

Department of Biology Course Outline

BIOL 2060 3.0: *Statistics for Biologists*

Course Instructor: Mark Vicari  [Hear my name](#)

How to address me: Dr. Vicari; Prof. Vicari;
Mark

Personal Pronouns: he/him/his

Email: biol2060@yorku.ca

Note: If you have questions or would like to talk with me, you can approach me after class, send an email, or see me during office hours (below).

Office Hours: Wed & Fri, 12:30-1:30 via Zoom:
<https://yorku.zoom.us/j/96716949056>

Course Format: in-person; lectures will normally be recorded.

Prerequisites: LE/CSE 1520 3.00, or LE/CSE 1530 3.00, or LE/CSE 1540 3.00, or LE/EECS 1520 3.00, or LE/EECS 1530 3.00, or LE/EECS 1540 3.00; and SC/MATH 1014 3.00, or SC/MATH 1505 6.00, or both SC/MATH 1013 3.00 and SC/MATH 1025 3.00, or ISCI 1410 6.00, or both ISCI 1401 3.00 and 1402 3.00, or both ISCI 1401 3.00 and MATH 1025 3.00, or equivalents.

Course credit exclusions: AP/ECON 2500 3.00, AP/ECON 3210 3.00, AP/ECON 3480 3.00, AP/ECON 3500 3.00, AP/GEOG 2420 3.00 or SC/GEOG 2420 3.00, HH/KINE 2050 3.00, HH/KINE 3150 3.00, SC/MATH 1131 3.00, SC/MATH 2560 3.00, SC/MATH 2565 3.00, SC/MATH 2570 3.00, AP/POLS 3300 6.00, HH/PSYC 2020 6.00, HH/PSYC 2021 3.00, AP/SOCI 3030 6.00.

Lecture Times: Tues. & Thurs., 08:30 – 10:00

Lecture Location: Lassonde A (LAS A)

[Click here for Keele campus map & directions.](#)

Tutorial Times and Locations:

Tutorial section	Day & time	Location*
Tutr 01	Tues. 11:30-13:00	VH1016
Tutr 02	Wed. 11:30-13:00	MC 215
Tutr 03	Thurs. 11:30-13:00	MC 215
Tutr 04	Fri. 11:30-13:00	LSB 101
Tutr 05	Tues. 13:00-14:30	CB 120
Tutr 06	Wed. 13:00-14:30	VH 3000
Tutr 07	Thurs. 13:00-14:30	CB 120
Tutr 08	Fri. 13:00-14:30	CB 129
Tutr 09	Tues. 14:30-16:00	ACE 008
Tutr 10	Thurs. 14:30-16:00	HNE B15
Tutr 11	Mon. 16:00-17:30	MC 216
Tutr 12	Tues. 16:00-17:30	R S507
Tutr 13	Wed. 14:30-16:00	CB 120
Tutr 14	Thurs. 16:00-17:30	CB 115
Tutr 15	Fri. 14:30-16:00	CB 120

*For building acronyms/abbreviations see <https://w2prod.sis.yorku.ca/Apps/WebObjects/cdm.woa/4/wo/AFgGnPLt7S3dPTkXgFXNt0/0.3.4.59.0>

Study Spaces on Campus:

<https://currentstudents.yorku.ca/study-spaces>

Course TAs: TBA

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Land Acknowledgement

York University recognizes that many Indigenous Nations have longstanding relationships with the territories upon which York University campuses are located that precede the establishment of York University. York University acknowledges its presence on the traditional territory of many Indigenous Nations. The area known as Tkaronto has been caretaken by the Anishinabek Nation, the Haudenosaunee Confederacy, and the Huron-Wendat. It is now home to many First Nation, Inuit, and Métis communities. We acknowledge the current treaty holders, the Mississaugas of the Credit First Nation. This territory is subject to the Dish with One Spoon Wampum Belt Covenant, an agreement to peaceably share and care for the Great Lakes region.

Welcome to BIOL 2060!

The great variability of living organisms tends to obscure fundamental patterns in nature. In this course you will learn some of the basic techniques biologists use to see through that variability and uncover those patterns.

Course Calendar Description: Statistical problem solving for biologists. Basic theory for the analysis of parametric and non-parametric data. Includes a tutorial period for group discussion and solving of statistical problems. Three lecture hours per week; approximately two 1.5-hour tutorials every three weeks. One term. Three credits.

Course learning objectives

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

1. Describe data using appropriate measures of location and spread.
2. Recognize different types of data and variables encountered by biologists.
3. Analyze and illustrate different types of data using appropriate methods.
4. Calculate probabilities of events that are mutually exclusive, independent, or conditional.
5. Describe the properties of a normal (including a standard normal) distribution.
6. Explain the difference between the Z and t distributions and use the appropriate distribution to calculate the probability of an event.
7. Formulate or interpret statistical hypotheses.
8. Describe the different types of errors that can occur in statistical analyses and experimental design, and how those can be minimized or avoided.
9. Transform data so that they meet the requirements of a statistical test.
10. Recognize when to use, and be able to carry out, each of the following statistical tests using real data: binomial; chi square; one-sample, two-sample and paired t; one-way analysis of variance using fixed or random variables; correlation; linear regression; and alternatives to the above, including non-parametric tests, in situations where data do not meet test requirements.
11. Use *Excel*, *RStudio* and *ChatGPT* to conduct statistical analyses and display data.

Inclusive teaching statement: As your instructor, I am committed to providing and encouraging an environment of equity, diversity, and inclusion (EDI) within this course. I designed this course with a commitment to the principles of Universal Design for Learning (UDL) and evidence-based teaching practices. This class is a community and we—both you and I—are here to learn and succeed together and support each other.

Science is influenced by cultural context and has often been exclusionary regarding whose voices were allowed and amplified. Thus, there can often be biases in course materials. My hope is to continue improving this course, integrating diverse scientists and experiences. Please contact me at biol2060@yorku.ca if you have any suggestions to improve the course in terms of equity, diversity, and inclusion.

YorkU students come from far and wide and represent a diversity of cultures and backgrounds. To support students whose primary language is not English, services are available at York including individual appointments, and group events, such as ESL Café. See <https://www.yorku.ca/laps/eslolc/> for more information.

Community Guidelines

The following values are fundamental to academic integrity and are adapted from the International Center for Academic Integrity*. In our course, we will seek to behave with these values in mind.

	As students, we will...	As your instructor or TA, we will...
Honesty	<ul style="list-style-type: none"> Honestly demonstrate our knowledge and abilities on assignments and exams Communicate openly without using deception, including citing appropriate sources 	<ul style="list-style-type: none"> Provide honest feedback on your demonstration of knowledge and abilities on assignments and exams Communicate openly and honestly about the expectations and standards of the course via the course outline, and with respect to assignments and exams
Responsibility	<ul style="list-style-type: none"> Complete assignments on time and in full preparation for class Participate fully and contribute to team learning and activities 	<ul style="list-style-type: none"> Provide timely feedback on your assignments and exams Create relevant assessments and class activities
Respect	<ul style="list-style-type: none"> Speak openly with one another, while respecting diverse viewpoints and perspectives Provide sufficient space for others to voice their ideas 	<ul style="list-style-type: none"> Respect your perspectives even while we challenge you to think more deeply and critically Help facilitate respectful exchange of ideas

	As students, we will...	As your instructor or TA, we will...
Fairness	<ul style="list-style-type: none"> Contribute fully and equally to collaborative work, so that we are not freeloading off others Not seek unfair advantage over fellow students in the course 	<ul style="list-style-type: none"> Create fair assignments and exams, and grade them in a fair, and timely manner Treat all students equitably
Trust	<ul style="list-style-type: none"> Not engage in personal matters while on class time Be open and transparent about what we are doing in class Not distribute course materials to others without authorization 	<ul style="list-style-type: none"> Be available to all students when we say we will be Follow through on our promises Not modify the expectations or standards without communicating with everyone in the course
Courage	<ul style="list-style-type: none"> Say or do something when we see actions that undermine any of the above values Accept the consequences (e.g., a lower or failing grade) of upholding and protecting the above values 	<ul style="list-style-type: none"> Say or do something when we see actions that undermine any of the above values Accept the consequences (e.g., lower teaching evaluations) of upholding and protecting the above values

* This class statement of values is adapted from Tricia Bertram Gallant, Ph.D.

Learning Materials


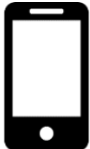


Textbook: M.C. Whitlock and D. Schluter, 2020. *The Analysis of Biological Data*, 3rd edition. W.H. Freeman & Co., New York.

- We will largely follow the text from the beginning up to and including at least chapter 17 (skipping chapter 14). See pages 10-11 for details of which chapters and sections.
- Note that if you have a copy of the 2nd edition of this book, it may suffice, but it is your responsibility to ensure that all the material in the 3rd edition that we cover is indeed covered in the 2nd edition.

Website: on eClass. Please log in at <https://eclass.yorku.ca>

- Lecture slides will be posted after each lecture. A preview version of the slides will usually be posted shortly before each lecture.
- Please check the course eClass site often for important information and updates.
- Important information will be sent out through course announcements. Please make sure you receive course announcements to your email & check your email often.
- You should also check the “Announcements” slides at the start of each lecture asap if you miss a class. Not all of the information in the announcement slides will be sent out as course announcements.

Technology Checklist:

 <p>An internet-enabled computer to access eClass, <i>Excel</i> and <i>RStudio</i>.</p>	 <p>Cell phone for in-class clicker polling (or you may use your laptop)</p>	 <p>Scientific calculator for test-writing</p>	 <p>Access to reliable internet</p>
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MS Excel is available free to York students; see: <https://www.yorku.ca/uit/student-services/software-and-apps/>. **RStudio** and **R** are available free. Downloading and installation instructions will be provided.

Assessment in this Course**Grade Breakdown**

COMPONENT	GRADE VALUE	DUE DATE	SUBMISSION
ASSIGNMENT 1	7.5%	Sept 27 2024	Crowdmark and/or Turnitin
TEST 1	10%	Oct 3 2024	In person
TEST 2	10%	Oct 31 2024	In person
ASSIGNMENT 2	7.5%	Nov 8 2024	Crowdmark and/or Turnitin
TEST 3	10%	Nov 21 2024	In person
ASSIGNMENT 3	7.5%	Dec. 3 2023	Crowdmark and/or Turnitin
TUTORIALS	17.5% (2.5% ea.)	See p. 12-13	In person
FINAL EXAM	30%	Dec. exam period	In person
ACTIVITIES	5% BONUS	Throughout	Clickers and/or other in-class

Assignments

In assignment 1 you will explore the important concept of standard error, and gain experience using *Excel*. In assignment 2 you will gain experience using *RStudio* to conduct statistical analyses. In assignment 3 you will use *ChatGPT* to enhance the use of *RStudio*. Assignments are due (must be submitted to Crowdmark and/or Turnitin) by **11:59 p.m.** on the evening of the due date. **Late policy:** a penalty of 1% per calendar day will apply for the first 5 days after the due date. The penalty will increase to 5% per day on day 6. Submissions will not be accepted more than 2 weeks after the due date.

Tests

Tests will be held in person during the lecture period. They will consist of short-answer questions, including problem-solving questions. You will be allowed a calculator and up to 10 double-sided “cheat sheet” pages of written and/or photocopied material. The second and third tests will not be cumulative, but you will be expected to be familiar with material from previous tests. The final exam grade will replace the lowest test grade IF the exam grade is higher (including if the test was missed). **Missed test policy:** if you miss one test, the weight of the test will be automatically transferred to the final exam. No documentation or explanation is needed. Please note that there are **no makeup tests**. If you miss more than one test, contact me as soon as possible after the second or third missed test.

Tutorials

There will be seven tutorial sessions; please see the course schedule on pages 12-13. **You may only attend tutorials for the tutorial section in which you are registered.** During each session you will work in a small group to complete a problem set consisting of questions designed to prepare you for the tests and exam. At the end of the session, you will hand in the problem set to your TA, who will assign a grade shared by all members of the group. Your final exam grade will replace ALL tutorial grades that are lower than your exam grade (including if a tutorial was missed). **Missed tutorial policy:** the weight of ALL missed tutorials (2.5% for each) will be automatically transferred to the final exam. For example, if all seven tutorials are missed, the weight of the exam will be increased by 17.5%. No documentation or explanation for missed tutorials is needed. Please note there are **no makeup tutorials** if you miss a tutorial. Problem sets **must be handed in at the end of the tutorial session** or they will be considered missed.

Final Exam

The final exam will be held in person during the December Exam period, to be scheduled by the Registrar’s Office. It will cover the whole course and have a similar format to the tests. You will be allowed a calculator and up to 10 double-sided “cheat sheet” pages of written and/or photocopied material, as for the tests.

Activities

Activities will consist mainly of clicker questions, but may also include worksheets or other materials, completed and submitted **in class**. They will review material pertaining to the lectures. They will be graded for **participation and completion** only. Activities marks are bonus marks with a weight of up to 5%, depending on how many you complete. For example, if you submit responses for 60% of class activities, a 3% bonus will be added to your final grade in the course. Because activities marks are bonus marks, **there will be no exemptions or extensions for missed activities**. Activities **must be submitted in person** to be considered completed.

Regrading/Reappraisal Procedures

Please submit regrading requests via the reappraisal form on eClass. In this form you'll be asked to include (1) your name and student number, (2) the reason for the request (e.g., the total was miscounted), and (3) a copy of the assessment. We will strive to review all re-grading requests within 3 weeks.

If you think your work was marked incorrectly, point (2) above should include a rationale for regrading based on academic merit (i.e., an explanation as to why marks were deducted unfairly). Note that re-marking can result in the mark being raised, confirmed, or lowered and the grade from a remark/reappraisal is final.

Please note that in fairness to all students in the course, final grades are **NOT** negotiable and will not be “bumped up” to a higher-grade bracket. Individual ‘extra credit’ assignments are not available during or after the course.

University Policies

Important Dates

Drop Deadline: Friday November 8, 2024 (last day to drop without course on transcript)

Course Withdrawal Deadline: Tuesday December 3, 2024 (course appears on transcript with “W”)

Grading Scheme

In accordance with the York University Undergraduate Calendar Regulations, the letter grades assigned in undergraduate courses at York conform to the descriptions and grade ranges shown here: <https://calendars.students.yorku.ca/2023-2024/grades-and-grading-schemes>

Academic Honesty and Integrity

Academic misconduct undermines the values of honesty, trust, respect, fairness, and responsibility that we expect in this class. York University provides supports such as academic integrity workshops to ensure that all students understand the norms and standards of academic integrity that we expect you to uphold.

York students are required to maintain the highest standards of academic honesty and they are subject to the Senate Policy on Academic Honesty (<http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/>). The Policy affirms the responsibility of faculty members to foster acceptable standards of academic conduct and of the student to abide by such standards. Please review and familiarize yourself with the policy.

There is also an academic integrity website with comprehensive information about academic honesty and how to find resources at York to help improve your research and writing skills, and cope with University life. Students are expected to review the materials on the Academic Integrity website: <https://www.yorku.ca/unit/vpacad/academic-integrity/>

Examples of actions that do not adhere to York’s Academic Integrity Policy include:

- Plagiarism (presenting someone else’s work as your own)
- Accessing unauthorized sites for assignments or tests. **In this course, the use of ChatGPT or other generative A.I. systems for the completion of academic work is authorized, but must be acknowledged. Use of such systems without proper acknowledgement will be considered academic misconduct.**
- Unauthorized collaboration on assignments, tests and exams.
- Uploading work to third party repository sites (e.g., Course Hero, One Class, etc.)
- Scanning, sharing, uploading, or publishing exams, tests, or scholarly works

For more information on what academic integrity is and why it is important see:

<https://spark.library.yorku.ca/academic-integrity-what-is-academic-integrity/>. Information on the process of investigations into breaches of academic honesty:

<https://spark.library.yorku.ca/academic-integrity-breach-of-policy-on-academic-honesty/>

Important Note from the FSc Committee on Examinations & Academic Standards (CEAS):

Numerous students in Faculty of Science courses have been charged with academic misconduct when materials they uploaded to third party repository sites (e.g., Course Hero, One Class, etc.) were taken and used by unknown students in later offerings of the course. Whenever a student submits work obtained through an external site (e.g., Course Hero, Chegg), the **submitting student will be charged with plagiarism** and the **uploading student will be charged with aiding and abetting**. To avoid this risk, students are urged not to upload their work to these sites.

Assistance for Students (Academic and Well-Being)

Academic Advising*: <https://www.yorku.ca/science/academic-advising/> * Departments also offer program-specific advising. Check with your Department’s Undergraduate Office.

Centre for Human Rights, Equity, and Inclusion: <https://rights.info.yorku.ca>

Centre for Indigenous Students Services: <https://aboriginal.info.yorku.ca/>

Good2Talk 24-hour Ontario Student Helpline: 1-866-925-5454 /Text: GOOD2TALKON to 686868

Keep.meSAFE: <https://myssp.app/keepmesafe/ca/home>

Learning Commons (general academic learning supports including library research, time management, study skills, career planning, etc.): <https://learningcommons.yorku.ca/>

Peer Assisted Study Sessions (PASS): <https://www.yorku.ca/colleges/bethune/get-help/pass/>

Peer Tutoring: <https://www.yorku.ca/colleges/bethune/help/tutoring/>

Sexual Violence Response and Support: <https://thecentre.yorku.ca>

Student Counselling, Health & Well-being: <https://counselling.students.yorku.ca/>

Support Services for International Students: <https://yorkinternational.yorku.ca/international-student-support/>

Writing Services: <https://www.yorku.ca/colleges/bethune/get-help/writing/>

York University Student Services: <https://family.yorku.ca/student-services/#SCD>

York University Student Well-being Resources: <https://www.yorku.ca/well-being/resources/students/>

Accessibility

York University is committed to principles of respect, inclusion, and equality of all persons with accessibility needs across campus. The University provides services for students with accessibility needs (including physical, medical, learning, and psychiatric needs) who require accommodation related to teaching and evaluation methods/materials. These services are made available to students in all Faculties and programs at York University.

Students in need of these services are asked to register with Student Accessibility Services (SAS) as early as possible to ensure that appropriate academic accommodation can be provided with advance notice. You are encouraged to schedule a time early in the term to meet with each professor to discuss your accommodation needs. Please note that registering with SAS and discussing your needs with your professors is necessary to avoid any impediment to receiving the necessary academic accommodations to meet your needs.

Additional information is available at the following websites:

Student Accessibility Services: <https://accessibility.students.yorku.ca>

York Accessibility Hub: <http://accessibilityhub.info.yorku.ca/>

Religious Observance Accommodation

York University is committed to respecting the religious beliefs and practices of all members of the community and making accommodations for observances of special significance to adherents. Should any of the dates specified in this course outline for an in-class test or examination pose such a conflict for you, contact the course instructor within the first three weeks of class. Similarly, should an assignment to be completed in a lab, practicum placement, workshop, etc., scheduled later in the term pose such a conflict, contact the course instructor immediately. To arrange an alternative date or time for an examination scheduled in the formal examination periods (December and April/May), students must complete and submit an accommodation request form at least 3 weeks before the exam period begins. <https://secure.students.yorku.ca/pdf/religious-accommodation-agreement-final-examinations.pdf>

Student and Instructor Conduct in Academic Situations

Students and instructors are expected to maintain a professional relationship characterized by courtesy and mutual respect. Moreover, it is the responsibility of the instructor to maintain an appropriate academic atmosphere in the classroom and other academic settings, and the responsibility of the student to cooperate in that endeavour. Further, the instructor is the best person to decide, in the first instance, whether such an atmosphere is present in the class. The policy and

procedures governing disruptive and/or harassing behaviour by students in academic situations is available at <http://secretariat-policies.info.yorku.ca/policies/disruptive-andor-harassing-behaviour-in-academic-situations-senate-policy/>.

Academic accommodation refers to educational practices, systems and support mechanisms designed to accommodate diversity and difference. The purpose of accommodation is to enable students to perform the essential requirements of their academic programs. At no time does academic accommodation undermine or compromise the learning objectives that are established by the academic authorities of the University.

University rules regarding registration, withdrawal, appealing marks, and most anything else you might need to know can be found on the university's website, here:

<https://calendars.students.yorku.ca/policies-and-regulations>

Lecture Topics and Readings

The following is tentative a list of lecture topics and textbook readings, in the order in which we will cover them. Please note material may change due to unforeseen circumstances.

1) INTRODUCTION TO STATISTICS, **Chapter 1**

- Populations and samples
- Random sampling
- Types of data - categorical versus numeric
- Explanatory versus Response variables
- Frequency and probability distributions

2) DISPLAYING DATA, **Chapter 2**

- Plotting frequency distributions
- Bar graphs, histograms
- Contingency tables, box plots, violin plots
- Scatterplots for two continuous variables

3) DESCRIBING DATA, **Chapter 3**

- Sample mean and sample median
- Variance and standard deviation
- Quartiles
- Cumulative frequency distributions
- Proportions

4) ESTIMATION WITH UNCERTAINTY, **Chapter 4**

- Estimating a population parameter
- Sampling distribution of the estimates
- Standard error
- Confidence intervals

5) PROBABILITY, **Chapter 5**

- Probability of events

- Mutually exclusive events
- Probability distributions
- Addition and multiplication rules
- Independent events
- Probability trees
- Conditional probability
- Pseudoreplication (interleaf 2)

6) HYPOTHESIS TESTING, Chapters 6 & 7

- Null (H_0) versus alternative (H_A) hypotheses
- One versus two-sided tests
- P-value
- Type I and Type II errors
- Analysing proportions and hypothesis tests using the Binomial distribution
- IGNORE material on confidence intervals for proportions, p. 190-91 (p. 189-191 in 2nd Ed).

7) GOODNESS-OF-FIT AND CONTINGENCY TESTS, Chapters 8 & 9

- χ^2 goodness-of-fit tests
- assumptions
- Fitting data to probability distributions
- Relative risk / Odds ratios
- Contingency tests / Fisher's Exact test

8) THE NORMAL DISTRIBUTION, Chapter 10 sections 10.1-10.6

- The standard normal distribution and probabilities
- Normal distribution of sample means
- Central limit theorem
- IGNORE 10.7 normal approximation for the binomial distribution

9) STUDENT'S T-TEST, Chapters 11 & 12

- the t-distribution
- confidence intervals
- one- and two-sample t-tests
- assumptions
- IGNORE confidence limits for variance and standard deviation in section 11.5
- paired t-test
- F-test of equal variances

10) VIOLATIONS OF ASSUMPTIONS, TRANSFORMATION AND NONPARAMETRIC TESTS, Chapter 13

- Detecting deviations from normality (read section, but we won't go into details about Shapiro Wilk test).
- Transforming data to meet normality assumption
- Nonparametric alternatives to t-tests

IGNORE CHAPTER 14.

11) ANALYSIS OF VARIANCE, Chapter 15

- Single factor ANOVA
- Assumptions and nonparametric alternatives (don't need to know details but should know when to use them).

- Planned versus unplanned comparisons
- Random-effects ANOVA

12) CORRELATION, **Chapter 16 sections 16.1-16.5, 16.8**

- Correlation coefficient
- IGNORE confidence interval material in section 16.1
- Hypothesis testing, assumptions and the importance of range
- Spearman’s rank correlation
- IGNORE 16.6 effects of measurement error
- Quick formulas: sum of products, sum of squares, correlation coefficient (IGNORE others)

13) REGRESSION, **Chapter 17 sections 17.1, 17.3, 17.5-6, 17.9, 17.11**

- Estimation of least squares line
- Hypothesis test of slope
- IGNORE 17.2 confidence in predictions
- Testing hypotheses (IGNORE ANOVA approach material in section 17.3).
- IGNORE 17.4 regression toward the mean
- Assumptions and transformations
- IGNORE 17.7 effects of measurement error
- IGNORE 17.8 nonlinear regression
- Logistic regression
- Quick formulas: regression slope (IGNORE others not already mentioned above for Ch. 16)

Course Schedule: Important Dates

Monday	Tuesday	Wednesday	Thursday	Friday
September				
2 Labour day	3	4	5 First lecture	6
9	10	11	12	13
16	17	18	19 Tutorial 1	20 Tutorial 1
23 Tutorial 1	24 Tutorial 1	25 Tutorial 1	26 Tutorial 2	27 Assignment 1 due Tutorial 2
October				
Sept 30 Tutorial 2	1 Tutorial 2	2 Tutorial 2	3 Test 1	4

Monday	Tuesday	Wednesday	Thursday	Friday
7	8	9	10 Tutorial 3	11 Tutorial 3
14 Thanksgiving	15 Reading Week	16 Reading Week	17 Reading Week	18 Reading Week
21 Tutorial 3	22 Tutorial 3	23 Tutorial 3	24 Tutorial 4	25 Tutorial 4
28 Tutorial 4	29 Tutorial 4	30 Tutorial 4	31 Test 2	Nov 1
November				
4	5	6	7 Tutorial 5	8 Drop deadline Assignment 2 due Tutorial 5
11 Tutorial 5	12 Tutorial 5	13 Tutorial 5	14 Tutorial 6	15 Tutorial 6
18 Tutorial 6	19 Tutorial 6	20 Tutorial 6	21 Test 3	22
25	26 Tutorial 7	27 Tutorial 7	28 Tutorial 7	29 Tutorial 7
December				
2 Tutorial 7	3 Assignment 3 due Last lecture Withdrawal deadline	4	5 Exams begin	6