



PhD MODELS FOR ECONOMICS AND FINANCE

THEMES AND READINGS FOR THE PREPARATION OF THE ADMISSION

Based on the chosen curriculum, candidates for admission to the PhD are suggested to study the following themes and material:

1. Mathematics

Mathematics and Mathematics for Economics

Basic notions of calculus. Implicit functions, homogeneous functions. Free or constrained maxima and minima. Elements of utility theory. Pareto optimality problems. Notions of linear algebra. Ordinary Differential Equations: first order ordinary differential equations, linear differential equations of any order, systems of linear differential equations. Dynamical systems: equilibrium and stability.

Probability Theory

Set theory, Random Variables; Convergence Theorems, Central Limit Theorem, Law of Large Numbers.

References

- Guerraggio, A. - Salsa, S., Metodi matematici per l'economia e le scienze sociali, Giappichelli, 1997.
- Simon, C. – Blume, L.E., Matematica per l'Economia e le Scienze Sociali, Università Bocconi Editore (trad. it. a cura di A. Zaffaroni) 2002.
- Ross, S., Calcolo delle probabilità, Apogeo 2004.
- Chang, A. and Wainwright (1967) Fundamental Methods of Mathematical Economics (freely available on-line).
- Peccati, L., Salsa, S. and Squellati, M. Mathematics for Economics and Business, EGEA, 2008
- Intriligator, M.D., Mathematical Optimization and Economic Theory, Prentice Hall Series in Mathematical Economics 1971.
- Takayama, A., Mathematical Economics, Cambridge University Press 1985.
- Blitzstein, J.K., Hwang, J. (2019) Introduction to Probability, Second Edition, CRC Press.

2. Statistics

Sampling distributions, estimators, sufficient statistics.

Linear models, OLS theory.

Index numbers, national income models, income, consumption and productivity measurement,

Time series analysis, panel data analysis, regression and causality.



References

- Wood, S. Core Statistics, CRC Press, 2014.
- Azzalini A. Inferenza Statistica, Springer Italia, 2001.
- Di Ciaccio A., Borra S., Statistica: metodologie per le scienze economiche e sociali, McGraw Hill 2007.
- Stock J., Watson M., Introduction to Econometrics, Pearson 3rd edition.
- Guarini R., Tassinari F., Statistica Economica, Il Mulino, 2000.
- Angrist J., Pischke J.S., Mostly Harmless Econometrics, Princeton University Press, 2009.
- Dekking, F.M., Kraaikamp, C. , Lopusha H.P. and Meester L.E , A Modern Introduction to Probability and Statistics: Understanding Why and How, Springer 2005.

3. Economic Geography

Local and regional development; the spatial behavior of economic agents; spatial agglomeration and regional specialization; inter-regional and intra-regional disparities; local, national and transnational economic relations and production systems; urban, regional and territorial policies; environmental issues and sustainability transitions; quantitative and qualitative methodologies in economic geography; GIS and spatial data analysis.

References

- Sheppard E., Barnes T.J., A Companion to Economic Geography, Wiley-Blackwell, 2017.
- Cumbers A., MacKinnon D., An Introduction to Economic Geography: Globalization, Uneven Development and Place, Routledge, 2019 (third edition).
- Martin R., Economy: critical essays in human geography, Routledge, 2018.
- Rogerson P.A., Statistical methods for geography: a student's guide, Sage, 2020 (fifth edition).
- Clark G.L. et al., The New Oxford Handbook of Economic Geography, Oxford University Press, 2018.