

**MATH COURSES (All Offered by Dept. Mathematics, National Taiwan University)**

All graduate level courses are highlighted.

NUMBER	TITLE	TEXTBOOK	GRADE	DESCRIPTION
MATH4006	CALCULUS (1)	James Stewart, Calculus Early Transcendentals, 8th edition.	A	-
MATH4007	CALCULUS (2)	James Stewart, Calculus Early Transcendentals, 8th edition.	A+	-
MATH4008	CALCULUS (3)	James Stewart, Calculus Early Transcendentals, 8th edition.	A+	-
MATH4010	Calculus 4 (Applications in Economics and Management)	Carl P. Simon and Lawrence Blume, Mathematics for Economics.	A	-
MATH2213 ECON5129	Introduction to Mathematical Analysis(I)	Mathematical Analysis. Second Edition. Tom M. Apostol.	B	Topics: point-set topology, metric spaces, Cauchy sequences, differentiation, Riemann-Stieltjes integral, sets of measure zero.
MATH2214 ECON5130	Introduction to Mathematical Analysis(II)	Mathematical Analysis. Second Edition. Tom M. Apostol; Measure and Integral. R. Wheeden, R.L. Wheeden, A. Zygmund.	B-	Topics: Infinite Series/Products, Multivariate differentiation (ImFT, InvFT), Space of Continuous Functions, Lebesgue measure and integral, integral convergence theorems.
MATH1103 ECON5132	Linear Algebra(I)	Friedberg, Insel, and Spence, Linear Algebra. 4th Edition	A+	Topics: Definition of Fields and Vector Spaces, Subspaces, Transformations and Matrix Representation, Invertibility and Isomorphism, Determinants, Eigenspaces, Characteristic Polynomial, Diagonalization, Jordan Normal Form.
MATH2217	Introduction to Ordinary Differential Equations	Boyces: Elementary differential equations and boundary value problems.	A	-
MATH2502	Introduction to Probability Theory	Patrick Billingsley, Probability and Measure, Wiley series in probability and mathematical statistics; Sheldon M. Ross, A First Course in Probability, 10th Edition (Global Edition), Pearson.	B+	Topics: Kolmogorov's Axioms, sigma-algebra, Random Variables, Convergence of Random Variables, Lindeberg CLT, SLLN, Markov Chains, MCMC.
MATH7603 ECON5088	Advanced Statistical Inference (I)	Casella, G. and Berger, R. L. (2002). Statistical Inference. 2nd ed. Duxbury Press.	A	Topics: Borel-Cantelli Lemmas, Common Families of Distributions, Sampling Distributions, Expectation Maximization Algorithm, Bayesian Statistics, Sufficiency/Likelihood/Equivalence Principles.
MATH5237	Causal inference	Causal Inference, by Miguel A. Hernan and James M. Robins	A+	Topics: Potential Outcome Framework, Graphical Causal Models, Survival Analysis.

**ECON COURSES (All offered by Dept. Economics, National Taiwan University)**

All graduate level courses are highlighted.

NUMBER	TITLE	TEXTBOOK	GRADE	DESCRIPTION
ECON1004	Principle of Economics (with Recitation) (1)	-	A+	-
ECON1005	Principle of Economics (with Recitation) (2)	Acemoglu, Laibson, and List, Economics (2015), 1st edition.	A	-
ECON2022	Statistics with Recitation	-	A	Topics: Naive Probability Theory, Random Variables, Normal Distributions, Rampling Distribution, Asymptotic Inference, MLE, Bootstrap.
ECON2020	Macroeconomics (1)	-	A+	Topics: GDP, Producer's Choice, Consumer's Choice, Equilibrium Analysis, Comparative Statics.
ECON2018	Microeconomics (1)	Price Theory and Applications 9/E By Landsburg	A+	-
ECON2023	Introductory Econometrics with Recitation	Stock & Watson, Introduction to Econometrics	A+	-
ECON2021	Macroeconomics (2)	-	A+	Topics: Saving and Consumption, Lucas Tree Model, Overlapping Generation, Asset Pricing Theory, RBC Model.
ECON2019	Microeconomics (2)	Landsburg, Steven E. (2014). Price Theory and Applications, 9th edition.	A+	-
ECON5166	Data Science and Social Inquiry	-	A+	Topics: Programming in R: tidyverse, data.table, regular expression, simulations, webscraping, JSON/HTML parsing, text mining, Chinese text processing, PCA, machine learning (random forest, k-means, SVM).
ECON5181	Revealed Preference Theory	Revealed Preference Theory. Christopher P. Chambers. Federico Echenique.	A-	-
ECON5179	Causal Inference and Prediction in Econometrics	Hayashi, F. 2000. Econometrics. Princeton University Press, Princeton.	A+	-
ECON5050	Financial Market and Derivatives	Derivatives Markets, Pearson, 2013, by Robert L McDonald, Third Edition	A+	-
ECON5077	Topics in Neuroeconomics	-	A+	Topics: Discussion of Several Papers: fMRI experiments, human behavioral experiments, animal experiments.
ECON5175	Trade Theory	-	A+	Topics: History of Trade Theory, Heckscher-Ohlin Model, Neoclassical Model, Welfare Analysis.
ECON3048	Demographic Economics	Anderson, Barbara A., 2014, World Population Dynamics: An Introduction to Demography, publisher: Pearson.	A	-
ECON3042	Economic Development	Economic Development (The Pearson Series in Economics) Todaro, M., Smith, S.	A	-
ECON4031	Game Theory	Binmore, Ken (2007). Playing for Real: A Text on Game Theory	A	-
ECON3043	Money and Banking (I)	Mishkin, Frederic S., Economics of Money, Banking, and Financial Markets.	A	-

ECON5178	Decision Theory	Gilboa, I. (2009). Theory of decision under uncertainty. Cambridge University Press.	A+	-
ECON5078	Fair Allocation Mechanisms	How to Divide When There Isn't Enough, Moreno-Tertero, Juan D. 2021., Cambridge University Press	A	-
ECON5169	Topics in Economics and Econometrics	Empirical Bayes Methods with Applications (Chapman & Hall/CRC Monographs on Statistics & Applied Probability), J.S. Maritz, T. Lwin	A+	-
ECON8810	Microeconomic Theory (I) A	Lecture Notes in Microeconomic Theory, 2006, Ariel Rubinstein, Princeton University Press.	A+	Topics: Utility and Preference Theory.
ECON8811	Microeconomic Theory (I) B	Osborne, Martin J. and Ariel Rubinstein (1994), "A Course in Game Theory," The MIT Press.	A+	Topics: Game Theory.
ECON8814	Macroeconomic Theory (I) A	Recursive Macroeconomic Theory, fourth edition, MIT Press, L. Ljungqvist	A	Topics: DSGE and RBC models.
ECON8815	Macroeconomic Theory (I) B	Recursive Macroeconomic Theory, fourth edition, MIT Press, L. Ljungqvist; Recursive Methods in Economic Dynamics, University of Arizona, Nancy L. Stokey, Robert E. Lucas, Jr	A+	Topics: Dynamic Programming, Growth, Calibration.
ECON7026	Econometric Theory (I)	Econometrics by Hansen, Bruce	A+	Topics: Least-Squares, GMM, Maximum Likelihood, Constrained Estimation.
ECON8821	Econometric Theory (II) B	Imbens, G. W., & Rubin, D. B. (2015). Causal inference in statistics, social, and biomedical sciences. Cambridge University Press	A+	Topics: Causal Inference Econometrics.
ECON7150	Econometric Analysis of Macroeconomic Time Series	Lütkepohl, Helmut (2006), New Introduction to Multiple Time Series Analysis, Springer.	A+	Topics: VAR, Cointegration, Sign-Restriction, Markov Regime Switching, Kalman Filter.
ECON7009	Introduction to Quantitative Methods	-	A+	Topics: Recap on Mathematical Analysis, Optimization Methods.
ECON7153	Empirical Game Theory Analysis	Reiss, P. and F. Wolak (2007). "Structural Econometric Modeling: Rationales and Examples from Industrial Organization," in Handbook of Econometrics, Volume 6A, Chapter 64.	A+	Topics: Structural Econometric Modeling.
ECON7217	Economic Analysis of Social Networks	-	A+	Topics: Identification of Social Interaction Models, Estimation of SAR, Network Games, Bayesian Inference Methods.
ECON7218	Computational Methods for Econometrics	-	A+	Topics: Numerical Optimization, Simulation Based Estimation, Bootstrap, Numerical Integration, Bayesian Computation, Gibbs Sampling, MCMC, M-H algorithm.