

## Business Statistics I (152079)

### Course coordinator

[Asst. Prof. Petra Posedel Šimović, PhD](#)

### Course description

This module presents the basics of descriptive and inferential statistics in the context of agricultural economics. The part concerned with descriptive statistics pays special attention to organization, presentation, and interpretation of different types of data. The intention here is to develop an ability to critically assess and interpret statistical data and to avoid common pitfalls. A short review of basic concepts of probability is a bridge to the part devoted to the inferential statistics. This part starts by an introduction to discrete and continuous random variables and the most important distributions, followed by the classical topics of estimations and hypotheses testing about the mean and proportion.

ECTS: **6.00**

English language: **L1**

E-learning: **L1**

**Teaching hours: 60**

Lectures: 44

Practicum: 12

Seminar: 4

#### Lecturer

- [Asst. Prof. Petra Posedel Šimović, PhD](#)

#### Associate teacher for exercises

- [Asst. Prof. Petra Posedel Šimović, PhD](#)

#### Grading

Sufficient (2): 60-69%

Good (3): 70-79 %

Very good (4): 80-89 %

Excellent (5): 90 -100%

### Type of course

- Undergraduate studies / [BS Courses taught in English](#) (Elective course, 1 semester, 1 year)

### General competencies

- raising the level of statistical literacy
- acquiring knowledge and skills necessary to understand, analyze and solve problems arising in the course of practical work
- developing an ability to critically assess and interpret statistical data and to avoid common pitfalls
- using statistical software with confidence

## Types of instruction

- Lectures  
individual work on concrete problems in order to acquire the level of statistical literacy necessary for understand, analyze and solve practical problems arising in the course of work in agricultural economics.
- Assessments
- Consultations
- Practicum  
on computers
- Seminars  
solving an individual problem

## Learning outcomes

| Learning outcome   | Evaluation methods                      |
|--|---|
| organize data and present them grafically  | individual and practical work, project  |
| calculate numerical descriptive measures of data   | homework, exam, practical work          |
| apply Excel tools for descriptive statistics   | exam, practical work, project           |
| distinguish between discrete and continuous random variables and their probability distributions | homework, practical work, project       |
| determinate probabilities and use statistical tables   | homework, practical work, project, exam |
| construct confidence intervals for means and proportions   | homework, practical work, project       |
| set up a hypothesis and test it  | homework, practical work, project, exam |
| be able to use mathematical software and interpret obtained results                              | project work                            |

## Working methods

### Teachers' obligations

1. Course planning
2. Selection and creation of teaching materials
3. Evaluation of course, teaching materials and curriculum
4. Construct tests
5. Grade students on the basis of their achievement

### Students' obligations

1. Attend lectures regularly
2. Do homeworks and participate actively during lectures
3. Write tests and win at least 25% of points on each test to get the signature
4. Do individual projects

## Methods of grading

| Evaluation elements | Maximum points or Share in evaluation | Grade rating scale                        | Grade  | Direct teaching hours | Total number of average student workload | ECTS |
|---------------------|---------------------------------------|---|--|-----------------------|--|------|
| 1st exam            | 40 %                                  | 60-69 %<br>70-79 %<br>80-89 %<br>90-100 % | Sufficient (2)<br>Good (3)<br>Very good (4)<br>Excellent (5) | 30                    | 90                                       | 2    |
| 2nd exam            | 30 %                                  | 60-69 %<br>70-79 %<br>80-89 %<br>90-100 % | Sufficient (2)<br>Good (3)<br>Very good (4)<br>Excellent (5) | 15                    | 45                                       | 2    |
| 3rd exam            | 30 %                                  | 60-69 %<br>70-79 %<br>80-89 %<br>90-100 % | Sufficient (2)<br>Good (3)<br>Very good (4)<br>Excellent (5) | 15                    | 45                                       | 2    |
| Total               | 100 %                                 |   |  | 60                    | 180                                      | 6    |

| Evaluation elements | Description                                 | Deadline   | Recoupment |
|---------------------|---|------------|------------|
| 3rd exam            | interval estimations and hypothesis testing | 16.th week |            |

## Weekly class schedule

1. The purpose of statistics. Descriptive and inferential statistics. Basic concepts. Types of variables. Scales of measurement.
2. Organizing and graphing of qualitative and quantitative data. Interpretation of different types of diagrams. Recognizing and avoiding common pitfalls.
3. Measures of central tendency – mean, median and mode. Measures of dispersion. Measures of position.
4. Index theory Measures of association Basic definitions and examples from the economic theory Types of measures of association
5. Elements of probability I Experiment, outcomes and sample space. Three conceptual approaches to probability. Examples.
6. Elements of probability II Dependent versus independent events. Conditional probability. Bayes's theorem.
7. Discrete random variables and their probability distributions I Probability distribution of a discrete random variable. Mean and standard deviation. The binomial probability distribution.
8. Discrete random variables and their probability distributions II The Poisson probability distribution. The hypergeometric probability distribution.
9. Continuous random variables and their probability distributions I Continuous probability distribution. The normal distribution. The standard normal distribution. Applications.
10. Continuous random variables and their probability distributions II The normal approximation to the binomial distribution.
11. Populations and samples Random and nonrandom samples. Selecting a simple random sample. Sampling errors.
12. Estimation of the mean Point and interval estimates. Interval estimation of a population mean for large and small samples. The t probability distribution
13. Estimation of the proportion Interval estimates of a population proportion. Sample size determination.
14. Hypothesis tests about the mean Hypothesis tests. Rejection and non-rejection regions. Two types of errors. Hypothesis tests about a population mean for large and small samples.
15. Hypothesis tests about the proportion Hypothesis tests about a population proportion.

## Obligatory literature

1. P.S. Mann, Statistics for Business and Economics, J. Wiley, N. Y., 2005.
2. M. Silver: Business Statistics, Mc. Graw Hill, London, 1997.

## Recommended literature

1. L. Kazmier, Schaum's Easy Outline of Business Statistics, McGraw-Hill, N. Y., 2003.
2. D. Huff, How to lie with statistics, WW Norton, N. Y., 1993.

## Similar course at related universities

- Matematik und Statistik, BOKU
- Statistik, University of Hohenheim