN HD)

Weighting: 60%

NB: The ticks in the various boxes are designed to provide feedback to students; they are not given equal weight in determining the recommended grade. Depending on the nature of the assessment task, lecturers may also contextualize and/or amend these specific criteria. **The recommended grade is tentative only, subject to standardisation processes and approval by the School of Education Learning and Teaching Committee.**

Feedback

Assessment Task	Feedback Mechanism	Feedback Date
Pre-assessment	The class will go over the quiz and discuss relevant points on the first day of the class. Individual students will receive verbal feedback on the first day of the class.	Tue 18 April (First day of class)
Data analysis	Individual feedback directly given on their writing during lab session	Friday 21 April (Last day of class)
Research report	Written feedback	Friday 12 May (within 2 weeks of submission)