

Advanced Statistical Inference (PSYC 301)

Instructor: Dr. Leandre R. Fabrigar

Office: Craine 319 (Not That It Matters!)

E-mail: fabrigar@queensu.ca

Office Hours (Hosted in Teams): Tuesday (12:30 PM - 1:30 PM), Wednesday (11:00 AM - 12:30 PM), or by Appointment

Required Text:

Field, A. (2018). *Discovering Statistics Using IBM SPSS Statistics* (5th Edition). Thousand Oaks, CA: Sage Publications.

Required Statistical Software (SPSS):

Statistical analyses in the course will be conducted using SPSS. SPSS is available to all Queen's students by logging into the Queen's Software Center. On this site, students can access SPSS 26 and the License Key. Students can go directly to the SPSS's info/download website with this direct link (NetID login required): <https://queensu.ca/sharepoint/academic>

Course Objectives and Format:

This course is designed to provide students with an introduction to basic inferential statistics as they are used in psychology and related disciplines. Course lectures will provide students with a basic conceptual introduction to key statistical concepts in inferential statistics. Lectures will also provide a conceptual introduction to commonly used statistical procedures such as t Tests, One-Way ANOVA, Factorial ANOVA, correlation, and simple regression. Course labs will provide students with hands-on instruction in how to conduct statistical analyses using IBM SPSS Statistics.

Exams:

There will be two take home exams. These exams will be a mixture of short answer, long answer, and essay questions. The midterm exam will include material covered in approximately the first half of the term. The final exam will cover material throughout the entire term, although a greater emphasis will be placed on material covered post-midterm. The midterm and final exams will be made available in onQ at

Statement on Academic Integrity:

Queen's students, faculty, administrators and staff all have responsibilities for upholding the fundamental values of academic integrity; honesty, trust, fairness, respect, responsibility and courage (see www.academicintegrity.org). These values are central to the building, nurturing and sustaining of an academic community in which all members of the community will thrive. Adherence to the values expressed through academic integrity forms a foundation for the "freedom of inquiry and exchange of ideas" essential to the intellectual life of the University (see the Senate Report on Principles and Priorities <http://www.queensu.ca/secretariat/policies/senate/report-principles-and-priorities>).

Students are responsible for familiarizing themselves with the regulations concerning academic integrity and for ensuring that their assignments and their behaviour conform to the principles of academic integrity. Information on academic integrity is available in the Arts and Science Calendar (see Academic Regulation 1 <http://www.queensu.ca/artsci/academic-calendars/regulations/academic-regulations/regulation-1>), on the Arts and Science website (see <https://www.queensu.ca/artsci/students-at-queens/academic-integrity>), and from the instructor of this course. Departures from academic integrity include plagiarism, use of unauthorized materials, facilitation, forgery and falsification, and are antithetical to the development of an academic community at Ö-e

can be submitted at: <http://www.queensu.ca/artsci/accommodations>. Students in other Faculties and Schools who are enrolled in this course should refer to the protocol for their home Faculty.

If you need to request academic consideration for this course, you will be required to provide the name and email address of the instructor/coordinator. Please use the following:

Instructor/Coordinator Name: Leandre R. Fabrigar

Instructor/Coordinator email address: fabrigar@queensu.ca

Timing of Final Examinations:

The exam dates for each Term are listed on the Faculty of Arts and Science webpage under ' ~~art~~@

Course Outline

<u>Topic</u>	<u>Readings</u>
<p>Week 1: (Sept. 8-11)</p> <p>Course Overview Making Claims with Statistics -Statistics as Principled Arguments -Using Inferential Statistics to Distinguish Among Claims -Systematic versus Chance Explanations -The Language and Limitations of Null Hypothesis Testing -The Quality of Statistical Evidence: MAGIC</p>	Ch. 1-2
<p>Week 2: (Sept. 14-18)</p> <p>Elementary Arguments and the Role of Chance -Random Sampling Processes as Explanation -Known Causes as Explanation for Departure from Randomness -The Independent Sample t Test -Setting Alpha: One-Tailed, Two-Tailed, and “Lopsided” Tests -Setting Beta: Power -The Repeated Measures t Test</p>	Ch. 10
<p>Week 3: (Sept. 21-25)</p> <p>Elementary Arguments and the Role of Chance (continued) -Random Sampling Processes as Explanation -Known Causes as Explanation for Departure from Randomness -The Independent Sample t Test -Setting Alpha: One-Tailed, Two-Tailed, and “Lopsided” Tests -Setting Beta: Power -The Repeated Measures t Test LAB 1 Due (September 25, 11:59 PM)</p>	Ch. 10
<p>Week 4: (Sept. 28-</p> <p>Magnitude of Effects -Probability Measures: The p value and Bayesi</p>	

	<u>Topic</u>	<u>Readings</u>
Week 10: (Nov. 16-20)	Hypotheses with Continuous Variables: Correlation and Regression -Characterizing relationships between continuous variables -The Pearson correlation coefficient -Understanding and interpreting correlations -Alternative measures of association -Simple regression and prediction -Standard error of estimate -Hypotheses for Regression -Standard and Unstandardized Solutions -Hypotheses for Regression -Standard and Unstandardized Solutions LAB 4 Due (November 20, 11:59 PM)	Ch. 8, 9
Week 11: (Nov. 23-27)	Hypotheses with Continuous Variables: Correlation and Regression (Continued) -Characterizing relationships between continuous variables -The Pearson correlation coefficient -Understanding and interpreting correlations -Alternative measures of association -Simple regression and prediction -Standard error of estimate	Ch. 8, 9
Week 12: (Nov. 30- Dec. 4, 7)	MAGIC: Further Considerations -Articulation: Ticks and buts -Generality -Interestingness -Credibility -MAGIC considered in totality LAB 5 Due (December 4, 11:59 PM)	
Final Exam (December 10-23)		