

## **M.A./Master of Economic Science: Economic and Environmental Modeling Course Descriptions**

### *EC501 Microeconomic Theory*

Topics covered include consumer theory, producer theory, general equilibrium, game theory, market failure, risk and uncertainty, efficiency and equity, welfare economics and market structure.

### *EC506 Econometrics*

Topics covered include the linear regression model, dummy variables, biases due to omitted variables, extraneous variables, heteroscedasticity, and autocorrelation, probit and logit models, and regression analysis in practice.

### *EC515 Data Management and Survey Techniques*

Topics covered include probability and probability distributions, tests of hypotheses (design and distribution of selected parametric and non-parametric test statistics), analysis of variance, measurement and scaling, research process, methods of data collection, design of surveys and questionnaires, the analysis and interpretation of survey data, data presentation and applied work using SPSS software.

### *EC517 Cost Benefit Analysis and Evaluation*

Topics covered include foundations of cost-benefit analysis; welfare economics; social objectives and the allocation of resources; project appraisal and analysis; measuring cost and benefits; risk and uncertainty; distributional questions; contingent valuation; policy and programme evaluation and case studies in cost-benefit analysis.

### *EC518 Environmental Economics*

Topics covered include externalities, Pigovian taxes, emission standards, tradable permits, Coasian analysis of environmental issues, institutional analysis of environmental issues, natural resource economics, contingent valuation and cost benefit analysis.

### *EC561 Economic Modelling*

The course in Economic Modelling will provide a theoretical underpinning to quantitative modelling in general and, from a practical point of view, will focus on existing model types that are used to provide decision support for policy makers. The models focused on in the practical part of the course will be selected from the following model types: sectoral programming models, computable general equilibrium models, agent based models, micro-simulation models, large scale econometric models and ecological models. Appropriate software packages will be used to work on building up models for practical project-based work.

### *EC562 Urban and Rural Resource Governance*

This module will use economic tools to investigate how integrated environmental strategies concerned with energy, waste management and transport have been successfully implemented in Ireland, the European Union and OECD countries. Particular emphasis will be given to the sustainable allocation of resources using integrated resource management strategies for energy, urban transport and waste management in an urban and rural context. Economic analysis will be employed to evaluate International, European and Irish climate change, energy, transport and waste management policies. An analysis of legislation and economic incentives concerned with regional renewable energy, climate change abatement, integrated transport systems and waste management will also be undertaken.

#### *EC519 Local and Rural Development*

Topics covered include theories of growth; technical change and economic growth; methods of spatial and regional analysis; theories of uneven development, spatial microeconomics and spatial macroeconomics.

#### *EC526 Public Sector Economics*

Topics covered include public expenditure theory, public choice theory, income distribution, poverty, theories of the welfare state, comparative analysis and social policy modelling.

#### *EC505 Minor Dissertation*

The minor dissertation shall be approximately 10,000 words in length and shall be original in content but not necessarily be a major contribution to a particular field of study. The dissertation will normally be linked to an internship in an appropriate regional or national agency.

#### *EC374 Advanced Econometrics*

Topics covered will include Binary Discrete Response Models, Multinomial Response Models, Limited Dependent Variables, Panel Data Models, Instrumental Variables, Dynamic Panel Data Models, Limited Dependent Variable Models and (C)LAD Estimators, GAMS, Policy Evaluation and Count Data Models Survival Analysis. The course has a significant practical content, with students expected to be competent users of a statistical software package at the end of the course.