

## Calendar Description

Introduction to statistics and its connection to all stages of the scientific inquiry process. Issues around data collection, analysis and interpretation are emphasized to inform study design and critical assessment of published research. Statistical software is used to conduct descriptive and inferential statistics to address basic life sciences research questions.

*Prerequisite:* BIO230H1/BIO255H1

*Exclusion:* STA220H1, PSY201H1, GGR270H1, ECO220Y1, ECO227Y1, SOC202H1, EEB225H1, HMB325H1, STA238H1, STA248H1, STA261H1, PCL376H1, STA215H5, STA220H5, STAB22H3

## Class Meeting Times

Section	In-person class meeting times*	Online activities**
<b>LEC0101</b>	Wednesday 1-3PM	see Quercus
<b>LEC0201</b>	Thursday 11AM-1PM	see Quercus

\* In-person class meetings are scheduled to take place on campus as per the schedule above. Your LEC room information is available on ACORN. If you wish to switch LEC sections, you must do so on ACORN by January 21, 2024 (i.e., the last date to enrol in S courses for Winter 2024). During the term, it may be necessary to move the occasional lecture online as a synchronous Zoom meeting. If this is the case, this will be communicated on Quercus with as much advance notice as possible.

\*\* There will be some variation in online activities from week to week. These will involve tasks such as watching a series of short pre-recorded videos, completing coding exercises, answering questions on videos/exercises, etc. Details will be posted on Quercus by end-of-day Monday of each week.

## Course & Instructor Information

### Dr. Jasty Singh

Assistant Professor, Teaching Stream

Department of Immunology

[sta288@utoronto.ca](mailto:sta288@utoronto.ca)

Office Hours: Wednesdays, 3:30-5:00PM on Zoom

### Dr. Bethany White

Associate Professor, Teaching Stream

Department of Statistical Sciences

[sta288@utoronto.ca](mailto:sta288@utoronto.ca)

Office Hours: Thursdays, 1:30-3:00PM on Zoom

Questions about the course material or administration should **not** be emailed; instead, you should bring your question to an instructor during their office hours or post to Quercus Discussions. Course-related inquiries that are more personal in nature may be sent to the instructors at [sta288@utoronto.ca](mailto:sta288@utoronto.ca). Be sure to send your email from your utoronto.ca email address and include your LEC section and your UTORid in your email subject line. You can expect a response within about 48 hours (Monday-Friday).

## Technical Requirements:



Stable internet connection



Laptop or computer



Working microphone  
(Office Hours/Group Work)



Working webcam  
(Office Hours/Group Work)

## Delivery Mode:

This is a **hybrid course** so it includes both in-person and online activities. You will be required to attend some activities in-person at a specific time and location (refer to in-person class meeting information above) and some activities online (synchronously or asynchronously).

## Course Learning Outcomes

Upon successful completion of this course, you will be able to:

- See the relevance of statistical issues in all stages of the life sciences research process.
- Select appropriate statistical methods to address basic life sciences research problems.
- Use statistical software to explore data and create numerical and graphical summaries that address life sciences research problems.
- Use statistical software to conduct appropriate statistical inference procedures (e.g., compute p-values, effect sizes, confidence intervals) to address a life sciences research problem.
- Draw scientific conclusions from graphical and numerical summaries of life sciences data and results of inferential procedures (e.g., p-values, effect sizes, confidence intervals).
- Identify strengths and weaknesses in study designs and analyses in published life sciences research.
- Design studies to address basic life sciences research problems.
- Recognize when standard statistical procedures are not appropriate and know to seek statistical expertise early in the research process.

## Textbook

We will use two **free**, open-source textbooks to help support your learning in this course:

- Vu, J, & Harrington, D (2020). *Introductory Statistics for the Life and Biomedical Sciences*. OpenIntro. Available at <https://www.openintro.org/book/biostat/>
- Çetinkaya-Rundel, M, & Hardin, J (2021). *Introduction to Modern Statistics*. OpenIntro. Available at <https://www.openintro.org/book/ims/>.

## Statistical Software - R

R is an open source statistical package that is widely used in academia, research and industry and is quickly becoming a standard platform. It is available for download from: <https://cran.r-project.org/> for use on Windows, Mac OS, and Linux (there is also a version for use on Android). RStudio provides a nice interface for R and offers some very useful functionality. In this course, you will generate and interpret R code/output on your STA288H1 lab assignments and project.

We strongly recommend using the University of Toronto's JupyterHub at <http://r.datatools.utoronto.ca> (you can access it using your UTORid and password) in this course. If you wish to install R (and RStudio) on your own machine, R is freely available for download at <http://cran.r-project.org> for Windows, MacOS, and Linux operating systems and RStudio is available at <https://posit.co/downloads/>.

## Quercus Course Site

Direct link to our course (you will need to sign in with your UTORid and password):

<https://q.utoronto.ca/courses/337701>.

It is your responsibility to check Quercus regularly and to monitor your utoronto email inbox for messages about the course. Important announcements, information about online activities and assessments, help (via Discussions and office hours), your grades, etc. will be on Quercus and most course assessments will need to be submitted through this site.

**The Discussions tool is enabled on Quercus.** Direct link: [https://q.utoronto.ca/courses/337701/discussion\\_topics](https://q.utoronto.ca/courses/337701/discussion_topics)

Please post questions there and respond to your peers' questions about course content (e.g., class meetings, online activities, readings, practice questions, etc.) or general course administration. To post a question, click on the *+Discussion* button on the top right of the page. Be sure to use an informative subject line to make our Discussions easy to follow and use. Quercus Discussions will be monitored on a regular basis. If you email your instructors with a course content or general administration question, you will be directed to Quercus Discussions. Note that this is a public (to everyone taking STA288H1 this term, and the teaching team) discussion forum and an extension of our classroom learning environment so please be respectful of one another. Derogatory, discriminatory, or otherwise inappropriate language or topics will be removed and dealt with at the instructors' discretion.

## Computing Labs

There will be three (4) 2-hour computing labs as well as a Lab 0 held during our in-class sessions to introduce you to the RStudio computing environment through JupyterHub. **You are only eligible to attend lab Q&A sessions for the LEC section in which you are officially enrolled.**

The purpose of these computing labs is to provide you with hands-on experience using the statistical software (R and R Studio) to summarize data and to run statistical procedures and to extract meaning from data. There will be interactive LearnR modules that you will need to work through before attempting the lab questions. The purpose of these LearnR modules is to introduce new R code that will be relevant to that particular lab. **Lab 0 will be held in class on Jan 24<sup>th</sup> (LEC0101) or Jan 25<sup>th</sup> (LEC0201).** We will work through the exercises together during that class to introduce you to the RStudio environment and the workflow of the labs and lab assignments. Your first lab assignment will also be due through Quercus at **12:00PM, Jan 26<sup>th</sup>** for a completion grade (1%). During the other four lab sessions you will have access to support from an instructor and TAs as you work through the assignment problems. We will not be available to help with lab assignments outside of your scheduled lab Q&A sessions (i.e., Wed 1-3PM for LEC0101, and Thurs 11AM-1PM for LEC0201 on Lab 1-4 weeks) or office hours. Lab assignment questions will be posted by the Monday of lab weeks. You are strongly recommended to attempt the Lab 1-4 assignments early in the week to ensure you have access to the support you need during the Q&A session. You must submit the lab assignment through Quercus by 12:00PM on the Friday after the lab. Lab assignments submitted in other ways (e.g., via email), or after the deadline will not be accepted. The lab schedule is included on the last pages of this syllabus. More information about the labs and the lab assignments will be posted on Quercus.

## Questions & Course Support

Have a course-related question? Need extra help with the material? Here are some options:

- **Have a question about STA288 course material, R, or general administration of the course?**

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- Review the questions already posted on the Quercus Discussions and if your question hasn't already been addressed, post it there with an informative subject line.
- Visit the instructors' office hours. Note that the TAs will not be available by email or for extra help outside class meetings or any office hours they hold.
- **Need to reach the instructors about a private or personal matter (e.g., grades)?** Email the instructors at [sta288@utoronto.ca](mailto:sta288@utoronto.ca) – do not post this on Quercus Discussions! ***E-mail should only be used for emergencies or personal matters and should include your LEC section (LEC0101 or LEC0201), and your UTORid or student number.*** If you email a question to the instructors about course material or course administration, then you will be asked to post your question on Quercus Discussions – these types of questions will not be answered by email.

## Grading Scheme & Assessment Information

Assessment	Percentage of Course Grade
Completion of weekly check-in questions on Quercus	5% - 0.5% each up to a maximum of 5%
In-person class meeting participation/contributions	5% - 1% each for best 5 of 7 class meetings (excluding Lab 1-4 and midterm weeks)
Completion of Lab 0 Assignment	1%
Lab assignments	24% - 6% each for 4 lab assignments
Course project	
• Research Proposal	7%
• Research Report	18%
Midterm	15%
Final Exam	25%

*No special rounding rules or individual grade adjustments (e.g. to meet GPA cut-offs, minimal requirements for programs, etc.) will be used to calculate course grades. No special reweighting of assessments or extra work will be accepted to account for perceived poor performance, nor to account for any assessment(s) that have been missed without accommodation. There are no exceptions to these policies.*

### Weekly Check-In Questions on Quercus (0.5% each up to a maximum of 5%)

There will be **12** weekly course check-ins (one per week) that you will complete through Quercus Quizzes available after you watch the lecture videos each week. Each course check-in will consist of up to approximately 10 questions that will highlight some of the important learning outcomes for that week, prepare you for participation in that week's in-person class activity on Wednesday (LEC0101) or Thursday (LEC0201) and give you an opportunity to reflect on your learning and the course. All questions must be attempted, and the Quercus Quiz must be submitted by the deadline (11:59PM, Tuesdays) to earn 0.5% for the course check-in. 0% will be recorded for incomplete check-ins and those which are not submitted by the deadline.

*There is no accommodation for missed weekly check-in quizzes available beyond the flexibility built into the grading scheme (i.e., you must complete and submit 10 of the 12 weekly quizzes to earn the full 5%).*

### In-Person Class Meeting Participation/Contributions (5%)

In-person class meetings will reinforce and extend your learning in the course through Polls, discussions, groupwork or other learning activities. Excluding the four lab and midterm weeks, there are 7 in-person class meetings, and you

must **both** attend class and complete the associated activities for at least 5 out of 7 classes to earn credit toward this 5%. **You must attend (and participate in) the LEC section in which you are officially enrolled to earn credit toward your in-person class meeting participation/contributions.** Online attendance/participation for in-person class meetings is not permitted.

Given that class activities will vary based on the nature of the course content each week, in-person class activities (and how this will be assessed) will be announced in-class itself, and completed within the class meeting.

*There is no accommodation for missed in-person class participation/contributions available beyond the flexibility built into the grading scheme (i.e., you must attend and complete activities for 5 out of 7 in-person classes to earn the full 5%).*

### Lab Assignments (24%)

The four (4) equally weighted lab assignments should be completed **independently** (i.e., you must answer the questions and write/run R code **on your own**; no sharing of answers permitted) and submitted through Quercus by 12:00PM on the Friday after lab days. The schedule is included on the last pages of the syllabus. Assignment questions will be posted on Quercus no later than the Monday of the lab week. Assignments must be completed and submitted in the correct format(s) through the appropriate Quercus assignment by the deadlines. Late assignments and assignments in other formats or submitted in different ways (e.g., over email) will **not** be accepted so be sure to complete your assignment early so you can be sure to submit it on time. You will have support from your instructor and TAs during in-person lab sessions. This lab assignment support will not be available at other times.

*There are **no extensions nor make-ups** on missed lab assignments.* If you miss a lab assignment for a legitimate reason and request accommodation that covers the deadline within *\*one week\** of missing your assignment (see “Missed Assessment” section below for information on how to request accommodation), the weighting of your assignment will be shifted to your final exam. However, at most two assignments may be accommodated this way; therefore, 0% will be recorded for missed assignments otherwise.

### Course project (25%)

Understanding biological research involves studying not only data, but the published biological context, and considering important statistical issues related to design and analyses. Therefore, in STA288H1 you will have the opportunity to engage in collaborative research with a group of 4-5 people in the course (groups will be formed on Quercus).

**Group project proposal (7%)** – In the research proposal, you and your group will identify a life science/biology related research question based on a review of the literature, and describe how a study could be designed, and how data would be collected, analyzed and interpreted. All group members are expected to contribute to the proposal **equally** and provide an outline their involvement in this proposal.

The group research proposal assignment will be comprised of three parts:

- (1) Groups will prepare a DRAFT Research Project Proposal to bring to class the week of **Feb 5-11**.
- (2) Student Groups will be matched for an **in-class peer review activity** during class the week of **Feb 5-11**. Each group will have an opportunity to present their proposal to another group, and receive/give peer feedback. Completion of

this peer review activity in the in-person class meeting will count towards individual “In-person Class Meeting Participation/Contributions” grades as described above.

(3) Groups will be able to incorporate the feedback they receive upon submission of the Final Research Project Proposals, which are due through Quercus **12:00PM, Feb 16**.

**Group project report (18%)** - Your group will conduct the study outlined in your research proposal, addressing any feedback received on your final research project proposal, by studying a virtual population. You will be given access to The Islands (<https://islands.smp.uq.edu.au/login.php>) – an online environment that has been created by the University of Queensland that allows students to collect data from a virtual population. Within your group, the final group project will expand on the initial research proposal, and you will conduct the study (being sure to incorporate the feedback provided on your proposal), and present your design, analysis and research findings in a written group assignment **due through Quercus 12:00PM, Apr 5**. All group members are expected to contribute to the project equally and provide an outline of their involvement in the project. Information on how individuals’ contributions to the group project will be assessed will be provided on Quercus.

*Due to the nature of this assessment (i.e., it is a group assessment), there will be **no extensions** on the research proposal or project under any circumstances. Late proposals/projects will not be accepted and there are no accommodations available for individuals’ missed contributions to their group’s project. More information on the research proposal and project will be posted on Quercus.*

### Midterm Test (15%)

The midterm test (combination of multiple choice and written answers) is scheduled during in-person class meeting times on Mar 6 (LEC0101) or Mar 7 (LEC0201). **You \*must\* write the midterm in the LEC section in which you are officially enrolled.** You will have exactly **1 hour and 30 mins** to complete the midterm test and you must bring your student identification to the midterm test.

Information on midterm test coverage, start time and room locations, along with some sample questions will be posted on Quercus in advance. Students may find a non-programmable calculator to be useful for the term tests. Any basic calculator will be sufficient (no special functions are necessary). Calculators on phones or any other devices equipped to communicate with the outside world (for example, through the internet or cellular or satellite phone networks) will not be permitted during the midterm test.

***If you miss the midterm for a legitimate reason (e.g., illness), you must report your absence within \*one week\* by following the steps described in the “Missed Assessment” section below.** If appropriate documentation is received by the deadline, the weight of your missed midterm will be shifted to your final exam. If no request for accommodation is received for your missed midterm (or it is incomplete), your midterm grade will be recorded as 0%.*

### Final Exam (25%)

The Final Exam will be a combination of multiple choice and written answers (3 hours) and will be scheduled by the Faculty of Arts and Science during the Final Exam Period (April 10-30). You must bring your student identification to the final exam.

Information on exam coverage and room locations, along with some sample questions will be posted on Quercus in advance. Students may find a non-programmable calculator to be useful for the final exam. Any basic calculator will be sufficient (no special functions are necessary). Calculators on phones or any other devices equipped to communicate with the outside world (for example, through the internet or cellular or satellite phone networks) will not be permitted during the final exam.

Final exam conflicts and petitions for a deferred exam must be brought to the Faculty of Arts and Science, not your instructors.

- Information on exam conflicts is available at <https://www.artsci.utoronto.ca/current/faculty-registrar/exams-assessments/exam-conflicts>.
- Information on how to request a deferred exam due to illness or another valid reason is available at: <https://www.artsci.utoronto.ca/current/faculty-registrar/petitions/deferred-exams>.

## Marking Concerns with Assessments

There are no regrades for weekly check-ins nor in-person class meeting participation/contributions, and requests for final exam regrades must be made through the Faculty of Arts & Science (please see below). Any requests to have a lab assignment, Group Project assignment or midterm regraded **must be made in writing through completion of the “STA288H1S Regrade Request Form” (available on Quercus) within \*one week\* of the date the marks are posted on Quercus**. To be considered, you must clearly identify the question you have concerns about, provide a detailed justification for your concern and make specific references to your answer, the feedback you received and to the relevant course material.

*Keep in mind that it is possible for your grade to go down if the regraded mark is lower than your original grade: your grade may increase, stay the same, or it may go down based on the regrade. Late requests or requests made in other ways (e.g., email, in office hours, etc.) will not be considered.*

Final exam viewing and regrade request must be made to the Faculty of Arts and Science. Please refer to <https://www.artsci.utoronto.ca/current/faculty-registrar/exams-assessments/exam-viewing> and <https://www.artsci.utoronto.ca/current/faculty-registrar/exams-assessments/exam-recheck-or-reread>.

## Missed Assessments

There are no accommodations nor make-ups for missed weekly check-ins or in-person class participation/contributions beyond the flexibility built into the marking scheme. We also cannot provide accommodations for the Group Project due to the nature of the assessment (i.e., it is a group assessment). Please refer to the previous sections for more information on the available accommodations for the remaining assessments.

Late assessments will not be accepted in STA288H1. To request accommodation for a missed lab assignment or midterm, you must **complete the “Missed STA288H1S Assessment Form” (available on Quercus) within \*one week\* of missing the assignment or midterm**. In this form, you will need to upload/submit one of the following supporting documents that covers the date(s) of your missed assessment:

- Absence declaration via ACORN (see <https://www.artsci.utoronto.ca/current/academics/student-absences> for important information on eligibility)
- U of T Verification of Illness or Injury Form (VOI) - see <http://www.illnessverification.utoronto.ca/index.php>
- College Registrar's letter
- Letter of Academic Accommodation from Accessibility Services

If you provide appropriate supporting documentation (i.e., one of the above documents) through the form by the deadline, your missed lab assignment or midterm will be accommodated as described in previous sections of this

syllabus. If the supporting documentation you submit is insufficient or you do not submit it through the form by the deadline, 0% will be recorded for your missed lab assignment or midterm.

If you are absent for an extended period of time, please contact your [College Registrar's Office](#) as soon as possible to seek advising and support.

*Note:* If you submit/write an assessment (e.g., lab assignment, midterm), it will be assumed that you deemed yourself fit enough to do so and your grade will stand as calculated. No accommodation will be made based on reports of medical, physical, or emotional distress **after** the fact.

## Academic integrity

You are responsible for reviewing and understanding the content of the University of Toronto's Code of Behaviour on Academic Matters at <http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>.

Academic offenses will be taken very seriously and dealt with accordingly. For all of the assessments in this course, submitting another student's answer(s) as your own, or providing your own answer(s) to another student for him/her to submit as his/her own is considered as an academic offense and will be reported as such.

*Note:* Students will be required to submit their Group Project assignments to the University's plagiarism detection tool for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their assignments to be included as source documents in the tool's reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of this tool are described on the Centre for Teaching Support & Innovation web site (<https://uoft.me/pdt-faq>).

### Can I use Generative AI Tools in STA288H1?

The work you submit for this course must be your own and may not include any content from generative artificial intelligence (AI) tools, either verbatim or with edits. You may, however, use generative AI to support your work on assignments in this course in the following ways:

- To answer general questions about high-level concepts covered in this course or assignment
- To assist with understanding and debugging R coding errors

Please note that any uses of generative AI beyond the ones listed above are not permitted, and will be considered use of an unauthorized aid, which is an academic offense. Submissions will be assessed at the discretion of the course coordinator, and students will be asked to show evidence of their work if a case of Academic Integrity and the inappropriate use of Generative AI tools is suspected.

All suspected cases of academic dishonesty will be investigated following the procedures outlined in the Code of Behaviour on Academic Matters. If you have any questions about what is or is not permitted in this course, please do not hesitate to contact the teaching team at [sta288@utoronto.ca](mailto:sta288@utoronto.ca).



## Intellectual Property Statement

The University considers an instructors' lectures and course materials to be their intellectual property covered by the Canadian Copyright Act.

Therefore, course material (i.e. slides, lecture recordings, assignments, assessment questions and all other supplementary course material available on Quercus) is the intellectual property of your instructors and is made available to you for your personal use in this course. Sharing, posting, selling or using this material outside of your personal use in this course is **not** permitted under any circumstances and is considered an infringement of intellectual property rights.

STA288H1 in-person class meetings will not be recorded, and no video recording of class meetings will be permitted under any circumstances. Students wishing to record audio or take photos in class meetings must ask for the instructors' explicit permission and may not do so unless permission is granted. In STA288H1S, this permission must be requested in writing and in advance by sending an email to [sta288@utoronto.ca](mailto:sta288@utoronto.ca). If permission is granted, this applies only for that individual student's own study purposes and does not include permission to "publish", share or distribute them in any way.

## Accessibility Needs

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodation, please feel free to contact Accessibility Services at (416) 978 8060; <http://accessibility.utoronto.ca>

## How to Succeed in this Course

- Read this course syllabus in its entirety and understand the course policies.
- Visit Quercus regularly and keep up-to-date with learning activities.
- Watch pre-recorded lecture videos and complete weekly check-ins.
- Do and submit lab assignments on time and take advantage of the support available to you during lab Q&A sessions.
- Attend and participate in the in-person class meetings.
- Regularly review learning resources, read the textbook and complete the recommended assigned exercises.
- If you find that you are having trouble with concepts, please seek help as early as possible on Quercus Discussions or in office hours.
- Do not try to memorize the biological pathways – these are useful reminders and may help set the concepts for problems as well as help you remember related topics (i.e. provide context) on assessments, but will not be tested separately – this is a statistics and scientific design course.
- Practice, practice, practice! Work through at least some of the recommended textbook exercises each week to make sure you understand the basic concepts. You need to study and do practice problems frequently (not just in the week before the exam) to keep up in the course.
- Take advantage of the help available & ask questions (in-person class meetings, office hours, Quercus Discussions).

Section	Monday	Tuesday	Wednesday	Thursday	Friday
<b>LEC0101</b>	ONLINE: Watch lecture videos (and, if applicable, work through learnR module) & complete weekly check-in Quercus quiz by 11:59PM Tuesday		IN-PERSON: attend/participate in class meeting 1-3PM		Submit assessment by 12PM Friday (if applicable)
<b>LEC0201</b>				IN-PERSON: attend/participate in class meeting 11AM-1PM	Wrap-up textbook readings and recommended problems.

## Course Schedule

This is our tentative schedule for course topics. Some adjustments may be made to the topics as the course progresses, depending on the rate at which individual topics are covered, but the lab and midterm schedule and all deadlines will remain the same. There will be recommended textbook problems posted on Quercus.

Week	Tentative Topic Schedule (See Quercus for up-to-date weekly topics and learning resources and activities)	Complete Asynchronous Online Activities By:	In-person Class Meetings	Important Reminders & Due Dates
Jan 8-14	<ul style="list-style-type: none"> <li>Course Introduction</li> <li>Data Origins: Sampling &amp; Study Design</li> </ul>	11:59pm, Tues, Jan 9 (both sections)	LEC0101 Wed, Jan 10 1-3pm LEC0201 Thurs, Jan 11 11am-1pm	<i>Jan 8 – First day of classes</i>
Jan 15-21	<ul style="list-style-type: none"> <li>Data &amp; Exploratory Data Analysis (EDA)</li> </ul>	11:59pm, Tues, Jan 16 (both sections)	LEC0101 Wed, Jan 17 1-3pm LEC0201 Thurs, Jan 18 11am-1pm	<i>Jan 21 – Last date to enrol in S courses</i>
Jan 22-28	<ul style="list-style-type: none"> <li>More Exploratory Data Analysis (EDA)</li> <li>Sampling variation &amp; informal inference</li> </ul>	11:59pm, Tues, Jan 23 (both sections)	LEC0101 Wed, Jan 24 1-3pm LEC0201 Thurs, Jan 25 11am-1pm	<b>Lab 0 Due (12PM, Jan 26)</b> Group project intro
Jan 29-Feb 4	<ul style="list-style-type: none"> <li>Thinking beyond the data – Randomization test comparing two proportions</li> </ul>	11:59pm, Tues, Jan 30 (both sections)	LEC0101 Wed, Jan 31 1-3pm LEC0201 Thurs, Feb 1 11am-1pm	<b>Lab 1 (12PM, Feb 2)</b>
Feb 5-11	<ul style="list-style-type: none"> <li>Thinking beyond the data – Interval estimate of a proportion (bootstrapping)</li> </ul>	11:59pm, Tues, Feb 6 (both sections)	LEC0101 Wed, Feb 7 1-3pm LEC0201 Thurs, Feb 8 11am-1pm	Research Project Proposal Peer Review ( <i>in class</i> )
Feb 12-18	<ul style="list-style-type: none"> <li>Inference on two means using simulation-based methods</li> </ul>	11:59pm, Tues, Feb 13 (both sections)	LEC0101 Wed, Feb 14 1-3pm LEC0201 Thurs, Feb 15 11am-1pm	<b>Final Research Project Proposal Due (12PM, Feb 16)</b>
Feb 19-25	<i>Reading week – no class meetings or new online activities</i>			
Feb 26-Mar 3	<ul style="list-style-type: none"> <li>Inference on one and two proportions using mathematical models</li> </ul>	11:59pm, Tues, Feb 27 (both sections)	LEC0101 Wed, Feb 28 1-3pm LEC0201 Thurs, Feb 29 11am-1pm	<b>Lab 2 (12PM, Mar 1)</b>
Mar 4-10	<ul style="list-style-type: none"> <li>Inference on one and two means using mathematical models</li> </ul>	11:59pm, Tues, Mar 5 (both sections)	LEC0101 Wed, Mar 6 1-3pm LEC0201 Thurs, Mar 7 11am-1pm	<b>Midterm on Mar 6 (LEC0101) &amp; Mar 7 (LEC0201)</b>
Mar 11-17	<ul style="list-style-type: none"> <li>Inference on means using one-way</li> </ul>	11:59pm, Tues, Mar 12 (both sections)	LEC0101 Wed, Mar 13 1-3pm LEC0201 Thurs, Mar 14 11am-1pm	<b>Lab 3 (12PM, Mar 15)</b>

	Analysis of Variance (ANOVA)			
Mar 18-24	<ul style="list-style-type: none"> <li>Inference on means using two-way Analysis of Variance (ANOVA)</li> </ul>	11:59pm, Tues, Mar 19 (both sections)	LEC0101 Wed, Mar 20 1-3pm LEC0201 Thurs, Mar 21 11am-1pm	
Mar 25-31	<ul style="list-style-type: none"> <li>Simple linear regression</li> </ul>	11:59pm, Tues, Mar 26 (both sections)	LEC0101 Wed, Mar 27 1-3pm LEC0201 Thurs, Mar 28 11am-1pm	<b>Lab 4 (due 12PM, Mar 29)</b>
Apr 1-7	<ul style="list-style-type: none"> <li>More complex models</li> </ul>	11:59pm, Tues, Apr 2 (both sections)	LEC0101 Wed, Apr 3 1-3pm LEC0201 Thurs, Apr 4 11am-1pm	<b>Final Group Research Report (due 12PM, Apr 5)</b>  <i>Apr 5 – last day of classes</i>
<i>April 10-30</i>	<i>Final exam period</i>			