
APPLIED STATISTICS II in Spring 2021 (MA2020)

Course Code	MA2020	Professor(s)	Alexandra Svoronou
Prerequisites	None	Office Number	PL 1st floor
Class Schedule	M: 16:55-18:15 in G-L21 R: 12:10-13:30 in Q-704 W: 15:20-16:40 in Q-704	Office Hours	Mo 3-4:30pm or by appointmt
Credits	4	Email	asvoronou@aup.edu
Semester	Spring 2021	Office Tel. Ext.	650

Course Description

MA 2020 will introduce more tools of statistical analysis. This course is the continuation of ma1020. Ma2020 familiarizes students with several types of multivariate statistics methods with respect primarily to applications and interpretations in the area of social sciences. This course will cover the data-analysis concepts and procedures used in economics, business, applied and experimental psychology, and in general in social sciences. Emphasis will be given to the qualitative interpretation and manipulation of mathematical and statistical concepts, showing the students their effectiveness through concrete applications. Students will use appropriate software packages for labs and projects and will taste the beauty, the magic and as well as the power of lying with statistics. In short, if you have a data structure that goes beyond what you learn in basic statistics courses, you will learn how to deal with them in a practically oriented way! Topics will include: Review Correlation: Linear , nonlinear regression and Multiple Regression. Time series The Chi square statistic : Tests for goodness of fit and independence. One-way ANOVA. Two-way ANOVA-Repeated measures Logistic regression. Non-parametric tests. The binomial test. Statistical techniques for Ordinal data: Mann-Whitney, Wilcoxon and Kruskal-Wallis tests. Correspondent Analysis.

Course Learning Outcomes

Be able to check the assumptions pertaining to each multivariate method and conduct a thorough multivariate analysis from the research problem to the interpretation of the results.
Be able to determine which technique is appropriate for a specific research problem.
Be familiar and fluent in using the SPSS package.

General Education

The general education program at AUP consists of four requirements: Speaking the World, Modeling the World, Mapping the World, and Comparing Worlds Past and Present.

This course can be used to fulfill the GENED requirements and as such has the following learning outcomes:

Learning outcomes of the general education in Mathematics:

LO1A: Develop a positive approach to mathematics •

LO1B: Appreciate its use in modeling the world

LO2: Reason with quantitative information – in words, numbers and graphs and charts

LO3: Clearly communicate quantitative information in words, in numbers and with graphs

LO4: Develop strategies for solving problems

Course Outline

The approach in this course is as follows: Extensive use of real-world case studies will be made to show students how to apply the mathematical concepts taught in concrete situations. The effectiveness of the computer will be shown. Software packages (Data Desk, Excel, SPSS) will be introduced to them through labs and projects. It is of increasing importance that, beyond developing computational skills, the students learn how to manipulate the abstract concepts from mathematics to interpret data and to solve concrete word problems (model building) originating in different fields. Beyond the traditional blackboard lectures the class is structured around individual and group exercises. Regular testing allows me as well as the students to closely follow their progress and to analyze which concepts they have not yet acquired sufficiently. At the end of this course students will be able to: Construct and apply factor structure diagrams for complex experimental designs. Apply statistical methods based on the theory of mixed linear models with a dedicated software product. Explain the theory of mixed linear models. Compare different methods of statistical analysis. Apply and explain statistical analyses of data from unbalanced block and split-plot experiments. Apply and explain hierarchical statistical analyses including variance component models and regression models with varying coefficients. Apply and explain statistical methods for repeated measurements including the identification of various correlation structures. Combine and modify the various techniques.

Textbooks

This course doesn't have any textbook.

Attendance Policy

Students studying at The American University of Paris are expected to attend ALL scheduled classes, and in case of absence, should contact their professors to explain the situation. It is the student's responsibility to be aware of any specific attendance policy that a faculty member might have set in the course syllabus. The French Department, for example, has its own attendance policy, and students are responsible for compliance. Academic Affairs will excuse an absence for students' participation in study trips related to their courses.

Attendance at all exams is mandatory.

IN ALL CASES OF MISSED COURSE MEETINGS, THE RESPONSIBILITY FOR COMMUNICATION WITH THE PROFESSOR, AND FOR ARRANGING TO MAKE UP MISSED WORK, RESTS SOLELY WITH THE STUDENT.

Whether an absence is excused or not is ALWAYS up to the discretion of the professor or the department. **For this course 3 unexcused absences can result in a low or failing participation grade.** In the case of excessive absences, it is up to the professor or the department to decide if the student will receive an "F" for the course. An instructor may recommend that a student withdraw, if absences have made it impossible to continue in the course at a satisfactory level.

Students must be mindful of this policy when making their travel arrangements, and especially during the Drop/Add and Exam Periods.

Grading Policy

Assignments: 10%

Quizzes: 25%

Final exam: 35 %

Project: 15%

Participation: 10%

Assignments will form an important supplement to the lectures as well as test the student's understanding of the material discussed in class. Late homework will not be accepted unless there is a valid excuse.

I shall give you HW almost at every session and we shall work on them on the next class. This will count on your participation.

You will be graded for 'assignments' on the assignments I shall give you at the end of each topic.

For the team project, please make a team of no more than 2 people and start working on your project from the early beginning of the semester.

Other
