

## Syllabus

### Sampling II 1 credit/2 ECTS

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Video lecture by  
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#### Short Course Description

Sampling II presents different applications of the methods and techniques covered in the Sampling I course. This is also an applied statistics methods course concerned almost exclusively with the design of data collection rather than data analysis. The course will concentrate on sampling applications to human populations, since this poses a number of particular problems not found in sampling of other types of units. The principles of sample selection, though, can be applied to many other types of populations.

#### Course Objectives

By the end of the course, students will...

- be able to design and implement large-scale statewide or national samples using multi-stage sampling with different sampling techniques
- understand the principles of telephone sampling and be able to design and select telephone samples
- understand issues related with multiple frame designs and use them in settings such as telephone sampling
- perform sample size calculations based on precision requirements, such as coefficient of variations and margin or error, and power requirements

#### Prerequisites

SURV 626 – Sampling I or equivalent course is required. Some experience with the R statistical computing software is helpful.

#### Class Structure and Course Concept

This is an online course using a flipped classroom design. It covers the same material and content as an on-site course but runs differently. In this course, you are responsible for watching video-recorded lectures and reading the required literature for each unit prior to participating in mandatory weekly one-hour online meetings where students have the chance to discuss the materials from a unit with the instructor.

Although this is an online course where students have more freedom in when they engage with the course materials, students are expected to spend the same amount of time overall on all activities in the course – including preparatory activities (readings, studying), in-class-activities (watching prerecorded videos,

attending the live online meetings), and follow-up activities (working on assignments and exams) – as in an on-site course. As a rule of thumb you can expect to spend approximately 3h/week on in-class-activities and 9 hours per week on out-of-class activities (preparing for class, readings, assignments, projects, studying for quizzes and exams). Therefore, the workload in all courses will be approximately 12h/week. Please note that the actual workload will depend on your personal knowledge.

## Mandatory Weekly Online Meetings

*Thursdays, 1:00 PM EDT/ 7:00 PM CEST, starting on April 8*

Meetings will be held online through Zoom. Follow the link to the meeting sessions on the course website on [mannheim.instructure.com](http://mannheim.instructure.com). If video participation via Internet is not possible, arrangements can be made for students to dial in and join the meetings via telephone.

In preparation for the weekly online meetings, students are expected to watch the lecture videos and read the assigned literature before the start of the meeting. In addition, students are encouraged to post questions about the materials covered in the videos and readings of the week in the forum before the meetings (deadline for posting questions is Thursday, 9:00 AM ET / 3:00 PM CET).

Students have the opportunity to use the Conferences feature in Canvas to connect with peers outside the scheduled weekly online meetings (e.g., for study groups). Students are not required to use Canvas Conferences and can of course use other online meeting platforms such as Google Hangout or Skype.

## Grading

Grading will be based on:

- Homework assignments (50% of the grade)
- Quizzes (15% of the grade)
- Participation in discussion during the weekly online meetings, submission of questions in the weekly discussion forum (Thursday, 9:00 AM ET / 3:00 PM CET) demonstrating understanding of the required readings and video lectures, and positive contributions on the Discussion Forum, see below (10% of grade)
- A final open-book online exam (25% of grade)

A+	100 - 97
A	96 - 93
A-	92 - 90
B+	89 - 87
B	86 - 83
B-	82 - 80
Etc.	

The grading scale is a base scale recommended by the MDM. Variations for grading on a scale are at the discretion of the instructor.

The final grade will be communicated under the assignment "Final Grade" in the Canvas course. Please note that the letter grade written in parentheses in Canvas is the correct final grade. The point-grade displayed alongside the letter grade is irrelevant and can be ignored. Dates of when assignment will be due are indicated in the syllabus. Extensions will be granted sparingly and are at the instructor's discretion.

### *Homework assignments*

The homework assignments will involve small-scale, sample design problems that will require you to identify and apply the methods and techniques covered in the lectures and assigned readings. The questions will require mathematical calculations and you will be asked to select samples using different sampling schemes. Although some examples of statistical software will be provided, none of the homework problems will require their use, and the assignments should preferably be solved by hand, with a calculator, or in a spreadsheet, so that you can have a more robust understanding of the concepts being applied in these exercises. Use the homework assignments as an indicator of your progress in this course.

Homework solutions should be submitted electronically via the course web site Assignment tool as an attachment. You must submit solutions, handwritten or typed, in a single PDF format file, with name and homework set number at the top of the first page, and page numbers at the bottom of each page. Handwritten versions must be fully legible: if the instructor cannot read the homework it will be returned ungraded. Files must be submitted in a standard name convention: 'Surname First Initial HW#.pdf'. For example, 'Nishimura R HW1.pdf'. Homework problems will be graded on a 100-point scale. The submitted homework will be marked electronically and returned via the Assignment tool, along with a copy of the homework solution.

Homework assignments are due the Tuesday after the online meeting (see schedule syllabus below). Late homework will not be accepted, except in case of emergencies, which should be reported to the instructor in advance through a request made in writing by email no less than 24 hours before the homework is due, and a reason must be given for the need to submit late. Late homework submission permission is not guaranteed.

Study groups are encouraged. However, group answers are not acceptable and each student must submit individual homework solutions. You are encouraged to ask and answer questions on the Discussion Forum about the homework assignments, but you should not request for or provide entire solutions. If this behavior is detected, there will be a 50% penalty on your grade for that assignment.

### *Quizzes*

During the first five minutes of each class session, there will be a closed book, closed notes quiz with three to five multiple choice questions about the assigned readings for that week (see textbooks and assigned readings and syllabus schedule). The questions will not involve any mathematical calculation and will assess the student's understanding of some the basic concepts and ideas of the content covered on the assigned readings, which will not necessarily be covered in the lectures. The students are encouraged to ask questions on the Discussion Forum about the assigned readings. There will be no make-up quizzes, but we will drop the two lowest quiz scores before calculating the final grade.

### *Class participation*

In preparation for the weekly online meetings, students are expected to watch the lecture videos and read the assigned literature before the start of the meeting. Please be prepared to contribute to the class discussion: everyone is expected to contribute. In addition, students are encouraged to post questions about the materials covered in the videos and readings of the week in the weekly discussion forum before the meetings (deadline for posting questions in the discussion forum is Thursday, 9:00 AM ET / 3:00 PM CET).

Participation through the discussion forum, either by asking or answering questions, is encouraged and positive contributions will be rewarded on your final grade. However, you should not request for or provide entire homework solutions. If this behavior is detected, there will be a 50% penalty on your grade for that assignment.

### *Final open-book exam*

The final cumulative, open-book, take-home exam will be available on the course website from May 6, 1 PM EDT/ 7PM CEST to May 13, 1 PM EDT / 7 PM CEST. Students will have 48 hours to complete it starting from the time the exam is opened on the course website. The solution of the exam should be uploaded to the course. If the student is unable to take the exam on the scheduled week due to prior commitments, they should contact the instructor as soon as possible to make special arrangements.

## Technical Equipment Needs

The learning experience in this course will mainly rely on the online interaction between the students and the instructors during the weekly online meetings. Therefore, we encourage all students in this course to use a web camera and a headset. Decent quality headsets and web cams are available for less than \$20 each. We ask students to refrain from using built-in web cams and speakers on their desktops or laptops. We know from our experience in previous online courses that this will reduce the quality of video and audio transmission and therefore will decrease the overall learning experience for all students in the course. In addition, we suggest that students use a wire connection (LAN), if available, when connecting to the online meetings. Wireless connections (WLAN) are usually less stable and might be dropped.

## Readings

### **Mandatory Readings**

Primary readings will be from the following volume:

Valliant, R., Dever, J.A., and Kreuter, F. (2018). *Practical Tools for Designing and Weighting Survey Samples*, 2nd Edition. New York: Springer.

### **Complementary Readings**

List of required and recommended readings for each class are provided below for each specific unit.

## Academic Conduct

Clear definitions of the forms of academic misconduct, including cheating and plagiarism, as well as information about disciplinary sanctions for academic misconduct may be found at

<https://www.president.umd.edu/sites/president.umd.edu/files/documents/policies/III-100A.pdf> (University of Maryland) and

<https://www.uni-mannheim.de/en/research/good-research-practice/> (University of Mannheim).

Knowledge of these rules is the responsibility of the student and ignorance of them does not excuse misconduct. The student is expected to be familiar with these guidelines before submitting any written work or taking any exams in this course. Lack of familiarity with these rules in no way constitutes an excuse for acts of misconduct. Charges of plagiarism and other forms of academic misconduct will be dealt with very seriously and may result in oral or written reprimands, a lower or failing grade on the assignment, a lower or failing grade for the course, suspension, and/or, in some cases, expulsion from the university.

## Accommodations for Students with Disabilities

In order to receive services, students at the University of Maryland must contact the Accessibility & Disability Service (ADS) office to register in person for services. Please call the office to set up an appointment to register with an ADS counselor. Contact the ADS office at 301.314.7682; <https://www.counseling.umd.edu/ads/>.

Students at the Mannheim Business School should contact the Commissioner and Counsellor for Disabled Students and Students with Chronic Illnesses at [http://www.uni-mannheim.de/studienbueros/english/counselling/disabled\\_persons\\_and\\_persons\\_with\\_chronic\\_illnesses/](http://www.uni-mannheim.de/studienbueros/english/counselling/disabled_persons_and_persons_with_chronic_illnesses/)

## Course Evaluation

In an effort to improve the learning experience for students in our online courses, students will be invited to participate in an online course evaluation at the end of the course. Participation is entirely voluntary and highly appreciated.

## Sessions

Please note that assignments and dates are subject to change. Information (e.g., articles and assignments) posted to the course website supersedes the information noted here.

### Week 1: Multi-Stage Sampling

Video lecture: available Thursday, April 1, 2021

Online meeting: Thursday, April 8, 2021, 1PM EDT/ 7 PM CEST

Homework Assignment 1: due Tuesday, April 13, 2021, 1PM EDT/ 7PM CEST

#### **Required Readings:**

Valliant, Dever and Keuter (2019), Chapter 9

### Week 2: Area Probability Sampling & Gridded Population Sampling

Video lecture: available Thursday, April 8, 2021

Online meeting: Thursday, April 15, 2021, 1PM EDT/ 7 PM CEST

Homework Assignment 2: due Tuesday, April 20, 2021, 1PM EDT/ 7PM CEST

#### **Required Readings:**

Valliant, Dever and Keuter (2019), Chapter 10

### Week 3: Telephone Sampling & Multiple Frame Sampling

Video lecture: available Thursday, April 15, 2021

Online meeting: Thursday, April 22, 2021, 1PM EDT/ 7 PM CEST

Homework Assignment 3: due Tuesday, April 27, 2021, 1PM EDT/ 7PM CEST

#### **Required Readings:**

Lepkowski et al (2007), Chapter 2.

Lohr (2011)

### Week 4: Sample Size Calculation & Power Computation

Video lecture: available Thursday, April 22, 2021

Online meeting: Thursday, April 22, 2021, 1PM EDT/ 7 PM CEST

Homework Assignment 4: due Tuesday, May 4, 2021, 1PM EDT/ 7PM CEST

**Required Readings:**

Valliant, Dever and Keuter (2019), Chapter 4

**Final exam**

Final exam opens May 6, 1 PM EDT/ 7PM CEST

Final exam closes May 13, 1 PM EDT/ 7PM CEST