# EMAP Module Outlines

## Macroeconomics for Policy

The aim of the course is to offer the foundation of modern macroeconomic policy analysis. How do fiscal stimulus payments like tax rebates boost consumption? How do tax incentives affect business investment and R&D? To answer such questions, we will study up-to-date macroeconomic models, balancing with meta-analysis and case studies on policy carried out in the past across countries. We also discuss how to better use micro data to address questions of interest to macroeconomists.

## Microeconomics for Policy

The module aims to build on undergraduate economic theory in order to develop the skills of microeconomic modelling and analysis, and the principles of welfare economics used in policy analysis. The module will carefully introduce and examine the relevant concepts and tools of microeconomics, including the fundamental principles of individual and collective decision making, the rigorous concepts of preferences, technology, and endowments, the functioning of competitive markets and the main sources of market failures, efficiency and equity, and information economics.

The module will then proceed to use the fundamental notions of microeconomics to construct and apply microeconomic models to a variety of policy questions -- ranging from environmental issues, inequality, education, and public finance to competition, industrial organisation and health economics.

## Quantitative Methods with Policy Applications

This module aims at familiarizing students with the most widely used and up-to-date methodologies and approaches of contemporary applied econometric data analysis. After reviewing fundamental concepts in probability theory and statistics, the module will analyse issues of sampling, linear regression models, causality and endogeneity, alternative data structures (i.e. cross-sections, time series and longitudinal data), Maximum Likelihood methods and policy evaluation.

The module aims to develop capability to both apply and critically assess alternative econometric methods. Students will develop a solid understanding of fundamental concepts in statistics and a full knowledge of the theory and practice of modern applied econometrics. On completion, students should have the ability to carry out applied econometric research as well as the capability to appraise approaches and findings produced by other researchers.

## Applied Microeconomics

Building on the methods and approaches of contemporary applied econometric data analysis developed in Quantitative Methods in Policy Applications, the Applied Microeconomics module will equip students with the applied econometric techniques for the empirical analysis of microeconomic data. This module will place emphasis on learning how to establish causal relationships between different variables and how to use this evidence to inform policy makers' decisions. Students will learn how to handle real-world data and use econometric software.

The module aims to develop capability to both understand and apply statistical techniques for the empirical analysis of microeconomic data. On completion, students should have the knowledge and skills to carry out applied econometric research using microeconomic data, as well as the capability to appraise approaches and findings produced by other researchers.

## Big Data and Machine Learning

Building on the methods and approaches of contemporary applied econometric data analysis developed in Quantitative Methods in Policy Applications, the Big Data and Machine Learning module will equip students with the empirical techniques to use and analyse large datasets. By the end of the course, students will be able to use modern empirical techniques such as machine learning on large microeconomic and financial datasets, assess the informativeness of empirical estimates and their use economic analysis, and visualize complex information sets. Students will learn how to handle real-world data and use econometric software.

## Time Series Econometrics and Forecasting

Building on the methods and approaches of contemporary applied econometric data analysis developed in Quantitative Methods in Policy Applications, the Time Series Econometrics and Forecasting module will equip students with applied statistical techniques for empirical analysis and forecasting of time series in macroeconomics. The module will introduce advanced econometric techniques that are used both in the applied literature and in professional analysis of economic and financial time series data.

## Economic Appraisal

This module is designed to build understanding and capability in appraisal and evaluation techniques, including cost-benefit analysis, multi-criteria decision analysis, real options and least regrets; and the underpinning tools that are required to conduct appraisals e.g. asset pricing models.

## Economics of Health and Education

The aim of this module is to build understanding of the economic analysis of education and health. The module will introduce key concepts, issues, theories and models relating to health economics and the economics of education, placing emphasis on empirical application and understanding of current empirical research in the field.

## Environmental Economics and Climate Change

Environmental economics provides the economic toolkit for the analysis of environmental issues, such as sustainability, climate change, pollution, and renewable energy, and an understanding of environmental economics is essential for policy makers to respond to local, national, and global environmental problems. This module aims to develop understanding of the economic analysis of environmental issues, and to build capability to use economic models to inform empirical analysis and policy.

## Labour Economics

The aim of this module is to enable students to understand the economic analysis of labour markets. The module will introduce the fundamental models of labour economics, and will enable students to gain understanding of contemporary labour economics through empirical applications.

## International Economics

This module aims to develop understanding and analysis of microeconomic and macroeconomic issues in international economics. The module will address key concepts, issues, theories and models in the fields of international trade and international finance, with a focus on application to policy issues.

## Public Economics

This module focuses on the role of the government in an economy. The aim is to provide an understanding of the reasons for government intervention in the economy, analysing the benefits of possible government policies, and the response of economic agents to the government's actions.