JOHNSON SHOYAMA
GRADUATE SCHOOL OF PUBLIC POLICY
UREGINA USASK

JSGS (814) Statistics for Public Health

	UNIVERSITY OF REGINA CAMPUS	UNIVERSITY OF SASKATCHEWAN CAMPUS
INSTRUCTOR:	**Dr. Gavin Simpson**	
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OFFICE HOURS:	**Tue & Thur 1300-1500 (Sask Time)**	
OFFICE LOCATION:	**RIC 523**	
TERM:	**Spring 2019**	
ROOM:	**Online**	
DATE AND TIME:	**May 6th – June 28th 2019**	

CALENDAR DESCRIPTION

This course offers an introduction to statistical methods and principles relevant for the study and analysis of public health data. Emphasis is on appropriate methods and on developing critical numeric/statistical thinking rather than the mathematical underpinnings of the methods. Practical computing skills are an essential part of the course and performing statistical analysis using the R statistical software is integrated throughout the course.

ATTRIBUTES OF JSGS GRADUATES

1. Management, Governance, and Leadership: Ability to inspire support for a vision or course of action and successfully direct the teams, processes, and changes required to accomplish it.
2. Communication and Social Skills: Ability to communicate effectively and build enduring, trust-based interpersonal, professional relationships.
3. Systems Thinking and Creative Analysis: Ability to identify key issues and problems, analyze them systematically, and reach sound, innovative conclusions.
4. Public Policy and Community Engagement: Ability to understand how organizational and public policies are formulated, their impact on public policy and management and how to influence their development.
5. Continuous Evaluation and Improvement: Commitment to on-going evaluation for continuous organizational and personal improvement.
6. Policy Knowledge: Ability to analyze and contribute content to at least one applied policy field.

COURSE CONTENT AND APPROACH

Statistics for Public Health will be taught as a combination of recorded lectures and computer-based lab classes, with (roughly) weekly seminars/tutorials where we will discuss the content for that week and allow for Q&A, clarification etc.

COURSE OUTLINE AND ASSIGNMENTS

The course will cover the following topics (weekly cadence suggested):

- The role of statistics in public health (May 6th / Week 1)
  - Hypothesis testing
  - Evidence-based practice
  - Research designs
- Descriptive statistics and exploratory data analysis (May 13th / Week 2)
  - Measure of central tendency and spread
  - Plotting data
- The basics of statistical inference (May 20th / Week 3)
  - Null hypothesis significance testing
  - Simple statistical tests & correlation
- The linear regression model (May 27th & June 3rd/ Weeks 4 and 5)
  - Simple linear regression
  - Multiple linear regression
  - Analysis of variance
- Generalized linear models (June 10th / Week 6)
  - Models of non-normal data (counts, dichotomous variables)
- Survival Analysis (June 17th / Week 7)
- Longitudinal studies (June 24th / Week 8)
  - Concepts of fixed and random effects
  - Clustering

The entire course will be available from the start of classes (May 6th) and you are free to work at your own pace. There are no internal deadlines within the course; all assessed elements at to be submitted by June 28th. The weekly online tutorial sessions will follow the suggested weekly cadence given above, though you should feel free to ask any questions about the course during these sessions.

DESCRIPTION OF ASSIGNMENTS:

Lab assignments will test your understanding of the course content and application of practical data analysis skills. Building upon analysis methods developed in the computer-based lab classes, you will be tasked with analyzing a similar data set and answering a set of questions related to the analysis. This requires you to demonstrate an understanding of both the practical R skills required to investigate and analyze the data set, and the statistical concepts needed to interpret the results of the analysis.

REQUIRED READINGS

The course text is: Dancey, Reidy, and Rowe (2012) *Statistics for the Health Sciences: a non-mathematical introduction*. Sage. There is a student companion web site; Direct Link. Paperback and Amazon Kindle editions can be purchased from Amazon.ca: Direct Link, though do watch who is selling the book on Amazon and the price should be ~$55. The Publisher has a wider range of options for e-book versions as well as the paperback, but is typically slower to deliver in my experience; Publisher Website.

Whilst not needed, for those wanting more assistance with R, I recommend *R for Dummies*, *2nd Edition* by de Vries and Meys (2015, Wiley, Link). (Disclosure: I provided the technical edit for Wiley, under contract, for the first & second editions of this book.) This book is freely available in an online format via the UofR Library; see the catalogue entry for details on accessing this resource: UofR Library Catalogue.

At a somewhat less-basic level, I recommend Dalgaard (2008) *Introductory Statistics with R*. Springer. (www.springer.com/us/book/9780387790534), which complements the material in Dancey et al. This book is freely available in PDF format via SpringerLink; on campus Direct Link. For off-campus access, you can access the resource via the UofR Library web pages; UofR Library Catalogue. If you wish, a cheap (~$30 CAD) softcover version of the book can be purchased if you access the SpringerLink page on campus or via the UofR Catalogue page.

Please note that *R for Dummies* nor *Introductory Statistics with R* are *not* required readings.

EVALUATION

The course we be assessed via a combination of:

- multiple choice and short answer questions/quizzes completed online through URCourses
- lab assignments involving analysis of a representative & relevant data set and answering related questions arising

The aim of these assignments is to test your understanding of the statistical concepts as well as the practical data analysis and interpretive skills required to use and analyze public health data.

Additional informal quizzes will be used to evaluate student progress; feedback for these will be provided so you are strongly encouraged to complete them, but they will not be formally assessed as part of your final mark for the course.

Grades will be assigned on the following basis: one mark is worth one mark towards your total mark for the course and therefore your final % will be calculated as *marks achieved / total marks available*. You are required to complete all assessed quizzes and lab assignments to pass the course.

LATE ASSIGNMENTS

Assignments will be accepted through URCourses, up to the end of the course (28th June 2019); note that this is technically within the exam period, but as this course doesn't have a final exam I am allowed to accept submissions during this period. Any assignments that are submitted beyond the end of the course will be awarded a grade of 0. No extensions will be provided as final marks for the course need to be determined and entered by 1st July. It is envisaged that you will organize yourself to complete the assignments at your own pace throughout the period the course is running. As such there are no deadlines for individual assignments. This allows you the greatest flexibility to study at your own pace.

STUDENTS WITH SPECIAL NEEDS

University of Regina (U of R): Students in this course who, because of a disability, may have a need for accommodations are encouraged to discuss this need with the instructor and to contact the Coordinator of Special Needs Services at (306) 585-4631.

U OF S: Students in this course who, because of a disability, may have a need for accommodations are encouraged to discuss this need with the instructor and to contact Disability Services for Students (DSS) at 966-7273.

Students Experiencing Stress

University of Regina (U of R): Students in this course who are experiencing stress can seek assistance from the University of Regina Counselling Services. For more information, please see the attached document, visit this website: http://www.uregina.ca/student/counselling/contact.html, or call (306) 585-4491 between 8:30 a.m. to 4:30 p.m. Saskatchewan time Monday to Friday.

ACADEMIC INTEGRITY AND CONDUCT

U of R: Ensuring that you understand and follow the principles of academic integrity and conduct as laid out by the University of Regina (available at http://www.uregina.ca/gradstudies/grad-calendar/policy-univ.html) is vital to your success in graduate school. Ensuring that your work is your own and reflects both your own ideas and those of others incorporated in your work is important: ensuring that you acknowledge the ideas, words, and phrases of others that you use is a vital part of the scholarly endeavour. If you have any questions at all about academic integrity in general or about specific issues, contact your course instructor to discuss your questions.

U OF S: Understanding and following the principles of academic integrity and conduct as laid out in the University of Saskatchewan's Guidelines for Academic Conduct is vital to your success in graduate school (available at www.usask.ca/university_secretary/council/reports_forms/reports/guide_conduct.php). Ensuring that your work is your own and reflects both your own ideas and those of others incorporated in

your work is important: ensuring that you acknowledge the ideas, words, and phrases of others that you use is a vital part of the scholarly endeavour. If you have any questions at all about academic integrity in general or about specific issues, contact any faculty member and we can discuss your questions.