30050 APPLICATIONS FOR ECONOMICS, MANAGEMENT AND FINANCE

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CLASS 18

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1 COURSE DESCRIPTION

What the course is about
This is a compulsory course in quantitative research methods for Economics, Management and Finance. The purpose of the course is to enable students to structure and conduct autonomously a research project based on the analysis of data sets concerning business, finance, economics and in general the social sciences. The course presents a set of tools with an applied perspective, providing the methodological knowledge that is necessary to conduct such projects with a fair level of competence and with the ability to choose appropriate statistical methods for various problems. The lectures will supply the students with the basic concepts and techniques of multivariate data analysis, which will then be linked to applications and data sets relevant for BIEMF students. Students will be given a general introduction to data sources relevant for both management, economics and finance. In theory, students can use any statistical software, though this course will give support for the use of SPSS – a widely used software package in the social sciences.

Pre-requisites
The course assumes a good knowledge of statistical methods

Consultation
Please use the office hours of the professors rather than email for questions about the course. In general, it is near impossible for professors to reply to emails given the sheer number of students. If you have a question, **please check the learning space first**.

Tutors
Tutors will hold their office hours in computer labs or their own offices. More detail of tutors' office hours will be provided in class.

Readings
Lecture notes online on the Bocconi E-learning platform

NCT: P. Newbold, W.L. Carlson, B. Thorne (2007) Statistics for Business and Economics and Student CD, 6/E, Prentice Hall (International Edition). Note that this book is the one you have used for your previous Statistics course. The book will be used in the lectures on Linear Regression and ANOVA.

Warner, R. (2008). *Applied Statistics: From Bivariate through Multivariate Techniques*. Los Angeles: Sage. Available from Library Course Reserve. We will only use chapter 4 from this book.

HAIR: Multivariate Data Analysis (International Edition) (Paperback) by Joseph F. Hair (Author), Ronald L. Tatham (Author), Rolph E. Anderson (Author), William Black (Author), 5th or 6th edition, Pearson Education, ISBN-10: 0139305874. **Note that this book will be used for Factor Analysis and Cluster Analysis (lectures from end of October onwards) – whereby chapters 3 (FA) and 8 (CA) will be made available online from the library.** The book also includes useful information about linear regression and complements NCT.

Norusis, M. J. (2006). *SPSS 15.0 Statistical Procedures Companion* (or any more recent version). Upper Saddle River, New Jersey, Prentice Hall (OPTIONAL). In this course we will be using the software SPSS. It is more advanced than Excel but also more user-friendly given the tasks we are dealing with. We will introduce SPSS through the lectures and tutorial office hours, but bear in mind that SPSS is highly user-friendly and we expect you to learn SPSS through "learning-by-doing". There are several books available for doing statistics with SPSS (most of them available on Amazon). There is also a lot of online material on SPSS. The Norusis book tells you how to perform linear regression, FA and CA, scale construction, descriptive statistics, and general data analysis. Although we have not classified this book as "required" it can be a useful companion when doing your project (see below).

Softwares: Web browser, SPSS, spreadsheets. SPSS can be installed following a link that will be available on the eLearning for windows computers only. Students with an apple computer have to bring their computers to the ASIT help desk to have it installed. Help Desk hours are Monday to Friday 9-12.30, Via Gobbi, 5, 4th floor, room 411.
Students are required to install SPSS as soon as possible.

2 DETAILED PROGRAM

Week	Date	Topic	Readings*
Week 1	07/9 (2)	Introduction to applied research	Lecture notes
	10/09 (3)	Data sources and screening in SPSS	Lecture notes, Norusis - Warner Chapter 4**
Week 2	14/9 (2)	ANOVA	Lecture slides & NCT chapter 17
	17/9 (3)	**SPSS and data screening – Aula INFOAS05**	
Week 3	21/9 (2)	Regression analysis	NCT chapters 12, 13, 14 Lecture notes/slides, Norusis ch. 12
	24/9 (3)	Regression analysis	
Week 4	28/09 (2)	Regression analysis	
	01/10 (3)	Regression analysis	
Week 5	05/10 (2)	Regression analysis	
	07/10 (3)	**Regression analysis – Aula 3**	
Week 6	12/10 (2)	Mock Exam	
Date to be announced		*Mid-term exam*	
Week 8	29/10 (3)	Factor analysis	Lecture slides HAIR Chapter 3 Norusis Chapter 17
Week 9	02/11 (2)	Factor analysis	
	05/11 (3)	Factor analysis	
Week 10	09/11 (2)	Factor analysis	
	12/11 (3)	**Factor analysis – Aula INFO6**	
Week 11	16/11 (2)	Scale construction and reliability analysis	Lecture slides - Norusis Chapter 18
	19/11 (3)	Cluster analysis	Lecture slides HAIR Chapter 8 Norusis Chapter 16
Week 12	23/11 (2)	Cluster analysis	
	26/11 (3)	**Cluster analysis – Aula INFO6**	
Week 13	30/11 (3)	Project discussion	
	03/12 (3)	Mock-exam – *Second partial*	
Date to be announced		*Final exam*	

*** Note:** All material contained in lecture notes is examinable.
** Warner, R. (2008). *Applied Statistics: From Bivariate through Multivariate Techniques*. Los Angeles: Sage. Available from Library Course Reserve.

Monday and Thursday's lectures will take place from 16.15 to 17.45 (Perego), and from 10.30 to 13.00 (Manfredini), respectively . Computer classes are reported in red in the above table.

3 ASESSMENT DETAILS

Assessment will be based on a project (30%) and on a written exam (70%). The project can be submitted once only. The maximum grade available to students who do not submit a project is 21/30. The midterm exam (i.e. 1st partial exam) is available for third year BIEMF students in the first semester. Provided you pass this exam, you can take the second partial exam in December. If you fail the mid-term exam or you are unable to attend (e.g. being away on exchange) – you need to take the general exam (which covers all material) being held in December and February or to be arranged on later dates (exact dates to be confirmed).

Exams
The exam is written and will consist of short questions. The questions will cover theory, methods and interpretation of the results of applied research in economics, management and finance. The exam will cover all topics of the course. Material covered in the lectures, in the text book and other

set readings, and in course lecture notes may be included in the exam. The exam will be worth 70% of the total grade for the course.

Project

The project is an applied research project which may be conducted by students working alone or in groups of up to 4. You have to choose your group - it will not be assigned by the professors. The project is worth 30% of your grade. All students in the group will receive the same grade, so choose and manage your group carefully. The grade you obtain in the project is valid for one-year cycle.

In terms of content, you are required to design an applied research project that can be completed using secondary data. To perform data analysis you are expected to use one or more of the techniques introduced in this course, interpret the results and draw conclusions. **For the project you have to use a data source selected by the professors.** The maximum length of the project is 13 pages.

Important deadlines for the project:

- By **Friday the 25th of September**, all students of the Applications course will have to send their Group composition to the following email address: applications30050@unibocconi.it. Only one email per group has to be sent. On the Subject please specify **name and surname of the person in charge of the group (reference student)**.

- By **Friday the 13th of November**, each group of the Applications course will have to send a Word document including the following: 1) details of the Research Question (title of the project is enough); 2) techniques that are planned to be used; 3) a few reference papers on the chosen topic. The email has to be sent by the *reference student* of each group only to applications30050@unibocconi.it.

- By **Friday the 11th of December** each group of the Applications course will have to send the project to applications30050@unibocconi.it. Also a paper copy of the project has to be handed in before the date of the final exam.

One (1) mark will be subtracted from the assigned grade for each day that the project is submitted after the deadline. Projects not received within two days after the deadline will not be graded.

Details of the assignment are provided in a separate handout. Please note the following important information:

Original work

All work submitted for this assignment must be the original work of the students named on the cover page. You must include the following declaration on the cover page. Every member of your group must sign it:

In submitting this assignment:

1. We declare that this written assignment is our own work and does not include (i) material from published sources used without proper acknowledgment or (ii) material copied from the work of other students.
2. We declare that this assignment has not been submitted for assessment in any other course at any university.
3. We have a photocopy or electronic version of this assignment in our possession.

If you do not include and sign the declaration, you will be awarded 0 for the assignment.

Penalties for plagiarism

Copying of work without acknowledgement is known as plagiarism. Plagiarism is considered a serious breach of academic practice and may be subject to sanction from the Rector and the Faculty Council. Any assignments found to be copied in whole or in part from any source (including other students) will be awarded 0. We will be using a specialised software that is designed to detect plagiarism. In the case that we receive two or more identical or very similar (e.g., paraphrased) assignments, all individuals or groups who have submitted the assignment will be awarded 0, and the students involved will not be permitted to resubmit.
In addition to being awarded 0 marks for the project, students who submit copied work will be referred to the university's Disciplinary Board for further action.

4 INFORMATION FOR THOSE STUDENTS BEING AWAY ON EXCHANGE

This note is for students who are away for an exchange program at a different university during the Fall semester and are planning to sit the exam for 30050 when coming back.

First, it is strongly recommended that you do the project as part of the overall exam. The project counts 30% of the overall grade in this course. Further information about the assignment and the available data sources will be available on the e-learning very soon. This will include some hints about writing the project and I will also give a template that you might want to follow in writing the project. You can write the project together with other students of the BIEMF classes. I am not organizing the groups so it is your responsibility to find or form a group with other students. It does not matter if these other students are either currently at Bocconi following 30050 this semester – or whether they are also on an exchange program. It is of course more challenging to work in groups whilst you are away on an exchange, so you always have the option of writing the project on your own. The max number of group members is in any case four (4) students.

For exchange students, the project needs to be sent to the email address applications30050@unibocconi.it by the exam date of the exchange student (please see above for instruction about the title of this email and the name of the file). Moreover, a paper copy of the project has to be handed in before the date of the final exam. See the course outline for further information.

You can use any kind of software to undertake the analysis for your project, but you might be better off if you are able to use SPSS. The ASIT helpdesk will be able to install SPSS on your computer, but needless to say, you would need to do that before going leaving for the exchange program.
It is very unlikely that your exchange institution provides no statistical softwares in their computer labs. Some softwares are freely available on the web. One such software is called Kstat and is an Excel macro that makes linear regression in Excel much easier. However, it does not give support for factor analysis or cluster analysis and Excel is not very suitable for analysis of very large data sets (i.e. with thousands of observation and hundreds of variables - an example being the European Social Survey (ESS)).
If your exchange institution does not provide SPSS in their computer labs, you might instead look for other softwares such as STATA or SAS – both of which are able to do regression, CA and FA. Unfortunately, we do not have resources to give online (i.e. via email) support for the use of statistical softwares. SPSS is very user-friendly, and easier to use than Excel when doing regression

analysis for instance. We have suggested the book by Norusis in the reading list, which gives information about how to use SPSS. However, there is a lot of online tutorials available for SPSS. The best place to look for them is www.youtube.com, where you will find a large number of tutorials for how to use SPSS. For instance, try searching for SPSS and Linear Regression.

5 HONOR CODE

Università Bocconi conceives of education as an ongoing process that stretches across a person's entire professional life. The University hopes that the entire Bocconi community will respect the values of fairness and correctness associated with it, values which inspire and guide the conduct of all community members as they pursue common objectives and a shared mission. The Università Bocconi Honor Code is published at http://www.unibocconi.eu/honorcode. We encourage all students to read it.