

Interdisciplinary Programmes

Academic year 2019-2020

Statistical Methods for Social Sciences

MINT015 - Autumn - 6 ECTS

Tuesday 10h15 - 12h00

Thursday 10h15 - 12h00

Course Description

Please note, it is compulsory for all MINT students (MIA and MDEV) to attend BOTH lecture sessions each week. They must attend on Tuesday at 10h15 AND Thursday 10h15.

This compulsory course is an introduction to statistical methods intended for students in the Interdisciplinary Master programs. The emphasis of the course will be on applications of core statistical ideas such as descriptive measures, probability distributions, sampling distributions, estimation, hypothesis testing and least squares regression to real-world problems. After taking this course, students will develop a deeper understanding of fundamental statistical concepts commonly used in international policy contexts; be able to apply these concepts readily to solve particular exercises; and master the implementation of a number of important statistical tools on a computer using appropriate software.

> PROFESSOR

[Jean Swanson](#)

[Office hours](#)

> ASSISTANTS

[Anna B. Kis](#)

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Syllabus

Course outline: The course consists of two 2-hour lecture sessions and one review session per week. The lecture sessions will introduce new concepts and demonstrate their application using real world examples. The review session will be used to cover material presented in the lecture, to discuss homework problems and to develop statistical computing skills. The course assumes no prior knowledge of statistics and no mathematical knowledge beyond high school algebra. Any mathematical tools beyond this will be covered in the lecture and/or during the review session.

Textbook: The main textbook will be *Introductory Statistics* 10th Edition (Global Edition) by Neil A. Weiss. Several copies are on reserve at the IHEID library. The relevant sections within a chapter will be noted on the course schedule. Students are asked to prepare for the lecture by reading the relevant chapters from the main textbook.

Other materials: The lectures will be taught from slides, which will be posted on Moodle each week before the lecture. Additional materials may be assigned from other sources where required.

Calculator: Students will need a scientific calculator. A graphing calculator is not required. Please bring a calculator that you are familiar with and have used in previous courses. [A calculator similar to the Casio fx-83GT plus will be sufficient for your needs in this course.]

Software: Stata, an integrated statistical software package used by social science researchers, will be introduced in this class as a complement to theory and solving problems by hand. This software allows for data analysis, data management and graphical representation. Stata will run on Windows, Mac and Linux/Unix computers. It is not essential to have the latest version (Stata 16). Older versions such as Stata 11, 12 or 13 will be adequate for this course. A good resource for help with Stata is the book '*A Gentle Introduction to Stata*' by Alan C. Acock.

*** Please note: the course does not focus on the development of Stata skills. Simple commands using the drop down facility of Stata are used to aid the understanding of the statistical content of the lectures. Students who want to develop advanced Stata skills should sign up for the second semester course, Advanced Quantitative Methods.

Grades: The final grade for this course will be a weighted average of **weekly homework problems** (15%), **one assignment** (15%) and two exams: a **midterm** (30%) and a **final** (40%).

Important: You cannot pass the course if you get a failing grade in **both** exams, even if your overall grade including your homework is a passing grade.

Weekly homework problems: Homework problems must be submitted in person to your TA during your review session. They must be legible and stapled. Late homework problems will **not** be accepted. Homework problems may **not** be submitted by email.

The Assignment: The assignment will be completed during your designated review session during the week of 11th November. If a student is absent from their registered review session during the week of November 11th they will **not** be able to complete the assignment unless they have documented evidence indicating why they were absent. Please note: travel documentation such as boarding cards, etc. will not be accepted as evidence. If a student is ill they will need a doctor's note as evidence. Every student will need a laptop to complete the assignment.

Exams: Both exams will be closed-book (you will not be allowed to have study materials with you). You will be allowed the use of a calculator but you cannot use the calculator utility on your phone. The exams will consist of short answer questions. Students will be provided with a formula sheet and relevant statistical tables. The midterm will be given on the 31st October. The final exam will be held on the 12th December. Both exams will start at 10:15am

Plagiarism constitutes a breach of academic integrity and will not be tolerated. Students who present the work of others as their own will receive a 0.

Content of the Course:

Introduction to Statistics
Descriptive Statistics
Probability
Random Variables
The Normal Distribution
The Sampling Distribution of the Sample Mean
Confidence Intervals
Hypothesis Testing

Least Squares Regression
Correlation
Introduction to Multiple Regression