MASTER'S DEGREE IN STATISTICS AND OPERATIONS RESEARCH
(MESIO UPC-UB)
Curriculum

STARTING DATE: SEPTEMBER 2013

This master corresponds to the adaptation of the current regulations of the MASTER'S DEGREE in STATISTICS AND OPERATIONS RESEARCH (MIEIO UPC-UB), offered since the academic year 2006-2007, and has over 90 graduate students.

> *** Note to students of the previous plan (MIEIO UPC-UB):**
> All activities carried out to date in the UPC-UB MIEIO and explained on the home page of the master (https://meioupcub.masters.upc.edu/), equally continue during 2013-2014.

MESIO UPC-UB is aimed at:

- **Graduates of the Degree in Statistics,** both to guide their future work with companies or institutions that need professionals in statistics and operations research and those with interests in a scientific / academic preparation for a PhD program[1].

- **Graduates of other disciplines** (mainly Economics and Social Sciences, Engineering, Mathematics, Computer Sciences, Biology and Health Sciences) providing skills and basic knowledge of the discipline that enable them to use the tools and quantitative techniques in statistics and operations research in their profession, each within its scope.

[1]*Graduates in Statistics must complete 30 credits of training complements.*

The MESIO UPC-UB distinguishes two pathways from the start of the studies:
- The **Pathway 1** is basically designed for students that come from the Statistics and Mathematics Grades.
- The **Pathway 2** is contemplated for the other students.

The MESIO UPC-UB is a master of 90 credits* (ECTS) distributed in the following way:
- 10 compulsory credits
- 10 compulsory credits   pathway 1 or 10 compulsory credits   pathway 2
- 40 optional credits
- 30 master's thesis credits

* 1 credit corresponds to 25 hours of student involvement (approximately).
* All courses are 5 credits (125 hours dedication), with a duration of one semester (3 hours per week of teaching).

The optional part of the Master is divided into 4 blocks from which it must be chosen the optional subjects:

Common training	2 subjects
Fundamentals in Statistics	6 subjects
Fundamentals in Operation Research	4 subjects
Specialties:	
• BUSINESS AND SOCIAL STATISTICS	8 subjects
• BIOSTATISTICS AND BIOINFORMATICS	7 subjects
• OPERATIONS RESEARCH	2 subjects

The attached table shows all the subjects that will be taught during 2013-2014 and the corresponding semester of instruction.

TABLE OF MESIO UPC-UB SUBJECTS FOR the ACADEMIC YEAR 2013-2014

SUBJECTS	SEMESTER
COMPULSORY CREDITS	
COMMON COMPULSORY TRAINING	
Software for Statistics and Optimization	Q1
Management of Statistical Information	Q2
COMPULSORY TRAINING	
Pathway 1	
Probability and Stochastic Processes	Q1
Advanced Statistical Inference	Q1
Pathway 2	
Foundations of Statistical Inference	Q1
Multivariate Data Analysis	Q1
MASTER THESIS	
Master Thesis	Q3
OPTIONAL CREDITS	
COMMON TRAINING	
Mathematics	Q1
Simulation	Q1
FUNDAMENTALS OF STATISTICS	
Lifetime Data Analysis	Q1
Time Series	Q2
Bayesian Analysis	Q2
Longitudinal Data Analysis	Q2
Discrete Data Analysis	Q2
Computational Intensive Methods	Q2
FUNDAMENTALS OF OPERATIONS RESEARCH	
Integer and Combinatorial Optimization	Q1
Continuous optimization	Q1
Stochastic optimization	Q2
Large scale optimization	Q2
BUSINESS AND SOCIAL STATISTICS	
Actuarial Statistics	Q2
Risk Quantification	Q1
Quantitative Marketing Techniques	Q1
Statistics for Business Management	Q1
Simulation for Business Decision Making	Q2
Social Indicators	Q2
Econometric Analysis	Q1
Financial Statistics	Q2
BIOSTATISTICS AND BIOINFORMATICS	
Clinical Trials	Q1
Advanced Experimental Design in Clinical Research	Q2
Advanced Topics in Survival Analysis	Q2
Foundations of Bioinformatics	Q1
Omics Data analysis	Q2
Epidemiology	Q2
Spatial Epidemiology	Q1
APPLICATIONS OF OPERATIONS RESEARCH	
Discrete Network Models	Q1
Statistical Data Protection	Q2