Statistical Sciences
UNIVERSITY OF TORONTO

# STA288H1 – Statistics and Scientific Inquiry in the Life Sciences
# LEC0101 & LEC5101 – Winter 2026

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.
*Prerequisites:* BIO120H1, BIO130H1
*Recommended Preparation:* BIO230H1/BIO255H1

*Exclusions:* 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** |
|---|---|---|
| **LEC0101** | Thursday 11am-1pm | see Quercus |
| **LEC5101** | Thursday 5pm-7pm | 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 18, 2026 (i.e., the last date to enrol in S courses for Winter 2026). During the term, it may be necessary to move the occasional in-person class meeting online. 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 prerecorded videos, completing coding exercises, answering questions on videos/exercises, etc. Details will be posted on Quercus by Monday of each week.

## Course & Co-Instructor Information

**Dr. Gracia Dong**
Assistant Professor, Teaching Stream
Human Biology Program &
Department of Statistical Sciences
sta288@course.utoronto.ca
Office Hours (starting week of Jan 12):
Tuesdays Noon-2pm (location posted on Quercus)

**Dr. Bethany White**
Associate Professor, Teaching Stream
Department of Statistical Sciences
sta288@course.utoronto.ca
Office Hours (starting week of Jan 12):
Wednesdays 4-6PM on Zoom (link on Quercus)

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@course.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 approximately 2 business days.

**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 complete some activities online.

## 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 (2024). *Introduction to Modern Statistics (2nd Edition)*. 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 STA288 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/427449.

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. Outline lecture slides will also be posted there in .pdf format, one slide per page only, prior to our course meetings. Alternative file formats will not be available. Complete lecture materials used in class will typically not be posted.

**The Discussions tool is enabled on Quercus.** 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. 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 STA288 this term, and the teaching team) discussion forum and an extension of our classroom learning community 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 **(3)** computing labs as well as a Lab 0 to introduce you to the RStudio computing environment through JupyterHub. ***You are only eligible to attend lab Q&A sessions taking place during regularly scheduled class meetings 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 22nd.*** 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 11:59PM, Jan 22nd for a completion grade (1%). During the other three lab sessions you will have access to support from the instructors 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., Thurs 11AM-1PM for LEC0101, and Thurs 5PM-7PM for LEC5101 on Lab 1-3 weeks) or office hours. Lab assignment questions will be posted by the Monday of lab weeks. ***You are strongly recommended to attempt the Lab 1-3 assignments early in the week to ensure you have access to the support you need during the Q&A session to finalize your assignment before the deadline.*** You must submit the lab assignment through Quercus by 11:59PM on the lab Q&A session date. 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 course schedule at the end of this syllabus. More information about the labs and the lab assignments will be posted on Quercus.

## Questions & Additional help

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?**
  - Review the questions already posted on the Quercus Discussions and if your question has not already been addressed, post it as a reply in the appropriate Discussions Topic.
  - 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@course.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 LEC5101*), 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

Your STA288H1S grade will be determined based on the following marking scheme:

| Assessment | Percentage of Course Grade |
|---|---|
| **Completion of weekly check-in questions on Quercus** | **5%** - 0.5% each up to 5% |
| **In-person class meeting participation/contributions** | **6%** - 1% each for best 6 of 8 class meetings excluding Lab 1-3 and midterm weeks |
| **Completion of Lab 0 Assignment** | **1%** |
| **Lab assignments** | **24%** - 8% each for 3 lab assignments |
| **Course project**<br>• **Research Proposal**<br>• **Research report** | <br>**6%**<br>**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 and/or autograded R coding components via MarkUs 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 Thursday (LEC0101 & LEC5101) and give you an opportunity to reflect
on your learning and the course. All questions must be attempted (they need not be correct), and the Quercus Quiz and/or MarkUs submission must be submitted by the deadline (11:59PM, Wednesdays) 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 (6%)*

In-person class meetings will reinforce and extend your learning in the course through Polls, discussions, groupwork or other learning activities. Excluding the three lab and midterm weeks, there are 8 in-person class meetings, and you must **both** attend class and complete the associated activities for at least 6 out of 8 classes to earn credit toward this 6%. ***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 (or remote) 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. Activities may include polls/activities completed on your phone/laptop/device, worksheets completed on paper, or other participation or contribution activities. Microsoft Forms will be *one* of the tools used for in-person class participation. You will need a UTORid and UTmail+ to complete Microsoft Form polls toward class participation. See https://easi.its.utoronto.ca/shared-services/office365/utmail/utmail-for-students/ for more information, and, if you do not already have your UTORid set up (this is needed for UTmail+), please see https://tcard.utoronto.ca/get-your-utorid-tcard/.

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 6 out of 8 in-person classes to earn the full 5%).

## *Lab Assignments (24%)*

The **three (3)** 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 11:59PM on lab Q&A session 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 instructors and TAs during lab Q&A sessions and office hours on lab weeks. 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 lab assignments may be accommodated this way; therefore, 0% will be recorded for missed assignments otherwise.

## *Course project (24%)*

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 your LEC section. Groups will be formed in class on January 22. If you do not attend this in person class meeting, or cannot find group members, you will be assigned to a group. Groups smaller than 5 students may have additional members assigned to them.

- **Group project proposal (6%)** – 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 on February 5.
  **(2)** Student Groups will be matched for an in-class peer review activity during class on February 5. 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 to finalize Final Research Project Proposals, which are due through Quercus 11:59PM, February 12.

- **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 11:59PM, April 2. **All group members are expected to contribute to the project equally and your group will need to document everyone's 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 with intermediate deadlines), there will be no extensions on the research proposal or project report under any circumstances. Late proposals/projects will not be accepted and there are no adjustments or 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) will take place during your in-person class meeting time on February 26. The location will be announced on Quercus closer to the test date. **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 TCard 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 simple, non-programmable calculator to be useful for the term tests. Any basic calculator will be permitted (no special functions needed). Programmable or graphical calculators, and 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 (2-hours) will be a combination of multiple choice and written answers and will be scheduled by the Faculty of Arts and Science during the Final Exam Period. You must bring your TCard (or appropriate government issued photo id – see https://artsci.calendar.utoronto.ca/term-work-tests-and-final-exams#final-exams) to be eligible to write the final exam.

Information on exam coverage and room locations, along with some sample questions will be posted on Quercus in advance. Students may bring a simple non-programmable calculator to the final exam (no special functions needed). Graphing calculators, or 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. Please refer to the following links for more information:

- 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).

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/final-exams/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 appropriate documentation 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* 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 **as long as the use(s) are stated on your assignment**:

- To answer general questions about high-level concepts covered in this course or assignment
- To assist with understanding and debugging R coding errors
- To assist with basic writing and grammar (e.g., as a spellchecker or to ensure consistency of verb tenses)

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 instructors, and students will be asked to show evidence of their work if a case of Academic Integrity involving 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 STA288 instructors at sta288@course.utoronto.ca.

## Intellectual Property Statement

**The University considers instructors' lectures and course materials to be their intellectual property covered by the Canadian Copyright Act.** Therefore, STA288H1 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 ***in advance*** 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@course.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 http://accessibility.utoronto.ca and discuss with your instructor.

## 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).

## Course Schedule

This is a ***hybrid course,*** so it includes both in-person and online activities according to the following weekly schedule.

| Section | Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|---|
| **LEC0101** | **ONLINE:** Watch lecture videos (and, if applicable, work through R activities) & complete weekly check-in Quercus quiz by 11:59PM Wednesday | | | **IN-PERSON:** attend/participate in class meeting 11AM-1PM<br>Submit assessment (if applicable) on Quercus by 11:59PM | Wrap-up readings & recommended practice exercises |
| **LEC5101** | | | | **IN-PERSON:** attend/participate in class meeting 5PM-7PM<br>Submit assessment (if applicable) on Quercus by 11:59PM | |

The tentative schedule for course topics is summarized in the table below. Some adjustments may be made to the topics as the course progresses, but the lab and midterm scheduling and all deadlines will remain the same. There will also be recommended textbook readings and 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 (Both Sections): | In-Person Class Meetings | Important Reminders & Due Dates |
|---|---|---|---|---|
| Jan 5-11 | Course Introduction Data Origins: Sampling & Study Design | 11:59 pm, Wed, Jan 7 | LEC0101 – 11am-1pm Thurs, Jan 8<br>LEC5101 – 5-7pm Thurs, Jan 8<br>**Learning activities** | *Jan 5 – First day of classes* |
| Jan 12-18 | Data & Exploratory Data Analysis (EDA) | 11:59pm, Wed, Jan 14 | LEC0101 – 11am-1pm Thurs, Jan 15<br>LEC5101 – 5-7pm Thurs, Jan 18<br>**Learning activities** | *Jan 18 – Last date to enrol in S courses* |
| Jan 19-25 | More Exploratory Data Analysis (EDA) | 11:59pm, Wed, Jan 21 | LEC0101 – 11am-1pm Thurs, Jan 22<br>LEC5101 – 5-7pm Thurs, Jan 22<br>**Learning activities: Lab 0 + Groups formed and complete group contract** | **Lab 0 Due (11:59PM, Jan 22)** |
| Jan 26-Feb 1 | Thinking beyond the data – | 11:59pm, Wed, Jan 28 | LEC0101 – 11am-1pm Thurs, Jan 29<br>LEC5101 – 5-7pm Thurs, Jan 29 | **Lab 1 (11:59PM, Jan 29)** |

| | | | | |
|---|---|---|---|---|
| | Sampling variation; Interval estimate of a proportion | | **Lab 1 Q & A** | |
| Feb 2-8 | Thinking beyond the data: Simulation-based hypothesis tests for proportions | 11:59pm, Wed, Feb 4 | LEC0101 – 11am-1pm Thurs, Feb 5<br>LEC5101 – 5-7pm Thurs, Feb 5<br><br>**Learning activity: Group Research Proposal Peer Review** | Research Project Proposal Peer Review (*in class*) |
| Feb 9-15 | Simulation-based inference on one or two means | 11:59pm, Wed, Feb 11 | LEC0101 – 11am-1pm Thurs, Feb 12<br>LEC5101 – 5-7pm Thurs, Feb 12<br><br>**Learning activities** | **Final Research Project Proposal Due (11:59PM, Feb 12)** |
| *Feb 16-22* | ***Reading week*** *– no class meetings or new online activities* | | | |
| Feb 23-Mar 1 | Inference on one proportion using mathematical models | 11:59pm, Wed, Feb 25 | LEC0101 – 11am-1pm Thurs, Feb 26<br>LEC5101 – 5-7pm Thurs, Feb 26<br><br>**Midterm** | **Midterm on Feb 26, during scheduled class meeting time showing on ACORN (LEC0101 & LEC5101)** |
| Mar 2-8 | Inference on two proportions using mathematical models | 11:59pm, Wed, Mar 4 | LEC0101 – 11am-1pm Thurs, Mar 5<br>LEC5101 – 5-7pm Thurs, Mar 5<br><br>**Learning activities** | |
| Mar 9-15 | Inference on one and two means using mathematical models | 11:59pm, Wed, Mar 11 | LEC0101 – 11am-1pm Thurs, Mar 12<br>LEC5101 – 5-7pm Thurs, Mar 12<br><br>**Lab 2 Q & A** | **Lab 2 (11:59PM, Mar 12)** |
| Mar 16-22 | Inference on means using one-way Analysis of Variance (ANOVA) | 11:59pm, Wed, Mar 18 | LEC0101 – 11am-1pm Thurs, Mar 19<br>LEC5101 – 5-7pm Thurs, Mar 19<br><br>**Learning activities** | |
| Mar 23-29 | Inference on means using two-way Analysis of Variance (ANOVA) | 11:59pm, Wed, Mar 25 | LEC0101 – 11am-1pm Thurs, Mar 26<br>LEC5101 – 5-7pm Thurs, Mar 26<br><br>**Lab 3 Q & A** | **Lab 3 (due 11:59PM, Mar 26)** |

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|---|---|---|---|---|
| Mar 30-Apr 5 | Simple Linear Regression & Course Wrap-up | 11:59pm, Wed, Apr 1 | LEC0101 – 11am-1pm Thurs, Apr 2<br>LEC5101 – 5-7pm Thurs, Apr 2<br><br>**Learning activities** | **Final Group Research Report (due 11:59PM, Apr 2)**<br><br>*Apr 2 – last day of classes* |
| *April 9-29* | *Final exam period. Final exam to be scheduled by the Faculty of Arts and Science.* | | | |