

**MDSC 407**  
**Statistics and Research Design in Health Sciences**

**Instructors:**

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**Office Hours/Policy on Answering Student Emails**

Dr. Na Li and Dr. Holodinsky will be available for office hours by appointment.

Student emails will be answered within 24 hours on weekdays. Note: attending office hours or using the D2L discussion board for course questions is preferred.

**Teaching Assistants:**

TBD

**Time and Location:**

Winter Semester: January 9 – April 12

Lectures: Mondays and Wednesdays 09:00 – 10:20 HSC Theatre One

This course is delivered in a flipped format. Some course material will be delivered via online modules (including but not limited to podcast lectures, online readings, and/or online quizzes). **Online modules need to be completed PRIOR to the lecture time on the week indicated in the course schedule** (ex. Lecture 2 online modules are to be completed before scheduled lecture time for Lecture 2 of the course). The online modules to be completed before lecture time are clearly marked on the course schedule. The course schedule and material delivery method are subject to change with adequate notice given to students. Please check D2L to keep current with the materials. In person lecture time will be highly interactive, and students will be given time to complete exercises in class with their peers (and with assistance from Instructors/TAs if needed). These exercises will form part of the In-Class Activities grade thus it is imperative that students come to class with appropriate online modules completed to ensure in class activities can be completed.

Labs: Fridays 09:00 – 10:50, 11:00 – 12:50, 13:00 – 14:50. HSC O1501

To best succeed in the course, students are encouraged to view the weekly lecture videos and participate in the weekly in person lecture learning tasks using the D2L and TopHat learning environments as well as attend the lab sessions.

**Prerequisite/Co-Requisite:**

Enrolment in the BHSc Honours Program

**Course Description:**

This course is an introduction to statistics and research design in health sciences. As a field of study, statistics consists of a set of procedures for organizing, describing, and interpreting data. Accordingly, we will focus on the theory and tools necessary to analyze data, which will be illustrated by relevant applications. The emphasis will be on statistical literacy, which is an important skill for both the analyses of health-related data and understanding and reviewing the health sciences literature.

**Overarching Theme**

This course is delivered in a flipped format. Lecture material is delivered via video, students are then encouraged to practice this new material via learning tasks on TopHat during in-person lecture time. Students will be able to apply their new learnings in the weekly labs and bi-weekly lab assignments. Finally, course concepts across the semester will be tied together in a final project where students will be able to tie together concepts from across the semester.

**Global Objectives**

The primary objective is for students to understand formulation of a research question, the data that are collected, the statistical analyses that should be used, and the conclusions that can be drawn.

**Course Learning Outcomes**

By the end of this course, students will be able to:

1. Distinguish sample level data from population level data
2. Classify data as nominal, ordinal, interval, or ratio
3. Explain the central limit theorem and describe its importance in biostatistics
4. Calculate and interpret confidence intervals for means, proportions, differences in means, and differences in proportions
5. Interpret the meaning of a given p-value
6. Compare and contrast the results of a hypothesis test and a confidence interval
7. Perform (both by hand and using statistical software) various hypothesis tests including t-tests, proportion tests and Chi-square tests, ANOVA, repeated measures ANOVA, and linear regression
8. Interpret the results of various hypothesis tests including t-tests (and non-parametric equivalents), proportion tests and Chi-square tests, ANOVA, repeated measures ANOVA, and linear regression
9. Justify the choice of hypothesis test used based on the attributes of given data
10. Describe the factors that influence power and sample size
11. Calculate power and sample size for various types of data

**Transferable Skill Development:**

Many of the skills and abilities that you are developing in your coursework are transferable to the workforce, graduate and professional studies and other facets of life. Employers seek applicants with transferable skills because they can be an asset in the workplace, regardless of industry or sector. Transferable skills are core skills for your success in building your future career.

The work that you will do in MDSC 407 will help you build the following transferable skills:

- **Collaboration:** Work respectfully with others from different backgrounds, cultures, and countries.
- **Verbal Communication:** Learn and share information by presenting, listening, and interacting with others.
- **Creativity and Innovation:** Find different and better ways to do things, being curious, thinking imaginatively.
- **Critical Thinking:** Actively and skillfully conceptualize, apply, analyze, synthesize, and/or evaluate information (data, facts, observable phenomena, and research findings) to make a reasoned judgement or draw a reasonable conclusion.
- **Digital Skills:** Use digital technologies like computers, social media, virtual meeting platforms, and the internet.
- **Information Literacy:** Find, understand, and use information presented through words, symbols, and images
- **Numeracy:** Use mathematical information such as numbers, symbols, words, and graphics to do tasks.
- **Problem solving:** Identify an issue, find and implement a solution, and assess whether the situation has improved.
- **Project Management:** Conceptualize, initiate, plan and execute a plan to achieve a predetermined goal (project) by effectively prioritizing activities and meeting deadlines.
- **Written Communication:** Share ideas and information by using words, images, and symbols.

### Learning Resources

There is no required textbook for this course.

Analyses in this course will be performed using Stata Statistical Software. Students will be required to have access to Stata to complete assignments in this course. This software is available in the Bioinformatics Lab (HSC 1501) and the Health Sciences Library Computer Lab. However, considering the evolving COVID-19 situation students may wish to purchase their own copy of Stata in the event they need to be away from campus for a period of time. There are several purchase options through Stata, the most economical being the Student 6-month Stata/IC license (<https://www.stata.com/order/new/edu/profplus/student-pricing/>). If students do not wish to purchase the software, they may utilize the Bioinformatics Lab or Health Sciences Library computer lab based on personal schedules (and respecting other bookings may occur in these rooms).

Learning activities will also be completed using the TopHat online platform (<https://www.tophat.com>). University of Calgary students can make a free TopHat account linked to their @ucalgary email address. Instructions for joining the MDSC 407 TopHat Online Course will be provided in the first week of the course.

### Recommended Textbooks/Readings

There is no required textbook for this course.

The following textbooks are optional references for those wishing to have a reference text. All evaluation, assignments and examples will be given in the lecture and lab notes. Those not wishing to purchase a textbook will have no disadvantage.

- Introduction to the Practice of Statistics (9<sup>th</sup> Edition), Moore, McCabe & Craig
- Biostatistics: A Foundation for Analysis in the Health Sciences (11<sup>th</sup> edition), Daniel & Cross

### A Note Regarding Pre-Lecture Materials

A list of required pre-lecture video materials will be outlined on D2L. These videos have been crafted carefully to inform you and enhance the lecture material. **Students are REQUIRED to watch assigned videos BEFORE each lecture.** Instructors will proceed in class on the assumption that students have watched completely the assigned videos. Students should be aware that many of the videos they will be assigned may present materials of an unfamiliar nature and style. Students should allot sufficient time to allow for several viewings of the assigned material.

### Learning Technology Requirements

Brightspace (by D2L) is located on the University of Calgary server and will be used extensively for communication with students. **It is the student's responsibility to ensure that they receive all posted communications and documents and that they receive emails sent by instructors or fellow students through D2L.** Only your @ucalgary.ca email address may be linked to D2L. Please ensure that you are regularly checking your @ucalgary.ca account.

### Evaluation

The University policy on grading and related matters is described in section F of the 2022-2023 Calendar.

In determining the overall grade in the course, the following weights will be used:

Description	Percentage of Grade	Due Date
Mid-Term Examination I	20%	February 15 9:00-10:20 MT  This exam will be delivered in person during class time. The exam will be handwritten. A scientific calculator is required, graphing calculators may not be used.
Mid-Term Examination II	20%	March 27 9:00-10:20 MT  This exam will be delivered in person during class time. The exam will be handwritten. A scientific calculator is required, graphing calculators may not be used.
Lab Assignments	20%	Assignment due dates and times are indicated in course schedule. Submitted online via D2L Dropbox
Online Learning Activities (TopHat)	10%	Due weekly at 23:59 on Fridays
Final Project (Contains several graded components due throughout the term. See Final Project Outline on D2L for details and marking rubrics)	30%	Projects will be delivered live on April 12 9:00 – 10:20 MT

\*\*There is no Registrar-scheduled final exam for this course

\*\*A student's final grade for the course is the sum of the separate assignments. It is not necessary to pass each assignment separately in order to pass the course.

- Detailed instructions on assignment completion and format are available on D2L.
- Detailed instructions on exam administration and format are available on D2L
- The final project is broken down into several smaller components due during the course of the term. On D2L detailed instructions on each final project component, including marking rubrics, can be found

### **A Note Regarding Writing Assignments:**

Writing skills are important to academic study in all disciplines. In keeping with the University of Calgary’s emphasis on the importance of academic writing in student assignments (section E.2 of 2022-23 Calendar), writing is emphasized, and the grading thereof in determining a student’s mark in this course. The Bachelor of Health Sciences values excellence in writing. Competence in writing entails skills in crafting logical, clear, coherent, non-redundant sentences, paragraphs and broader arguments, as well as skills with the mechanics of writing (grammar, spelling, punctuation). Sources used in research papers must be properly documented. The University of Calgary offers instructional services through the Students’ Success Centre’s Writing Support Services (<http://www.ucalgary.ca/writingsupport/>) for students seeking feedback on assignments or seeking to improve their general writing skills. Students are **strongly encouraged** to take advantage of these programs.

### **Grading Scheme:**

<b>Letter Grade</b>	<b>Description</b>	<b>Percentage</b>
<b>A+</b>	Outstanding performance	96-100
<b>A</b>	Excellent performance	90-95.99
<b>A-</b>	Approaching excellent performance	85-89
<b>B+</b>	Exceeding good performance	80-84
<b>B</b>	Good performance	75-79
<b>B-</b>	Approaching good performance	70-74
<b>C+</b>	Exceeding satisfactory performance	65-69
<b>C</b>	Satisfactory performance	60-64
<b>C-</b>	Approaching satisfactory performance	57-59
<b>D+</b>	Marginal pass	54-56
<b>D</b>	Minimal pass	50-53
<b>F</b>	Does not meet course requirements	0-49

### **Missed Components of Term Work:**

**Late assignments will not be accepted and will automatically receive a mark of zero, exceptions to this may be made on a case-by-case basis. Students who miss an exam will receive a mark of zero unless the instructor has been previously notified. There will be NO exceptions to this policy.**

**24-hour Stress Buster Bonus:** The stress buster is a one-time 24-hour extension on an individual assignment that students can redeem without penalty. However, the stress buster does not apply to quizzes, exams, and group assignments. Once the stress buster is redeemed, extensions will NOT be granted again on any assignment or other component of the course work. The only exceptions to this

are those in keeping with the University Calendar (debilitating illness, religious conviction, or severe domestic affliction) that are received in writing and with supporting documentation. Please note that while absences are permitted for religious reasons, students are responsible for providing advance notice and adhering to other guidelines on this matter, as outlined in the University Calendar (<https://www.ucalgary.ca/pubs/calendar/current/e-4.html>).

### **Course Evaluations and Student Feedback**

Student feedback will be sought at the end of the course through the Universal Student Rating of Instruction (USRI) and a qualitative student evaluation. Students are welcome to discuss the process and content of the course at any time with the instructor. Students may also address any concerns they may have with Dr. Ebba Kurz, Associate Dean (Undergraduate Health and Science Education) in the Cumming School of Medicine ([kurz@ucalgary.ca](mailto:kurz@ucalgary.ca)).

### **Attendance**

Students are encouraged to attend all live sessions and to watch all pre-lecture videos. It should be noted that while attendance is not formally taken nor graded, students absent from live sessions or choosing not to watch pre-lecture videos will be at a disadvantage in terms of learning important materials.

### **Conduct During Lectures**

The classroom should be respected as a safe place to share ideas without judgement - a community in which we can all learn from one another. Students are expected to frame their comments and questions to lecturers in respectful and appropriate language, always maintaining sensitivity towards the topic. Students, employees, and academic staff are also expected to demonstrate behaviour in class that promotes and maintains a positive and productive learning environment.

As members of the University community, students, employees and academic staff are expected to demonstrate conduct that is consistent with the University of Calgary Calendar, the Code of Conduct and Non-Academic Misconduct policy and procedures, which can be found at <https://www.ucalgary.ca/legal-services/university-policies-procedures>.

**Students are expected to take notes during class and should not rely solely on material supplied by the instructors.**

### **Use of Internet and Electronic Communication Devices in Class**

The Bachelor of Health Sciences program aims to create a supportive and respectful learning environment for all students. The use of laptop and mobile devices is acceptable when used in a manner appropriate to the course and classroom activities. However, research studies have found that inappropriate/off-topic use of electronic devices in the classroom negatively affects the learning of others during class time.

Students are responsible for being aware of the University's Internet and email use policy, which can be found at <https://www.ucalgary.ca/policies/files/policies/electronic-communications-policy.pdf>.

## **UNIVERSITY OF CALGARY POLICIES AND SUPPORTS**

### **Copyright**

All students are required to reach the University of Calgary policy on Acceptable Use of Material Protected by Copyright (<https://www.ucalgary.ca/policies/files/policies/acceptable-use-of-material->

[protected-by-copyright-policy.pdf](#)) and requirements of the Copyright Act (<https://laws-lois.justice.gc.ca/eng/acts/C-42/index.html>) to ensure they are aware of the consequences of unauthorized sharing of course materials (including instructor notes, electronic versions of textbooks, etc.). Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy <https://www.ucalgary.ca/pubs/calendar/current/k.html>.

### **Instructor Intellectual Property**

Course materials created by instructors (including course outlines, presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the instructor. These materials may **NOT** be reproduced, redistributed or copied without the explicit consent of the professor. **The posting of course materials to third-party websites such as note-sharing sites without permission is prohibited.** Sharing of extracts of these course materials with other students enrolled in the course **at the same time** may be allowed under fair dealing.

### **Academic Accommodations**

It is the student's responsibility to request academic accommodations according to the University policies and procedures listed below. The Student Accommodations policy is available at <https://ucalgary.ca/student-services/access/prospective-students/academic-accommodations>. Students needing an accommodation based on disability or medical concerns should contact Student Accessibility Services (SAS) in accordance with the Procedure for Accommodations for Students with Disabilities (<https://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities.pdf>). SAS will process the request and issue letters of accommodations to instructors. For additional information on support services and accommodations for students with disabilities, visit [www.ucalgary.ca/access/](http://www.ucalgary.ca/access/).

Students who require an accommodation in relation to their coursework based on a protected ground other than disability should communicate this need in writing to Dr. Ebba Kurz ([kurz@ucalgary.ca](mailto:kurz@ucalgary.ca)), Associate Dean (Undergraduate Health and Science Education).

### **Academic Misconduct**

The University of Calgary is committed to the highest standards of academic integrity and honesty. The University of Calgary has created rules to govern all its members regarding the creation of knowledge and the demonstration of knowledge having been learned.

Academic Misconduct refers to student behaviour that compromises proper assessment of a student's academic activities and includes (but is not limited to): cheating, fabrication, falsification, plagiarism, unauthorized assistance, failure to comply with an instructor's expectations regarding conduct required of students completing academic assessments in their courses, and failure to comply with exam regulations applied by the Registrar. **It also includes using of third-party websites/services to access past/current course material, essay/assignment writing services, or real-time assistance in completing assessments, seeking answers to assessment questions and similar, whether paid, bartered or unpaid.**

For information of the Student Academic Misconduct Policy and Procedures, please visit: <https://ucalgary.ca/policies/files/policies/student-academic-misconduct-policy.pdf>  
<https://ucalgary.ca/policies/files/policies/student-academic-misconduct-procedure.pdf>

Additional information is available on the Academic Integrity website at: <https://ucalgary.ca/student-services/student-success/learning/academic-integrity>.

### **Recording of Lectures**

Audio or video recording of lectures (or similar) is **prohibited** except where explicit permission has been received from the instructor.

### **Freedom of Information and Protection of Privacy Act**

Student information will be collected in accordance with typical (or usual) classroom practice. Students' assignments will be accessible only by the authorized course faculty. Private information related to the individual student is treated with the utmost regard by the faculty at the University of Calgary

### **Appeals**

If there is a concern with the course, academic matter or a grade, first communicate with the instructor. If these concerns cannot be resolved, students can proceed with an academic appeal, as per Section I of the University Calendar. Students must follow the official reappraisal/appeal process and may contact the Student Ombuds' Office (<http://www.ucalgary.ca/ombuds>) for assistance with this and with any other academic concerns, including academic and non-academic misconduct. Students should be aware that concerns about graded term work may only be initiated **within 10 business days** of first being notified of the grade. <https://www.ucalgary.ca/pubs/calendar/current/i-2.html>

### **Sexual and Gender-Based Violence Policy**

The University recognizes that all members of the University Community should be able to learn, work, teach and live in an environment where they are free from harassment, discrimination, and violence. The University of Calgary's sexual violence policy guides us in how we respond to incidents of sexual violence, including supports available to those who have experienced or witnessed sexual violence, or those who are alleged to have committed sexual violence. It provides clear response procedures and timelines, defines complex concepts, and addresses incidents that occur off-campus in certain circumstances. Please see the policy available at <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Sexual-and-Gender-Based-Violence-Policy.pdf>.

### **Resources for Support of Student Learning, Success, Safety and Wellness**

Student Success Centre	<a href="http://www.ucalgary.ca/ssc/">http://www.ucalgary.ca/ssc/</a>
Student Wellness Centre	<a href="http://www.ucalgary.ca/wellnesscentre/">http://www.ucalgary.ca/wellnesscentre/</a>
Student Advocacy and Wellness Hub (CSM)	<a href="https://cumming.ucalgary.ca/student-advocacy-wellness-hub/home">https://cumming.ucalgary.ca/student-advocacy-wellness-hub/home</a>
Distress Centre	<a href="http://www.distresscentre.com/">http://www.distresscentre.com/</a>
Library Resources	<a href="http://library.ucalgary.ca">http://library.ucalgary.ca</a>

### **Wellness and Mental Health Resources**

The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the excellent mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (<https://www.ucalgary.ca/wellnesscentre/services/mental-health-services>) and the Campus Mental Health Strategy (<http://www.ucalgary.ca/mentalhealth/>).

### **Student Ombuds' Office**

The Student Ombuds' Office supports and provides a safe, neutral space for students. For more information, please visit [www.ucalgary.ca/ombuds/](http://www.ucalgary.ca/ombuds/) or email [ombuds@ucalgary.ca](mailto:ombuds@ucalgary.ca)

**BHSc Student Faculty Liaison Committee (SFLC)**

The BHSc SFLC, with elected representatives from all majors, serves to raise issues of interest to BHSc students to the program administration, including items pertaining to curriculum, scheduling and events. A list of current representatives can be found on the BHSc website.

**Student Union (SU) Information**

The SU Vice-President Academic can be reached at (403) 220-3911 or [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca); the SU representatives for the Cumming School of Medicine can be reached at [medrep1@su.ucalgary.ca](mailto:medrep1@su.ucalgary.ca) or [medrep2@su.ucalgary.ca](mailto:medrep2@su.ucalgary.ca).

**Student Success Centre**

The Student Success Centre provides services and programs to ensure students can make the most of their time at the University of Calgary. Our advisors, learning support staff, and writing support staff assist students in enhancing their skills and achieving their academic goals. They provide tailored learning support and advising programs, as well as one-on-one services, free of charge to all undergraduate and graduate students. For more information visit: <https://www.ucalgary.ca/student-services/student-success>

**Emergency Evacuation/Assembly Points**

As part of the University of Calgary Emergency Evacuation plan, students, faculty, and staff should locate the closest Assembly Point in case of Fire Alarm. Safety signage is posted throughout the campus showing the locations and the possible route to these locations. All students, faculty, and staff are expected to promptly make their way to the nearest Assembly Point if the Fire Alarm is activated. No one is to return into campus facilities until an all clear is given to the warden in charge of the Assembly Area. For more information, see <https://www.ucalgary.ca/emergencyplan/building-evacuation/assembly-points>

**Safewalk**

Campus security will escort individuals, day or night, anywhere on campus (including McMahon Stadium, Health Sciences Centre, Student Family Housing, the Alberta Children's Hospital and the University LRT station). Call 403-220-5333 or visit <http://www.ucalgary.ca/security/safewalk>. Use any campus phone, emergency phone or the yellow phone located at most parking lot pay booths. Please ensure your personal safety by taking advantage of this service.

## Class Schedule

The following is a list of topics for class and assignment / exam due dates. Please note that unforeseen circumstances may cause changes to the schedule with respect to the timing of topics. Students will be notified of all changes in a timely manner by way of email and D2L announcements. The exam dates are firm and will not be altered. Note: TopHat learning activities are not listed here, they are due weekly at 11:59pm on Friday.

Course Schedule Date	Video Lectures (must be viewed prior to lecture date)	Instructor	In-Class Activities (during scheduled lecture time)	Lab Topics	Assignment Due Dates & Times
January 9	Course Overview Live lecture, no prep work required	Dr. Li, Dr. Holodinsky	-	Introduction to Stata	Self-select final project group members by Jan 13 23:59
January 11	Introduction to Statistics, types of data, populations, and samples  Descriptive Statistics: Summary Statistics and Graphics	Dr. Holodinsky	Introduction to Statistics Worksheet  Summary Statistics and Graphics Pt Worksheet	Calculating descriptive statistics by hand and in Stata  Creating graphical displays in Stata	
January 16	Introduction to the Scientific Method and Research Design  Ecological Study Design: individual vs ecological data, the ecological fallacy	Dr. Holodinsky	Introduction to the Scientific Method Worksheet  Ecological Study Literature Example	Review of the Ecological Study  Calculating measures of occurrence by hand	Group Project Contract due Jan 20 23:59
January 18	Measures of Occurrence: Prevalence, incidence, rates, and risks	Dr. Holodinsky	Measures of Occurrence Worksheet		

January 23	Probability: Application of Probability in Diagnostics Diagnostic Accuracy Study Design	Dr. Li	Application of Probability in Diagnostic Studies Worksheet Diagnostic Accuracy Example	Worked examples of probability and accuracy of diagnostic tests. Review of probability distributions	Assignment 1 Due Jan 27 23:59
January 25	Probability: Probability Distributions	Dr. Li	Probability Distributions Worksheet		
January 30	Using Distributions: The Central Limit Theorem	Dr. Li	The Central Limit Theorem and the t-distribution Worksheet	Calculating Z and t-scores by hand and in Stata	
February 1	Interval Estimates: Confidence Intervals for Means and the t-distribution	Dr. Li	Confidence Intervals for Means Worksheet	Calculating confidence intervals by hand and in Stata	
February 6	Validity, reliability, precision, and bias The Cross-Sectional Study	Dr. Holodinsky	Validity and Reliability Worksheet Cross-Sectional Study Literature Example	Midterm Review	Assignment 2 Due Feb 10 23:59
February 8	Hypothesis Testing: Principles of Hypothesis Testing	Dr. Holodinsky	Principles of Hypothesis Testing Worksheet		
February 13	Continuous Data: The One Sample t-test	Dr. Li	The One Sample t-test Worksheet	Review of hypothesis testing theory	
February 15	<b>Midterm I (up to and including Feb. 6)</b>			One sample t-test by hand and in Stata	
February 20, 22	<b>Reading Days – No Class</b>			<b>Reading Days – No Labs</b>	

February 27	Power and Sample Size for the One Sample t-test	Dr. Li	Power and Sample Size Worksheet	Power and Sample Size by hand and in Stata	Final Project Progress Report 1 Due March 3 23:59
March 1	Continuous Data: The Paired t-test & Two Sample t-test	Dr. Li	The Paired t-test & Two Sample t-test Worksheet	The paired and two sample t-tests by hand and in Stata	
March 6	Confidence Intervals, Power, and Sample Size for the paired and two-sample t-tests	Dr. Holodinsky	Confidence Intervals, Power, and Sample Size for the paired and two-sample t-tests Worksheet	Confidence interval, power, and sample size calculations for paired and two-sample tests in Stata	
March 8	Study Design: The Cohort Study and the Case Control Study	Dr. Holodinsky	Cohort and Case Control Study Design Worksheet		
March 13	Hypothesis Testing for More than Two Groups: The ANOVA	Dr. Holodinsky	ANOVA Worksheet	ANOVA calculations by hand and in Stata	Assignment 3 Due Mar 17 23:59
March 15	Categorical Data: The Chi-square test and odds ratios	Dr. Li	The Chi-square test and odds ratios Worksheet	Chi2 and odds ratio in Stata	
March 20	Categorical Data: The two-sample test of proportions (including confidence intervals for proportions)	Dr. Li	The two-sample test of proportions Worksheet	The two-sample test of proportions, power and sample size for proportions in Stata	Final Project Progress Report 2 Due Mar 24 23:59
March 22	Categorical Data: Power and Sample Size for Proportions The McNemar's Chi-square test	Dr. Holodinsky	McNemar's Chi-square test Worksheet	Midterm Review	

March 27	<b>Midterm II (up to and including March 15)</b>				
March 29	Linear Regression: Correlation, Hypothesis Testing, Assumptions for Linear Regression	Dr. Li	Linear regression hypothesis testing worksheet	The McNemar's Chi-square test in Stata Linear regression hypothesis testing in Stata	Final Project Rubric Assignment Due Mar 31 23:59
April 3	Study Design: The Randomized Controlled Trial and Quasi-Experiments	Dr. Holodinsky	RCT and Quasi Experiment Literature Example	<b>NO LABS – GOOD FRIDAY</b>	Assignment 4 Due Apr 7 23:59
April 5	Critically Appraising the Literature	Dr. Holodinsky	Critical Appraisal Example		
April 10	<b>NO CLASS – EASTER MONDAY</b>				Final Project Materials Due April 11 at 9:00
April 12	<b>FINAL PRESENTATIONS</b>			NO LABS	