

MASTER MODULE	SEMESTER	CREDITS	COURSE TYPE
COMMON	1	3	Optative
PROFESSOR(S)	CONTACT DETAILS		
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	TUTORIALS TIMETABLE		
	María del Carmen Carrión Pérez David Blanco Navarro		
MASTER DEGREE			
University Master in Physics: Radiations, Nanotechnology, Particles and Astrophysics, University of Granada.			
TEACHING DATES AND TIMES			
PRE-REQUISITES FOR REGISTRATION			
The requisites proper to the Master.			
BRIEF CONTENTS DESCRIPTION			
This course covers the statistical and technical treatment of experimental data. First a revision of uncertainties and basic statistic is done. The statistic revision is focused in its application to the analysis of data measured in physical experiments, specifically to random uncertainties, both from instrumental and statistical origin, in measurements. Different fitting techniques, mainly based in maximum likelihood principle, are studied, with special emphasis in linear and non-linear least squares. Finally stochastic processes are studied and methods to obtain information from time variable measures.			
PROGRAM			



- 1. Uncertainties in measurement.
- 2. Random variables and probability distributions.
- 3. Error Analysis.
- 4. Linear Least Squares.
- 5. Non-linear Least Squares.
- 6. Stochastic Processes.
- 7. Spectral estimation.

BIBLIOGRAPHY

- P.R. Bevington, D.K. Robinson, *Data reduction and error analysis for the physical sciences*, McGraw-Hill, 2003.
- J.R. Taylor, *Introduction to Error Analysis*, 1997.
- A. C. Melissinos, J. Napolitano, *Experiments in Modern Physics*, NY Academic Press, 2003.
- W. Mendenhall and T. Sincich, *Statistics for engineers and the sciences*, Prentice-Hall, 1995.
- W.H. Press, S.A. Teukolsky, W.T. Vetterling, and B.P. Flannery, *Numerical Recipes: The Art of Scientific Computing*, Third Edition, Cambridge University Press, 2007.
- E. R. Dietz, D. W. Preston, *The Art of Experimental Physics*, John Wiley & Sons, 2009.
- D.S. Sivia, *Data Analysis: A Bayesian Tutorial* (Oxford University Press 1996)

