Nom del Màster	**International Master in Economic Analysis.**	Mòdul	Quantitative Methods

DADES ESPECÍFIQUES DEL MÒDUL

Objectius Formatius del Mòdul	At the end of the module the student will be able to master the mathematical and statistical tools that are necessary to start empirical or theoretical research in economic analysis.	
Competències específiques del Mòdul	**Competència**	**Descripció**
	Scientific area	Ability to solve complex theoretical models and interpretation of results; ability to prove formal statements.
Estructura i Continguts del Mòdul	*BLOCK 1*: Mathematics: 1. Topology 2. Static Optimization 3. Dynamics 4. Introduction to Dynamic Optimization *BLOCK 2:* Statistics: 1. Probability 2. Measure Theory 3. Random Variable and Probability Distribution 4. Mathematical Expectation 5. Special Distributions 6. Functions of Random Variables 7. Limiting Distributions and Sampling 8. Estimation 9. Hypothesis Testing	
Metodologia docent	Apart from the regular lectures, Problem Sets will be regularly distributed, collected on the due date, and graded. - E-A presential: 40% - E-A directed: 20% - E-A autonomous/group work: 40%	

Avaluació	Grading will be based on a final exam and the grades obtained in the problem sets.
Bibliografia bàsica i enllaços web mes importants	*BLOCK 1:* 1. Brian Beavis and Ian M. Dobbs, *Optimization and stability theory for economic analysis*, Cambridge University Press, Cambridge, 1990. 2. Paul Blanchard, Glen R Hall, Robert L Devaney, *Differential Equations*, PWS Publishing company, 1996. 3. Angel de la Fuente, *Mathematical Methods and Models for Economists*, Cambridge University Press, 2000. 4. Gerald B. Folland, *Introduction to partial differential equations*, second ed., Princeton University Press, Princeton, NJ, 1995. 5. David Luenberger, *Introduction to linear and nonlinear programming*, Reading [etc.], Addison-Wesley, 1973. 6. Nancy L. Stokey and Robert E. Lucas, *Recursive methods in Economic Dynamics*, Harvard University Press, 1989. 7. Rangarajan K. Sundaram, *A First Course in Optimization Theory*, Cambridge University Press, 1996. *BLOCK 2:* 1. Ash, R.B., *Real Analysis and Probability*, Academic Press. 2. Billingsley, P., *Probability and Measure*, John Wiley. 3. DeGroot, M.H., *Probability and Statistics.* Addison-Wesley. 4. Hoel, P.G., Introduction to Mathematical Statistics. John Wiley. 5. Hogg, R.V. and Craig, H., Introduction to Mathematical Statistics. McMillan. 6. Lindgren, B.V., *Statistical Theory*. McMillan.