

Statistical Programming SS2864 Course Outline

1. Course Information

Course Information

Title: Statistical Programming

Lecture hours: Monday, Wednesday, Friday 3:30-4:30pm.

Location: B&GS-0165

Tutorial Hours: Thursday, 1:30-2:30pm SSC-1032

Office hours: Wednesday, Friday: 10:30am-12:00pm

Classes Start	Reading Week	Classes End	Study day(s)	Exam Period
January 9	Feb 18-26	Apr 10	Apr 11-12	Apr 13-30

* March 7, 2023: Last day to drop a winter-term half course without penalty.

List of Prerequisites

Prerequisite(s): A minimum mark of 60% in [Statistical Sciences 2857A/B](#) (or the former Statistical Sciences 2657A/B) or a minimum mark of 70% in one of [Statistical Sciences 2035](#), [Statistical Sciences 2141A/B](#), [Statistical Sciences 2143A/B](#), [Statistical Sciences 2244A/B](#), [Biology 2244A/B](#), [Economics 2222A/B](#), [MOS 2242A/B](#), [Psychology 2812A/B](#) or the former Psychology 2810; and enrollment in a module offered by the departments of Applied Mathematics; Mathematics; and Statistical and Actuarial Sciences. **Pre-or Corequisite(s):** [Statistical Sciences 2858A/B](#) for those using Statistical Sciences 2857A to meet the prerequisites.

Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

Technical Requirements

Due to the nature of the materials of the course, each student needs a laptop with the latest version of R and R Studio installed. Students are required to bring a laptop to classes.

Course Tutorials

During the course tutorial, our course TA will be available to answer your questions and present more examples. Attendance is highly recommended.

2. Instructor Information

Instructors	Email	Office	Phone	Office Hours
Jiandong Ren	Jren6@uwo.ca	WSC219	88209	W,F:10:30am-12pm
TA 1: Dechen Gao	Dgao28@uwo.ca			
TA 2: Pouya Farougi	pfarough@uwo.ca			

Students must use their Western (@uwo.ca) email addresses when contacting their instructors. Include SS2864 in the title of the mail.

3. Course Syllabus, Schedule, Delivery Mode

Course Description: An introduction to statistical programming using R.

Topics covered

1. Elementary statistical data analysis.
2. Elementary statistical graphics.
3. R programming.
4. Simulation.
5. Statistical Inference with R

Contingency plan for an in-person class pivoting to 100% online learning

In the event of a COVID-19 resurgence during the course that necessitates the course delivery moving away from face-to-face interaction, affected course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). The grading scheme will **not** change. Any remaining assessments will also be conducted online as determined by the course instructor.

4. Course Materials

Reference books

- (1) R for Data Science (2017), by Hadley Wickham and Garrett Grolemund, O'Reilly Media, 2nd edition. The book is available at <https://r4ds.had.co.nz/>
- (2) An Introduction to R Version 4.0.2. Available online at www.r-project.org.

- (3) The basics of S-Plus 4th ed. By Andreas Klause and Melvin Olson. Springer. The textbook can be downloaded from Western Library.

Students are responsible for checking the course OWL site (<http://owl.uwo.ca>) on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class.

All course material will be posted to OWL: <http://owl.uwo.ca>.

If students need assistance with the course OWL site, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

5. Methods of Evaluation

Assignments

There will be **four assignments**, which are scheduled to be given on **January 20, February 6, March 3 and March 20**. The due dates are one week after they are given. Students need to finish the assignment independently using R and R markdown and submit on OWL before the due time. Each assignment is worth 5 marks, the best three of the four count toward the course marks.

Group Project

There will be a group project, which students in **group of 4** need to complete. In the project, students may learn a R package of interest or identify a dataset and perform elementary data analysis. The project will be evaluated by a **12-minutes group presentation**. The group presentations will be given during the last two weeks of the term.

Individual Project

There will be an individual project, which students are required to complete individually. The format of this individual project could be similar to the group project; however the materials have to be significantly different. Students are expected to demonstrate the ability to learn and apply techniques related to those covered in class or R packages of their interests independently. The project will be evaluated by a term **project report (5 to 10 pages)** due at the final exam date.

Midterms or Tests

There will be **two 50-minute midterm tests**, scheduled on **February 10 and March 10** respectively. The first midterm is closed book, focusing on R basic programming. The second one is open book, focusing on applying R language to solve data analysis/statistical questions. For the second midterm, students must bring a laptop and answer the questions in R markdown and submit the R markdown file as well as the output file in PDF/HTML/Word format.

Final Exam

There will be a 2-hour closed book final exam. The date and time for it will be announced by the registrar's office, usually near the first part of March. Students are required to wait until the final exam schedule is posted before making arrangements for travel. Exams will NOT be moved to accommodate students who ignore this requirement.

The overall course grade will be calculated as listed below:

Assignments	15%
Midterm Exam 1 (closed book)	20%
Midterm Exam 2 (open book, must bring a laptop to the exam)	20%
Group Project	10%
Individual Project	10%
Final Exam (closed book)	25%

Key dates

Assignment 1	20-Jan-23	Due in 7 days	5%
Assignment 2	06-Feb-23	Due in 7 days	5%
Assignment 3	03-Mar-23	Due in 7 days	5%
Assignment 4	20-Mar-23	Due in 7 days	5%
Midterm 1	10-Feb-23	Closed book	20%
Midterm 2	10-Mar-23	Open book (Laptop required)	20%
Group Presentations 1	27-Mar-23		10%
Group Presentations 2	29-Mar-23		10%
Group Presentations 3	31-Mar-23		10%
Group Presentations 4	03-Apr-23		10%
Group Presentations 5	05-Apr-23		10%
Individual Project	27-Mar-23	Due on the Final Exam day	10%
Final Exam	TBD	Closed book	25%

6. Student Absences

If you are unable to meet a course requirement due to illness or other serious circumstances, please follow the procedures below.

Assessments worth less than 10% of the overall course grade:

Late assignment submission is NOT accepted. However, note that only the best three of the four assignments count towards the course marks.

Assessments worth 10% or more of the overall course grade:

For work totalling 10% or more of the final course grade, you must provide valid medical or supporting documentation to the Academic Counselling Office of your Faculty of Registration as soon as possible. For further information, please consult the University's medical illness policy at

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf.

The Student Medical Certificate is available at

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf.

Missed midterm exams

There are no makeup exams for the midterm tests. If you miss one for legitimate reasons with supporting document from the Science Academic Counselling Office, the test weight is moved to the final exam. If you miss the midterm tests without supporting documents, the marks are lost.

If you miss the deadline for submitting the individual project with supporting documents, then one week extension will be given.

Absences from Final Examinations

If you miss the Final Exam, please contact the Academic Counselling office of your Faculty of Registration as soon as you are able to do so. They will assess your eligibility to write the Special Examination (the name given by the University to a makeup Final Exam).

You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (e.g., more than 2 exams in 23-hour period, more than 3 exams in a 47-hour period).

If a student fails to write a scheduled Special Examination, the date of the next Special Examination (if granted) normally will be the scheduled date for the final exam the next time this course is offered. The maximum course load for that term will be reduced by the credit of the course(s) for which the final examination has been deferred. See the Academic Calendar for details (under [Special Examinations](#)).

Note: missed work can *only* be excused through one of the mechanisms above. Being asked not to attend an in-person course requirement due to potential COVID-19 symptoms is **not** sufficient on its own.

7. Accommodation and Accessibility

Religious Accommodation

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor and/or the Academic Counselling office of their Faculty of Registration. Please consult University's list of recognized religious holidays (updated annually) at

<https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>.

Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf.

8. Academic Policies

The website for Registrarial Services is <http://www.registrar.uwo.ca>.

In accordance with policy,

https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf,

the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at their official university address is attended to in a timely manner.

No electronic devices are allowed in closed book exams, except for non-programmable calculators.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

9. Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on adding/dropping courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: <https://www.uwo.ca/sci/counselling/>.

Students who are in emotional/mental distress should refer to Mental Health@Western (<https://uwo.ca/health/>) for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at

https://www.uwo.ca/health/student_support/survivor_support/get-help.html.

To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at

http://academicsupport.uwo.ca/accessible_education/index.html

if you have any questions regarding accommodations.

Learning-skills counsellors at the Student Development Centre (<https://learning.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: <https://www.uwo.ca/se/digital/>.

Additional student-run support services are offered by the USC, <https://westernusc.ca/services/>.