



## UNIVERSITY OF NEW YORK IN PRAGUE

<b>Course:</b>	<b>PSY507 Advanced Data Analysis (4 ECTS)</b>
<b>Semester:</b>	Fall 2019
<b>Prerequisites:</b>	None
<b>Instructor/Title:</b>	<b>Filip Děchtěrenko, Mgr. et Mgr. Ph.D.</b>
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<b>Office hours:</b>	By appointment

### 1. Catalogue Description

The course aim is to introduce students to basic concepts of advanced statistical methods and their limits and possibilities. The course includes practical experience with other studied methods in Jamovi.

### 2. Course Purpose

This course is intended as a practical introduction into advanced statistical methods. All theoretical information will be practiced in statistical software Jamovi. Purpose of the course is to analyze own set of data and write a short method and result section of the manuscript.

### 3. Required Readings:

**Text: Learning statistics with jamovi: a tutorial for psychology students and other beginners**

Authors: Navarro, D.J. and Foxcroft, D.R.

doi: 10.24384/hgc3-7p15

Year: 2019

**Text: An adventure in statistics: The reality enigma.**

Author: Field, Andy

ISBN: 10.24384/hgc3-7p15

Year: 2016

**It is up to you to purchase this book before the class. We will be using it from the first day of class onwards.**

#### 4. Additional Readings:

Cumming, G. (2014). The new statistics: Why and how. *Psychological Science*, 25(1), 7-29.

Cumming, G. (2013). Understanding the new statistics: Effect sizes, confidence intervals, and meta-analysis. Routledge.

Dyer, C. (2006). Research in psychology: A practical guide to methods and statistics. Blackwell publishing.

Grissom, R. J., & Kim, J. J. (2005). Effect sizes for research: A broad practical approach. Lawrence Erlbaum Associates Publishers.

Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: a practical primer for t-tests and ANOVAs. *Frontiers in Psychology*, 4, 863.

Montgomery, D. C., Peck, E. A., & Vining, G. G. (2012). Introduction to linear regression analysis (Vol. 821). John Wiley & Sons.

Thompson, B. (2004). Exploratory and confirmatory factor analysis: Understanding concepts and applications. American Psychological Association.

Rutherford, A. (2001). Introducing ANOVA and ANCOVA: a GLM approach. Sage.

#### 5. Learning Outcomes

Upon completion of this course, the students should be able to:

- Import real dataset and prepare it for analysis;
- Define each of the variable in the dataset and understand, which analysis can be used on the data
- Perform descriptive statistics and explore basic relationship between variables;
- Visualize data using several standardized plots
- Analyze data using class of GLM models (ANOVA, ANCOVA, factorial ANOVA), perform factorial analysis ;
- Write down a standard statistical report;

#### 6. Course Schedule

**Week 1:** Review of simple statistical concepts and methods (descriptive statistics, (Nov. 3) t-tests, correlations, regression). Introduction to Jamovi software. Introduction to ANOVA, practical use of ANOVA

**Week 2:** Advanced factorial ANOVA, ANCOVA, repeated measures ANOVA, (Nov. 30) including practical use of the methods on the dataset in Jamovi, selection of dataset for the analysis

**Week 3:** Multiple regression, factorial ANOVA, non-parametric tests, midterm (Dec. 13)

**Week 4:** Presentation of the final projects, final test. (Feb. 2)

**7. Course Requirements and Grading – the course will be graded on the basis of:**

Participation	10%
Midterm Exam	25%
Presentation	25%
Project	40%
Total	100%

**Participation in class (10%)**

In a case of absence, email notice is required at least one day before the class.

**Midterm Exam (25%)**

Exam covering concepts presented in the class.

**Presentation (25%)**

Students will present results of the their analysis on chosen dataset.

**Project (40%)**

Main part of the class. Students are required to finish detailed analysis of dataset of their choice.

**Grading scale**

Letter Grade	Percent (%)	Generally Accepted Meaning
A	95-100	Outstanding work
A-	90-94	
B+	87-89	Good work, distinctly above the average
B	83-86	
B-	80-82	
C+	77-79	Acceptable Work
C	73-76	
C-	70-72	

D+	67-69	Work that is significantly below average
D	63-66	
D-	60-62	
F	0-59	Work that does not meet the minimum standards for passing the course

## 8. Key UNYP Policies

### Attendance

Missing more than 3 hours will begin to have a negative impact on your participation grade. As this is a 2-credit course, the number of allowed absences is correspondingly less than for a 3-credit course. **Thus, based on UNYP policy, if you miss more than 8 (eight) hours of class, you will fail the course. Pay strict attention to this. This class policy is standard UNYP policy.**

### Academic Honesty

- The university's rules on academic dishonesty (e.g., cheating, plagiarism, submitting false information) will be strictly enforced. Please familiarize yourself with the **student honor code** or ask your instructor for clarification.
- For examinations: copying from your neighbor, communicating with another student, using a phone or anything similar will result in you failing the test or quiz.
- On written papers, properly note your sources with academic citations. Cutting and pasting from the Internet without accurately citing the source may be considered plagiarism. Students may be required to submit papers electronically, which could mean an automated check for plagiarism via the Turnitin resource. Students may also be required to defend the content of a paper orally to an instructor as a check on authorship.
- If you have questions about any of the above, please consult with the instructor.

## 9. General Requirements

- Students are expected to attend each class session and participate in a positive way.
- Students are expected to come to class fully prepared to discuss homework readings, projects or cases.
- Students are expected to either bring their own laptops with installed Jamovi software or use one of the computers in the lab
- In the event of illness or emergency, contact your instructor **in advance** to determine whether special arrangements are possible.

## 10. European Credit Transfer and Accumulation System (ECTS)

Students that complete the course will receive 4 ECTS credits, which is the equivalent of 2 American credits. (In other words, 4 ECTS credits equal approximately 2 American credit hours.) Further, 1 ECTS credit corresponds to 25-30 hours of work. Thus, a 4 ECTS credit course (equivalent to a 2 American credit course) will total 100-120 projected work hours. For this course, students are expected to spend time in the following course-related activities. For example:

Class Lectures and exams	30 hours
Reading class-related material	35 hours
Exam preparations	25 hours
Team preparation	15 hours
Final project preparation	15 hours
<b>TOTAL</b>	<b>120 hours</b>

## 11. Technology Expectations

Assignments, excluding those that are carried out exclusively in class, must be completed on a computer. Students are assumed to be familiar with the use of the Internet and in particular with the gathering of data from the Worldwide Web. This will be a necessary tool for carrying out some of the course assignments (i.e., long essay or class presentations).

**Revised: September 2019**