School of Education

EDST5101: Interventionist and Experimental Design and Analysis

Semester 1, 2018

Contents

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	Mon 09-16 (w7, MorvB 107); Tue 09-16 (w7, MorvB 107); Thu 09-16 (w7, Block G15); Fri 09-16 (w7, JGoodsLG19) Week 7 is 16 April - 22 April

Summary of Course

In this course, you will learn about research design and data analytical strategies used in small scale experimental to large scale interventionist studies in educational settings. You will be exposed to a number of basic descriptive statistical procedures including frequency distributions, measures of central tendency and variability, and inferential procedures including t-tests, ANOVA, chi-square and other non-parametric tests. Upon successful completion of this course, you should be able to understand and apply experimental research designs and interpret statistical data.

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

- Additional real-life examples have been introduced; and
- Class time for hands-on activities has been increased.

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

Program Learning Outcomes

		Assessment/s
1	**Advanced disciplinary knowledge and practices** 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, 2, 3
2	**Research-based learning** 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, 2, 3
3	**Cognitive skills and critical thinking** Demonstrate advanced critical thinking and problem solving skills	1, 2, 3
4	**Communication, adaptive and interactional skills** Communicate effectively to a range of audiences, and be capable of independent and collaborative enquiry and team-based leadership	3
5	**Ethical and responsible professional practice** Demonstrate an advanced capacity to recognise and negotiate the complex and often contested values and ethical practices that underlie education	1, 2, 3

AITSL Professional Teaching Standards (Proficient, Highly Accomplished, Lead)

Standard	Assessment/s
5.1.2	1, 2, 3
5.1.3	1, 2, 3
5.1.4	1, 2, 3
5.3.2	1, 2, 3
5.3.3	1, 2, 3
5.3.4	1, 2, 3
5.4.2	1, 2, 3
5.4.3	1, 2, 3
5.4.4	1, 2, 3
5.5.2	1, 2, 3
5.5.3	1, 2, 3
5.5.4	1, 2, 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 14 March (Wed)	Introducing the course, informal evaluation of prior knowledge in statistics, understanding different types of research design	Field (2013) Introduction (Chapter 1), The SPSS Environment (CHAPTER 3)
Note. This course runs over 4 days in April. There is a pre-course assessment ahead of the first class due to the university's policy about course withdrawal before the census date. I have added a pre-course 1-hour session to discuss the pre-course assessment in March. We will meet on 14 March (Wed) from 5 to 6 pm (room: John Goodsell 112). The objectives of this pre-course session are: discussions between students and lecturer about prior statistical background related to this course and brief overview of the pre-course assessment, which is due on 30th of March.		
Day 1 16 April (Mon)	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 17 April (Tues)	Research design and statistical testing using: Analysis of Variance (ANOVA)	Field (2013) Comparing Several Means: ANOVA (Chapter 11)
Day 3 19 April (Thurs)	Research design and statistical testing using: Analysis of Variance (Two-way ANOVA)	Field (2013) Factorial ANOVA (Chapter 13)
Day 4 20 April (Fri)	Research design and statistical testing using: Advanced Types of Analysis of Variance Wrapping-up Discussion of the final assessment	Field (2013) Factorial ANOVA (Chapter 12)
Note. John Goodsell Room 124 is booked: from 16 to 30 April, from 5 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.

8. ASSESSMENT

Assessment Task	Length	Weight	Student Learning Outcomes Assessed	Australian Professional Standards for Teachers	Program Learning Outcomes Assessed	Due Date
Assessment 1 Pre-course assessment	Online quiz: (7 items)	20%	3	5.1.2; 5.1.3; 5.1.4; 5.3.2; 5.3.3; 5.3.4; 5.4.2; 5.4.3; 5.4.4; 5.5.2; 5.5.3; 5.5.4;	1-3, 5	Friday 30 March 5:00 PM
Assessment 2 Data Analysis	2 problems using statistics	20%	1, 3, 4	5.1.2; 5.1.3; 5.1.4; 5.3.2; 5.3.3; 5.3.4; 5.4.2; 5.4.3; 5.4.4; 5.5.2; 5.5.3; 5.5.4;	1-3, 5	Friday 20 April 5:00 PM
Assessment 3 Research Report	1,500 words	60%	1, 2, 3, 4	5.1.2; 5.1.3; 5.1.4; 5.3.2; 5.3.3; 5.3.4; 5.4.2; 5.4.3; 5.4.4; 5.5.2; 5.5.3; 5.5.4;	1-5	Monday 30 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.

Assessment 1: Pre-course assessment, Online quiz (7 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 in Moodle.
  - This quiz will be available in Moodle between March 15th and 30th.
  - Quiz will consist of multiple-choice items (7 items).
  - Deadline to complete the online quiz is March 30th.

Assessment 2: Data Analysis
Exercise and writing of statistics results
- A set of data and research questions will be given to students.
- Students will produce and write results based on SPSS outputs (t-tests and ANOVA tests).
- Lecturer will provide assistance while students are analyzing the data in class.
- Tasks to be completed are within what has been covered in this course.

Assessment 3: Research Report
- Students will be presented with the data but not research questions. Students will need to formulate a set of research questions, using the data provided.
- Students will analyse the data using the statistical techniques covered in this course.
- 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 deviations)
  - Conduct and present inferential statistics (e.g., t-test, ANOVA)
- Description and interpretation of the data should be accurate, appropriate, concise, and readable.
- Results should be presented in a couple of tables (in the APA style: American Psychological Association).
- Students will be asked to write the results using a format that is similar to the results sections of a journal article (take a look at journal articles that use experimental design methods).

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 • 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 • 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 • 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 • Present your ideas clearly • Present your ideas in logical and coherent order					
Presentation of response according to appropriate academic and linguistic conventions • 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
Assessment 1: Pre-course assessment	Feedback on the quiz will be provided to students in Moodle, right after they complete the quiz. On the first day of the class we will go over the quiz together and discuss relevant points.	30 March (Fri) immediately after taking the quiz; and further discussion on16 April (Mon) (First day of class), if necessary
Assessment 2: Data Analysis	Individual feedback (verbal and written) will be given for their assessment on the last day of class	20 April (Fri) (Last day of class)
Assessment 3: Research Report	Written feedback in Moodle	11 May (Fri) (within 2 weeks of submission)