

Vesalius College

Course description

Course title: Introduction to Statistics

Course code: STA101E

Teacher responsible: Prof. Dr. Camille Vanderhoeft

Course description:

Statistics is concerned with: (1) describing and extracting information from a data set, organizing and summarizing sample data (descriptive statistics); (2) making predictions or decisions about a data set based on information contained in a sample (inferential statistics). This course provides an introduction to both branches of statistics. Topics covered include: describing sets of data using graphs and numbers; correlation and simple linear regression; probability; probability distributions; sampling distributions; estimation of mean and proportion; hypothesis tests.

Course objectives:

This course aims at providing students with a basic understanding of and appreciation for descriptive statistics (describing data) and inferential statistics (drawing conclusions from data). The material is broad enough to provide a basic statistics background for students for whom this course is their only exposure to the material, while building the foundation for students enrolling in subsequent intermediate and more advanced statistics courses. Emphasis is on the practice of statistics rather than on mathematical proofs.

At the end of the course, you should be able to:

- critically analyze data sets and apply the tools of statistics to data in order to improve decision making;
- use the statistical software R to enter data, generate descriptive statistics and graphs, estimate population parameters, perform hypothesis tests;
- communicate the results of your statistical work: write up the results of your statistical analysis in a report consisting of
 1. a non-technical abstract aimed at decision makers, so that they can improve their decisions, and
 2. a main section –aimed at peers– explaining the technical details and exact interpretation of your results.

Practical considerations:

We use the free (open-source) statistical software R (<http://www.r-project.org/>). Preferably, students should bring their own laptop to the classroom. The software is also available in computer rooms B002-B006 at the VUB campus, where students can practice.

Grade weighting scheme:

The final grade for the course will be calculated on the following weighting:

- Attendance, class participation 10%
- Assignments (three, each carrying 1/3) 20%
- Midterm exam 30%
- Final exam 40%

Used course material and references:

Required: Verzani, J. (2007). *Using R for Introductory Statistics*. Chapman & Hall/CRC. ISBN- 10: 1584884509; ISBN-13: 9781584884507.

Additional: Anderson, D.R., Sweeney, D.J., Williams, T.A, Freeman, J. & Shoesmith, E. (2007). *Statistics for Business and Economics*. London: Thomson. ISBN- 10: 1844803139 ISBN-13: 9781844803132.

... **or** Keller, G. (2005). *Statistics for Management and Economics* (7th ed.). Thomson South-Western. International Student Edition: ISBN-10: 0495013390 ISBN-13: 9780495013396.

... **or** Keller, G. (2009). *Managerial Statistics* (8th ed.). South-Western Cengage Learning. International Student Edition: ISBN-10: 0324569556 ISBN-13: 9780324569551. CD-Rom included.

And more... information will regularly be made available through the learning platform *PointCarré* (<http://pointcarre.vub.ac.be/>). Students are encouraged to check or get their personal login before the lectures start.