# UBC Forestry

PFFAC Tip Sheet

# Syllabus Best Practices

## Outline



## 1. Introduction: principles for robust syllabus

These are some principles to help construct a robust syllabus in the new online learning context.

- Accessibility: use plain language and a comprehensive structure, and strive for clarity.
  - Using the appended syllabus template is your first step toward creating an accessible syllabus. You may also want to contact the Centre for Teaching, Learning and Technology for support.
- Connectivity and cohesiveness – with the course technology (i.e. Canvas)
  - If you opt to use the template canvas shells, your syllabus can be nicely embedded to the canvas course, and you should model the canvas learning modules the same way you model your learning topics, activities, and schedule. This provides better cohesion to your course in the eyes of the student.
- Heuristics: the 'ease of use' of your syllabus increases if it reflects the design of your course
  - Suggest using backwards design:
    - Identify the desired results**.** What should students know and be able to do at the end of the course? **These are your learning outcomes** (section of syllabus).
    - Determine acceptable evidence that students have achieved these learning outcomes. **These are your assessments** (section of syllabus following learning outcomes)

- Plan learning experiences, instruction, and resources that will help students be able to provide evidence that they have met the learning outcomes. **This comprises your course structure, learning materials, learning activities, and learning topics** (subsequent sections of syllabus following assessments).
- Try this: go here to establish robust learning outcomes by using the learning outcomes generator at the bottom of that page.

## 2. Communication keystone

Per section 2.2 of the *Communications Protocol in Online Learning Environments* Tip Sheet, the syllabus is a keystone communication device. It should layout all protocols, be comprehensive to include all potentially required information (or steer students to the right place for information through the use of hyperlinks and identified helpdesks).

Encourage students to carefully read the syllabus. Create a syllabus that has as much information as needed about the course. Attached to this document is a template syllabus (Appendix 1) and an example syllabus (Appendix 2) for a course fully delivered online during the summer of 2020.

To reduce time consuming questions from the student cohort, we suggest:

- Activate and properly setup a discussion board (suggest Piazza) in Canvas where students answer to themselves

## 3. What your syllabus should contain

### 3.1 Advice to instructors

In addition to the mandated content for course syllabi at UBC, we advise the following:

- Instructors should review course syllabi – realistically, with online learning, teachers might have to revise how much of their content they can deliver. Everything will likely be slower-paced, with more time dedicated to walking students through scenarios, problem-solving, etc.
- Instructors should consider additional diversity and inclusion statements in syllabi for what is expected for specific courses (beyond UBC policy). See wording and information from the UBC Equity and Inclusion website, especially the UBC Statement on Respectful Environment for Students, Faculty, and Staff

- A reminder about Syllabi and Canvas: Instructors should use Canvas as the online learning management system for all of their courses. The Canvas site should, at minimum, provide the following:
    - Course outline/syllabi; your syllabus should be well-integrated into your Canvas site – (a canvas template have been provided for instructors, the template integrates a draft syllabus that you can replace with your own)
    - Canvas calendar
    - information on academic integrity
    - grades dispersal/display
    - feedback on assignments.

## 3.2 Information to include

Information specific to online learning resources that could potentially be included in your Syllabus (and appropriately linked in your Canvas site):

- keeplearning.ubc.ca for assistance with online learning technology and requirements
- Location of resources on Canvas and use of additional learning tools
- Online textbook sources
- UBC Library online resources useful to the course and the use of EZProxy for access
- Academic integrity information and pledge
- Agreement to a 'social contract' for online peer-to-peer interactions, including etiquette for online classrooms
    - Clear guidelines for respectful online conduct should be included in course syllabi, encouraging students to be mindful of the impact of communications and how to practice good 'netiquette'
    - Instructors should provide conflict/dispute resolution guidance and relevant institutional links to respond to any dissonances in intercultural communication, including UBC Wellbeing and Early Alert links
    - Provide links to students that include: the Faculty of Forestry Student Resources website, the UBC Health and Wellbeing website
- Explicitly list software and hardware requirements specific to the course (i.e., beyond fundamental recommendations by UBC or UBC Forestry)
- Statement of expectations for class attendance for different session types, course module completion, and online participation evaluation
- Provide students with a clearly stated plan of action in the event of technological failure on the instructor or the student side, including how long students should wait online if the instructor has not yet logged on or who students should contact if they are unable to log in
- Provide a clear statement of how participation will be evaluated, including all components and any adjudication by the teaching team as a whole
    - See section: **General considerations for evaluating online participation** in the Online teaching and learning best practices document – found in Canvas

### 3.3 Rules on accessibility

Push your syllabus:

- After completing your syllabus, date the document, save it as a PDF document and distribute to your students. In Canvas, you may wish to upload the content into the syllabus tool. If a student requests it, send a digital copy by email.
- The syllabus must be provided to registered students within the first week of class unless you will create the syllabus in consultation with the students, in which case the syllabus must be finalized prior to the last date by which students are permitted to drop the course without receiving a "W" on their transcript.

## Appendices

**Appendix 1**. Generic syllabus template
**Appendix 2**. Example syllabus courtesy of Dr. Andrés Varhola

NOTE: This template is modified from the generic UBC template and takes into account the context of online learning within the Faculty of Forestry. It is not necessary to include every element, and is meant to give a sense of what can be included in a syllabus.

## ACKNOWLEDGEMENT [OPTIONAL]

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xwməθkwəy̓əm (Musqueam) people. The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on in their culture, history, and traditions from one generation to the next on this site.

## COURSE INFORMATION

| Course Title | Course Code Number | Credit Value |
|---|---|---|
| Course Title | ABCD XXX | 3 credits |

### Prerequisites

[Is there a course that students must have passed before taking this course?]

Text …

### Corequisites

[Is there a course that students must take concurrently (if not before)?]

Text …

## CONTACTS

| | |
|---|---|
| **Course Instructor(s)** | Dr. Firstname Lastname<br>Email: firstname.lastname@ubc.ca<br>Office: Office XXX, Building<br>Office and/or contactable hours: XXX |
| **Course TA(s)** | Firstname Lastname<br>Email: firstname.lastname@.ubc.ca<br>Office: XXX |

## COURSE INSTRUCTOR BIOGRAPHICAL STATEMENT [OPTIONAL]

[You may wish to include your department/faculty/school and other information about your academic qualifications, interests, etc.]

## OTHER INSTRUCTIONAL STAFF

[If others lead face-to-face components such as tutorials or labs, let students know that they will meet them and be introduced in those sessions. Are others involved in marking homework? If so, do you want to identify them and provide contact information to students or have inquiries come to you?]

## COURSE DESCRIPTION

[Provide a brief course description in a paragraph or two.]

Text …

### Target Audience [OPTIONAL]

[Clearly state target audience of the course. For whom is this course intended?]

Text …

## LEARNING OUTCOMES

[State the overall goal of the course in a couple of sentences.] This determines the design of the rest of your course design, and should be reflected by the assessments, and subsequent. Go here to establish robust learning outcomes by using the learning outcomes generator at the bottom of that page.

The overall goal of this course is ...

[Provide a list of 5-6 course learning outcomes for students.]

By the end of this course, you should be able to:

- 
- 
- 
- 

## ASSESSMENTS

Assessments to student learning include the following components in this course. Each component must be passed to successfully complete the course and receive credits. The passing grade is 50%.

| Components | Points/Marks | Weight |
|---|---|---|
| e.g. | | |
| Online Self-tests (#?) | ? each x ? = ? | XX% |
| Online Discussions (#?) | | |
| Assignment 1 | | |

| | | |
|---|---|---|
| Assignment 2 | | |
| Assignment 3 | | |
| … | | |
| Online Exam | | |

Student final letter grade will be given based on the following grading scales:

Assessment 1: [ XX% ]
***Addresses learning outcomes #? and #?.***
[Provide brief description for the assessment component.]

Assessment 2: [ XX% ]
***Addresses learning outcomes #? And #?.***
[Provide brief description for the assessment component.]

Assessment 3: [ XX% ]
***Addresses learning outcome #? and #?.***
[Provide brief description for the assessment component.]

## Policies on Assessment Issues, Late Submissions

[Provide students with a clearly stated plan of action in the event of technological failure on the instructor or the student side, including how long students should wait online if the instructor has not yet logged on or who students should contact if they are unable to log in]

## Participation Expectations

[Provide a clear statement of how participation will be evaluated, including all components and any adjudication by the teaching team as a whole.

See section: General considerations for evaluating online participation in the Online Teaching and Learning Best Practices document – found in Canvas ]

## COURSE STRUCTURE

[In a paragraph or two, clearly and briefly describe the delivery format of the course. Is it fully online? Any synchronous or face-to-face components (e.g. live web conferencing sessions, labs, etc.)? What goes to synchronous or face-to-face, if any? What is asynchronous? How will synchronous or face-to-face component and asynchronous component support each other, if applicable? Will all course materials and learning activities be made available through UBC Canvas learning management system? If any specific platform(s) or tool(s) you might use for any learning activities, you may want to name the activities and tools.]
[Provide a statement of expectations for class attendance for different session types, course module completion, and online participation evaluation.]

Text …

## LEARNING TOPICS

[List the learning topics with its titles. For a 3-creidt course, chunk content on weekly basis. Group topics into Weeks/Modules/Lessons if preferred.]

e.g.

Module I: Module Title
    Topic 1.1: Topic title
    Topic 1.2: Topic title
Module II: Module Title
    Topic 2.1: Topic title
    Topic 2.1: Topic title
…

## LEARNING ACTIVITIES

[In a paragraph or two, describe and highlight the learning approaches of the course. Do you plan to create some experiential learning experience for students in the course? In what ways (e.g. problem-based learning, case study, etc.)? What types of assignments and learning activities will students encounter? Will students be engaged in any online class discussions, small group activities, peer commenting/reviews, web-conferencing, and/or other in the process of learning?]

Text ...

## SCHEDULE OF TOPICS

*Note that all deadlines, dates and times are given in Pacific Standard Time (PST). Contact your instructors to discussion any adjustment needed to accommodate your time zone.*

| Start Week | Topic | Core Concepts | Learning Activities | Assignment Dues |
|---|---|---|---|---|
| **1**<br>Day 1-7 | **Course Orientation** | Course syllabus<br>Course schedule<br>Course requirements<br>Assignment details | • Review course introduction and overview materials.<br>• Familiarize yourself with course platform and tools.<br>• Post self intro on class discussion board.<br>• Obtain required textbooks.<br>• Ask any questions of general requirements for the course on class discussion board.<br>• … | Self Introduction due by 11:59pm on Day 3 of the week (PST). |
| **Module 1: Module Title** | | | | |
| **2**<br>Day 1-7 | **Topic 1.1:**<br>Topic Title | | • | |
| **3**<br>Day 1-7 | **Topic 1.2:**<br>Topic Title | | • | |
| **x**<br>Day 1-7 | **Topic x.x:**<br>Topic Title | | • | |
| **Module 2: Module Title** | | | | |
| **x**<br>Day 1-7 | **Topic 2.1:**<br>Topic Title | | • | |
| **x**<br>Day 1-7 | **Topic 2.2:**<br>Topic Title | | • | |
| **x** | **Topic x.x:** | | • | |

| | | | | |
|---|---|---|---|---|
| Day 1-7 | Topic Title | | | |
| **Module 3: Module Title** | | | | |
| **x**<br>Day 1-7 | **Topic 3.1:**<br>Topic Title | | • | |
| **x**<br>Day 1-7 | **Topic 3.2:**<br>Topic Title | | • | |
| **x**<br>Day 1-7 | **Topic x.x:**<br>Topic Title | | • | |
| **Module 4: Module Title** | | | | |
| **x**<br>Day 1-7 | **Topic 4.1:**<br>Topic Title | | • | |
| **x**<br>Day 1-7 | **Topic 4.2:**<br>Topic Title | | • | |
| **x**<br>Day 1-7 | **Topic x.x:**<br>Topic Title | | • | |
| **14**<br>Day 1-7 | **Course Wrap-up** | | • | |

## LEARNING MATERIALS

[List the required textbooks if any, and tell where to obtain them.]

- 
- 

### Course Materials

[In a paragraph or two, describe any other types of course materials that will be included in the course. Any required readings, lecture ppt/videos, additional resources, audios, videos, and so on to be used in the course? How are they going to be made available for students?]

## NETIQUETTE EXPECTATIONS

In taking this course, you are agreeing to a 'social contract' for online peer-to-peer interactions. Netiquette, or internet etiquette, is a set of guidelines for acting appropriately online. We are providing you with the following guidelines to empower you to successfully communicate in our online learning environment. Please click on the links above to understand what is being asked of you and how to hold up your end of the social contract.

We encourage you to….

- Be clear when expressing thoughts and information, remember that other users cannot not see your facial expressions or hear tone of voice. Thus, it is important to be weary of using humor and sarcasm.
- Remember that humans are on the other end of correspondence. Do not say anything that you would not say in person. Before you send something, ask yourself… how would I interpret this if I received it? Should I send it? Is the content better discussed over the phone, video chat or in person?
- Respect other people's time. Make the subject line of a post specific to your message. Avoid tangents and stick to one subject per posting.
- Don't expect instant responses from peers or professors.
- Be forgiving and supportive of other learners.
- Understand that grammatical and spelling errors will happen and do not judge.
- Be sure to respond to your classmates' comments on your posts, just like you would in a face-to-face conversation.
- Remember everyone is from different cultures and may bring different perspectives. Embrace diversity.
- Provide sincere and constructive comments of praise and feedback
- Respect the fact that everyone has different levels of technical competency and different learning styles
- Before entering a discussion, be sure to observe and review before leaping in to respond; avoid repetition. Also, take some time to consider your response to ensure it is well thought-out.
- Refer to your classmates' posts and comments when you contribute to the discussion to show that you acknowledge their thoughts.
- Do not use capital letters (this means someone is shouting). To emphasize a word, use asterisks in the following manner: *word*.
- Include your name at the end of each posting/comment.
- Cite all sources incorporated in posting using APA format and use a direct link when possible.
- Proofread all postings before submitting. Avoid using abbreviations and foul language; and be sure to use proper capitalization.
- Fundamentally, just as with your assignments or participation in other classes, remember that your posts and contributions in our online environment represent YOU. Be the best version of yourself in all ways possible. Go the extra mile to be a great contributor to the online environment.

## LEARNING RESOURCES

See keeplearning.ubc.ca for assistance with online learning technology and requirements.

Useful information about resources on Canvas and use of additional learning tools

See the UBC Library online resources for information about accessing electronic resources on and off campus.

## TECHNOLOGY

[describe the technological requirements to succeed in this course – generic minimum and optimum setups are listed below]

e.g.

Software and hardware requirements:

*Minimum setup (for both PC and Mac):*

- i5, quad, 2+ GHz
- 8 GB ram
- 250 GB free disk space
- 14" screen size
- Webcam (720p) and with microphone
- ISP service 5 Mbps upload/download speed
- Free cloud storage

*Optimal setup (for both PC and Mac):*

- Windows PC
- i7, quad, 3 GHz
- 16 GB ram
- 512 GB or better free disk space
- 15" or better screen
- Webcam (720p) with microphone
- Separate monitor, 24"
- Separate keyboard and mouse
- ISP service 100 Mbps upload/download speed
- Paid cloud storage of 50 GB or better

## WELLBEING RESOURCES [STUDENT HELP]

Should any unfortunate and unforeseen conflicts arise your instructors are well prepared to connect you with the relevant support mechanisms at UBC. These support mechanisms provide conflict/dispute resolution guidance and respond to any dissonances in intercultural communication.

Here are some links:

- Early Alert is meant to provide support to any student, undergraduate or graduate, who might need assistance because of a temporary setback or an ongoing difficulty that puts their academic success at risk.
- The Faculty of Forestry Student Resources website, Indigenous resources, the UBC Health and Wellbeing website

## UNIVERSITY POLICIES

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.

Details of the policies and how to access support are available on the UBC Senate website**.**

## OTHER COURSE POLICIES [OPTIONAL]

- Academic integrity information and pledge

### Analytics

Learning analytics includes the collection and analysis of data about learners to improve teaching and learning. This course will be using the following learning technologies: Canvas. Many of these tools capture data about your activity and provide information that can be used to improve the quality of teaching and learning. In this course, I plan to use analytics data to:

- View overall class progress
- Track your progress in order to provide you with personalized feedback
- Review statistics on course content being accessed to support improvements in the course
- Track participation in discussion forums
- Assess your participation in the course

## Copyright

All materials of this course (course handouts, lecture slides, assessments, course readings, etc.) are the intellectual property of the Course Instructor or licensed to be used in this course by the copyright owner. Redistribution of these materials by any means without permission of the copyright holder(s) constitutes a breach of copyright and may lead to academic discipline.

[State whether or not you permit students to record your classes.]

# FRST 231 – Introduction to Biometrics

## Course Syllabus

### Acknowledgement

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### 1. Course information

| | |
|---|---|
| Title: | **Introduction to Biometrics** |
| Code (section): | **FRST 231** (921) |
| Term: | 2020S (July 7 - Aug 13, 2020) |
| Credits: | 3 |
| Pre-requisites: | None |
| Co-requisites: | One of MATH 100, MATH 102, MATH 104, MATH 180, MATH 184, MATH 190 |
| Syllabus version: | 2020-07-15 |

### 2. Teaching team

*Instructor*: **Andrés Varhola**
Department of Forest Resources Management
University of British Columbia
Email: andres.varhola@ubc.ca
Digital office: Collaborate Ultra Course Room
Office hours: See Canvas calendar

*TA*: **Pramila Khatri Chhetri**
Department of Forest Resources Management
University of British Columbia
Email: pramila@mail.ubc.ca
Digital office: Collaborate Ultra Course Room
Office hours: See Canvas calendar

### 3. Course description

This course provides an introduction to statistical methods commonly used in Forestry and Natural Sciences disciplines. Practical real-world examples are used throughout the course and students will be encouraged to find workable solutions to related problems using the resources and techniques provided.

The course is based on the Bluman (2018) Elementary Statistics textbook and thus very well reflects its "*nontheoretical approach without formal proofs, explaining conceps intuitively and supporting them with abundant examples*." Most of the statistical techniques in the course are done by hand and only a simple calculator is necessary; this way students focus on the details of the underlying concepts of each procedure.

## 4. Course website

All the updated and official information relevant to the course is available at the course's website, which is hosted by the Canvas system. To access the course, please login with your Campus Wide Login (CWL) through this link:

`https://canvas.ubc.ca/courses/`

Only students registered in the course will be able to access the FRST 231 site, through which they will be able to download teaching materials, handouts and files required for the labs, observe the updated **due dates**, and read announcements related to the course. The website will be constantly updated and will be **your primary source of official information**.

## 5. Learning outcomes

The student will practice and learn:

- how to use data to facilitate decision-making in natural sciences;
- how to organize, summarize, chart and interpret statistical data;
- how to maximize the functionality of a simple scientific calculator for statistical techniques;
- how to use probability and counting techniques to determine the likelihood of events occurring;
- to understand sampling theory and sampling errors;
- how to test for statistical significance by developing hypotheses and constructing confidence intervals from normal and other distributions;
- to understand the limitations of confidence intervals and hypothesis testing;
- how to perform simple regression and analysis of variance techniques; and
- when it is appropriate to apply each of the techniques above.

## 6. Course structure

Below is a description of the course components, all designed for fully online delivery (more details in section 7).

### 6.1 Lecture recordings

The theoretical background of all statistical techniques will be provided by **pre-recorded lectures** which mostly include practical exercises equivalent to those that students solve on theor own during labs, tutorials and examinations. Students will be able to download and print **PDF versions of the lecture slides** covered in the videos with the empty spaces that are filled by the instructor during the lecture recording, so they can replicate the procedures.

### 6.2 Lecture live discussions

After students watch the recorded lectures, we will meet twice a week in a live session via Collaborate Ultra to discuss the topics reviewed so far. We will review learning objectives, review topics deeper, solve extra exercises and, most importantly, answer any questions students may have. Live discussions will be friendly, informal, spontaneous, and will give us a sense of community. One meeting will take place during one of the slots scheduled for lectures in the system, and and another one take place in the evening so students in different time zones can participate (to be determined). All students can participate in both sessions of course, which will be recorded for watching later. All live sessions will be **formally scheduled in the Canvas** calendar.

### 6.3 Lab assignments

Ten laboratory assignments are designed to exercise the skills learned in class. Students work on those assignmets on their own at home and later get the assistance of the TA during live sessions and one-on-one interactions as needed. All lab exercises will be handed out in Word format. Students are requested to print them and work on the exercises

using a pencil by hand (although they can also complete them digitally, but this is challenging and time-consuming for math equations). Once the handouts are completed, students must individually:

1. Submit the final numerical answers digitally via Canvas (assignments labelled **Lab # – Numerical submission**).
2. Submit a scanned PDF file with the handwritten procedures (assignments labelled **Lab # – Handwritten procedures**). Apps to scan with decent quality using a smartphone will be suggested in the startup guide).

The reason for students being required to submit a scanned PDF is for the Teaching Team to be able to look into your procedures so partial marks and more detailed feedback can be provided. Students will be able to work in groups remotely to complete lab assignments, even though submissions are individual.

### 6.4 Lab live discussions

Similarly to the lecture live discussions, lab discussions will take place for the TA and instructor to answer any questions regarding the lab assignments. Typically, students will have worked on their own for some time in the lab exercises and bring questions to the live sessions. One of these sessions will use a regularly scheduled slot, while the other will be accommodated for students in different time zones. All lab live sessions will be **formally scheduled in the Canvas** calendar.

### 6.5 Participation

Lecture topics will be supported by **pre-lecture quizzes** to test student's knowledge of topics to be discussed, and **post-lecture quizzes** to test their gained knowledge. Correct and incorrect answers for these quizzes will be identified, but students will get full marks just for participating. In other words, the only way to loose points in participation quizzes is to not submit them at all. 100% of the points will be awarded to students who complete the quizzes on time, regardless of how many correct answers. These quizzes will be conceptual in nature, short (about 5-8 questions each), and will mostly evaluate critical thinking and the big picture of statistics rather than numerical calculations. There will also be additional polls or quick questions embedded in the lectures, which will mostly be anonymous and using third-party apps, which for such reason will not count for participation. Another minor component of participation is live session attendance (both for lecture and labs); see **Assessment of learning** section below for more details.

### 6.6 Optional self-completed tutorials

Throughout the course, there will be six optional tutorials for students to complete directly via the McGraw Hill Connect Math system, which also hosts the eBook for this course. Successful completion of the tutorials will grant up to 3 bonus points going towards the midterm, and up to 3 towards the final exam (incorrect answers will reduce the bonus points proportionally). Access to the Connect Math system is only available for students who purchase the eBook, and bonus points can only be allocated via automatic grading. However, the exercises will be available in PDF handouts to all students who want to use them as practice.

### 6.7 Midterm

There will be **one midterm** completed synchronously by all students on a date and time to be announced, with these steps:

1. Download and print an empty handout with space for handwritten solutions to the exercises.
2. Read the exercise instructions directly online via Canvas.
3. Fill the printed handout with handwritten procedures.
4. Submit the numerical answers online directly via Canvas.
5. Submit a scanned version of the handwritten procedures.

The midterm will be open-book, so we don't need to worry about remote invigilation. This course is ideal for such a modality!

### 6.8 Final exam

There will be **a cumulative final exam** completed synchronously by all students on a date and time to be announced, with identical steps as the midterm.

### 6.9 Office hours and one-on-one booking system

The instructor and TA will one hour per week of scheduled office hours (to be determined) so students can ask any questions. This will happen via an open chatroom Collaborate Ultra. In addition, we will hold two separate additional hours for private one-on-one meetings with 10-minute slots using an automatic booking system. At least one of these hours will be scheduled at a time convenient for students on different time zones.

## 7. Online course delivery

This course is not a simple online self-paced course that you take in Udemy or Coursera. It is a university course with all the benefits of such! The Instructor and TA will be with you the whole time with a high level of presence, and the lack of face-to-face interaction will be compensated by a carefully crafted set of teaching materials, a close monitoring of student progress behind the scenes, plentiful opportunities for group and one-on-one interactions with the Instructor and TA, and the beauty of students having handy recordings of all activities. In addition, being able to review these materials with flexibility in time and watching recordings as many times as needed is a great advantage lacking in most face-to-face environments. The sections below describe some additional features of online course delivery.

### 7.1 Modular completion and navigation

The course will be delivered in modules representing each lecture topic. Students will be able to track their progress in Canvas as coursework is being completed, mark them as done for a visual illustration of progress, and make sure they meet deadlines. Canvas will allow students to navigate through the course progressively and smoothly. Deadlines for the completion of assignments and participation quizzes will be established, but there will be flexibility for students to work on the materials on their own time.

### 7.2 Time dedication & workload

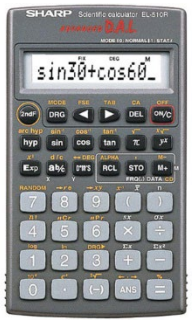
You may be wondering that if we have recorded lectures AND live sessions, the time dedication to the course will be much higher than in a face-to-face environment. However, this is not the case, for two primary reasons: 1) recorded lectures are more compact than live lectures because there are no interruptions, and 2) we will not use all of the scheduled lecture and lab slots during the term.

### 7.3 Efficient communications

We will use **Piazza** for class discussion, accessible via Canvas. The system is highly catered to getting you help fast from classmates, TAs and Instructor. Rather than emailing questions to the teaching staff, posting questions on Piazza is encouraged . If you have any problems or feedback for the developers, email `team@piazza.com`. Our class page can be directly accessed at `https://piazza.com/ubc.ca/summer2020/frst231921/home`.

## 8. Learning materials

### 8.1 Supplies required



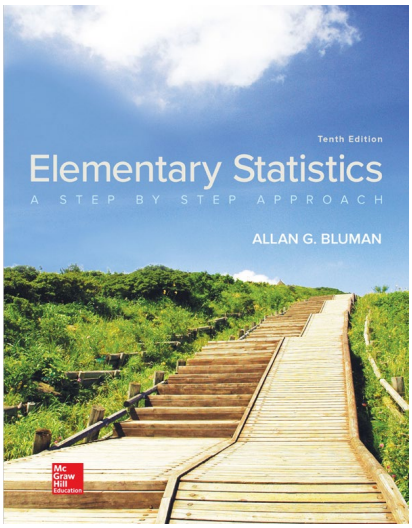

1. **A computer** with adequate internet connection. A tablet with a keyboard will do the job but is not ideal, and completing this course with just a smartphone will be very challenging.
2. **A ruler** for creating a few graphs.
3. **A simple scientific calculator**; the *Sharp EL-510R* (image in the right) is ideal for the purpose of this course and costs less than $10 in any bookstore; if students buy other calculators, the instructor and TA might not be able to help you maximize its functionalities. Please make sure the calculator you buy allows writing entire equations in one line, including brackets.
4. **Access to a scanner** or **scanning app** for mobile devices such as **Genius Scan**; these will be used to submit written procedures for labs, midterm and exam, each in a single PDF file.

Not mandatory but strongly recommended:

5. **Access to a printer** to print lab handouts for handwritten completion, as well as the midterm and exam handouts. If a printer is not available, students can submit their own sheets provided that they use the same space as the handouts and report answers in perfect order.
6. A separate mobile device with a QR code reader to easily complete interactive surveys appearing on video lectures.

### 8.2 Textbook

The course is almost entirely based on the following **optional** textbook:




**Bluman A.G.**. 2018. ***Elementary Statistics - A Step by Step Approach***. 10th Edition. McGraw-Hill. 808 p. ISBN: **978-1-26004177-4** (1-year digital access only for $89).

The textbook has been ordered for the course and is available for FRST 231 students at the UBC library by clicking here. The eBook and the McGraw-Hill Connect system, which we will use for optional tutorials during the term, can be accessed by following the registration process of this link:

`https://www.connectmath.com/`

Please complete the registration process using code **3HUGX-VD4HX** when prompted, as that will take us to our course. It is **NOT mandatory** to purchase the book or its digital access.

Lecture topics and lab exercises are supported by this book produced in UBC Forestry:

**Kozak A., Kozak R.A, Staudhammer C.L., Watts, S.B**. 2008. ***Introductory Probability and Statistics: Applications for Forestry and Natural Sciences***. Cabi. 448 p. ISBN: 978-1845932756.

### 8.3 Learning analytics

*Learning analytics* includes the collection and analysis of data about learners to improve teaching and learning. Many of these tools capture data about your activity and provide information that can be used to improve the quality of teaching and learning. This course will mostly use **Canvas** as the main learning analytics resource (see course website section above).

In addition, we may use the tool **Mentimeter** (`https://www.mentimeter.com/` and `https://www.menti.com/`) and **Poll Everywhere** (`https://www.polleverywhere.com/`) for some interactive

live interactive exercises. Please note that surveys submitted via Mentimeter are anonymous and the instructor cannot therefore use it for participation tracking. Polleverywhere requires a name but students can use aliases to anonymize their responses.

## 9. Contents

The course is divided in four major modules and follows the Bluman & Mayer (2018) textbook (last column):

| Modules | Lecture | Topics | Book section |
|---|---|---|---|
| Introduction & data analysis | 1. Basic concepts | Introduction | - |
| | | Descriptive and inferential statistics | 1-1 |
| | | Variables and types of data | 1-2 |
| | | Data collection and sampling techniques | 1-3 |
| | 2. Data analysis | Frequency distributions and graphs | 2-1, 2-2, 2-3 |
| | | Measures of central tendency, variation, position and shape | 3-1, 3-2, 3-3 |
| Probability | 3. Probability fundamentals | Definitions | 4-1 |
| | | Addition rules and multiplication rules | 4-2, 4-3 |
| | | Conditional probability and Bayes Theorem | 4-3 |
| | 4. Counting-based probability | Counting techniques: tree diagrams, combinations & permutations | 4-4 |
| | | Probability and counting rules | 4-5 |
| | 5. Probability distributions | Probability distributions and their metrics | 5-1, 5-2 |
| | | Discrete probability distributions | 5-3, 5-4 |
| Statistical inference | 6. Normal distribution fundamentals | The normal distribution | 6-1, 6-2 |
| | | Normal approximation to the binomial distribution | 6-4 |
| | 7. Sampling & Central Limit Theorem | The Central Limit Theorem | 6-3 |
| | 8. Confidence intervals & sample size | Confidence intervals and sample sizes for means, proportions and variances | 7-1, 7-2, 7-3, 7-4 |
| | 9. Hypothesis testing: single values | Hypothesis testing for single values of means, proportions, and variances | 8-1, 8-2, 8-3, 8-4, 8-5 |
| | | Confidence intervals and hypothesis testing equivalences | 8-6 |
| | 10. Hypothesis testing: differences | Hypothesis testing for differences between means, proportions and variances | 9-1, 9-2, 9-3, 9-4, 9-5 |
| Regression & ANOVA | 11. Analysis of variance | One-way analysis of variance | 12-1, 12-2 |
| | 12. Correlation and regression | Correlation and regression | 10-1, 10-2, 10-3 |

## 10. Assessment of learning

The course is evaluated through the **Lab assignments**, pre- and post-lecture **participation** quizzes, one **Midterm** and a **Final Exam**. The midterm and the final exam are composed of exercises of the same level of *easiness* as the examples shown in lectures and labs. However, the midterm and exam questions are presented in a random order so a very important skill for students to develop is to quickly identify the topic related to any given problem and the specific procedure to solve it. Both evaluations are **open book**, and students will be provided with a standard **formula sheet**. The midterm is a 90 minute evaluation taking place synchronously for all students, while the exam is 2.5 hour-long exam also designed for remote online completion.

Lab assignments will be due at specific dates specified in Canvas. Late assignments will be penalized 10% of the total possible points for each day past the due date. Once the assignments are returned graded to the students, late assignments will automatically receive a grade of 10% but they still need to be handed in to pass the course. **Students can not pass the course unless all assignments are submitted for grading**, no matter how late they are. Grades will be allocated following the distribution below:

- Participation: 10%
- Lab assignments: 25% (2 bonus points in lab average over 100 points if attendance in all live sessions > 85%)
- Midterm: 25%
- Exam: 40%

Students that for justified medical (or other) reasons miss the **Midterm** will place all the weight of the grade in the final exam. **Students must have a combined grade of 50% or more on the Midterm and Final Exam in order to pass the course** (a sum of the Midterm and Final Exam less than 32.5% of your final grade results in failure regardless of lab and participation grades).

## 11. Tentative calendar

Please note that recorded lectures will likely air earlier than the weeks indicated below, but the schedule is a guideline for timely completion of coursework. If a student falls behind severly, catching up will be difficult and assignment deadlines may not be met.

| Week | Dates | Lectures | Labs | Evaluations |
|---|---|---|---|---|
| 1 | Jul 8 – 10 | Lecture 1 | --- | --- |
| 2 | Jul 13 – 17 | Lecture 2, Lecture 3, Lecture 4 | Lab 1 + Lab 2 | --- |
| 3 | Jul 20 – 24 | Lecture 5, Lecture 6 | Lab 3 + Lab 4 | --- |
| 4 | Jul 27 - 31 | Lecture 7, Lecture 8 | Lab 5 + Lab 6 | MIDTERM (**July 29**) |
| 5 | Aug 3 - 7 | Lecture 9, Lecture 10 | Lab 7 + Lab 8 | --- |
| 6 | Aug 10 - 13 | Lecture 11, Lecture 12 | Lab 9 + Lab 10 | --- |
| 7 | Aug 17 -21 | --- | --- | FINAL EXAM |

## 12. Communications

Students should strictly follow these instructions related to who they should contact for specific purposes. When you look for information related to the course, before contacting the Instructor or TA, please make sure to: 1) check the syllabus; 2) check the website (announcements are regularly posted, and all deadlines are included there).

If you absolutely need to contact the Instructor or TA, **please** follow this order: 1) ask questions directly during live lectures and lab sessions; 2) post the question in **Piazza**; 3) book a one-on-one appointment on the select slots (system to be provided); 4) email the question or book an appointment if none of the slots work (you can use the Canvas messaging system for that).

Also, make sure you know who to contact regarding specific matters. **Contact the TA regarding:** lab attendance issues, lab grade inquiries, lab exercise questions, late lab assignment penalties, medical notes and concessions, etc.; the TA has full authority regarding all the aspects of the labs. **Contact the instructor regarding**: lecture material and theory, tutorials, midterm and exam.

## 13. University policies

### 13.1 Code of conduct

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating may result in total loss of points in an assignment, exam or entire course, and will be referred to the President's Advisory Committee on Student Discipline. Careful records are kept in order to monitor and prevent recurrences.

To fully understand what plagiarism means and avoid it please visit:

`http://learningcommons.ubc.ca/resource-guides/avoid-plagiarism/`

For a broader guide on general student conduct, go to:

`https://students.ubc.ca/campus-life/student-code-conduct`

## 13.2 Support

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise, so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.

Details of the policies and how to access support are available on the UBC Senate website:

`https://senate.ubc.ca/policies-resources-support-student-success`

## 13.3 Copyright

All materials of this course (course handouts, video recordings, lecture slides, assessments, tests, course readings, etc.) are the intellectual property of the Course Instructor or licensed to be used in this course by the copyright owner. **Redistribution of these materials by any means without permission of the copyright holder(s) constitutes a breach of copyright and may lead to academic discipline**. **Students are strictly forbidden from using the course material for any purpose other than self-study**. Do not share course materials to individuals not enrolled in the course. Recording of any event within our class or field activities is not allowed without the consent of the instructor and other participants. The instructor is allowed by UBC policies to record live sessions within Canvas, and students are responsible for not redistributing those recordings or any other materials.