ELIGIBILITY

The applicants for the Summer School are expected to have at least a Master's degree in economics and/or econometrics or in relevant subjects with a strong background in economics and currently be engaged in academia. Some may be chosen from outside academia (e.g., government, private sector, NGOs), if they have the minimum academic qualification and relevant experience. In the description of the course, there is an indication of the background in econometrics, finance, economic theory or other subjects that participants should possess in order to take full advantage of the course. In addition, participants must have a good knowledge of the English language.

All these are, however, basic guidelines, and all cases will be considered on their own merits.

IMPORTANT DATES

April 1, 2012	Application deadline
May 1, 2012	Notification of acceptance
June 1, 2012	Deadline for payment of fees
July 1, 2012	Deadline for cancellation
22 - 29 July, 2012	Summer school duration

SCIENTIFIC COMMITTEE

CONTACT

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ECONOMICS & ECONOMETRICS

7TH ADVANCED SUMMER SCHOOL

Advanced Time Series and Forecasting

Prof. Bruce E. Hansen

Department of Economics,
University of Wisconsin-Madison

Rethymno, Crete, Greece
22 - 29 July 2012

University of Crete
Faculty of Social Sciences
Department of Economics

website ➤➤➤ http://assee.soc.uoc.gr/

> This is a wonderful time to be a young economist. I urge you all to rush through graduate training in some or all of neurology, biochemistry, cognitive psychology, and anthropology, and with the full toolkit this provides, get to work on completing the new science of pleasure, and the enlightened perspectives this will bring to economic policy and the well-being of consumers.
>
> **D. McFadden**
> *The New Science of Pleasure-Consumer Behavior and the Measurement of Well-Being*

Overwiew

Since 2006 the Department of Economics of the University of Crete is successfully running its Advanced Summer School in Economics and Econometrics. The broader objective of this series of events is to provide advanced training for young researchers from all over Europe and beyond on important disciplines of economics and econometrics. The Summer School follow a traditional structure: lectures in the morning and computer practical sessions in the afternoon. The specialized topic varies from year to year and reflects issues that are currently lively areas of new research and policy interest. The faculty is comprised of leaders in the field, and offers an overall coverage of the specialist area.

The 7th Advanced Summer School in Economics and Econometrics will be held in 22 - 29 July, 2012 at the University Campus in Rethymno, Crete. The topic of the School is "**Advanced Time Series and Forecasting**". The lectures of the Summer School will provide an up-to-date coverage of advanced topics in time series econometrics and forecasting.

Trygve Haavelmo Professor **Bruce E. Hansen** (Department of Economics, University of Wisconsin-Madison) will be the Distinguished Guest Professor.

Up to **26 students** will be accepted to the program.

Course Description

Objectives

The course will cover some advanced topics in time series econometrics and forecasting.

We will cover theory, methods, and applications. The primary emphasis will be on methods, with theory presented as an aid to understanding the methods. All methods will be carefully illustrated in full detail by applications to macroeconomic aggregates including quarterly GDP and monthly unemployment rates.

Outline

Day 1: Forecasting. The first lecture will focus on forecasting from semiparametric linear models. We will first discuss one-step-ahead forecasts, including point forecasts, interval forecasts and density forecasts. We will then move on to multi-step-ahead forecasts, including both iterated one-step forecasts and direct forecasts. Fan charts will be introduced. The forecast methods will be fully general and not rely on distributional assumptions.

Day 2: Structural Breaks. The second lecture will deal with the econometrics of structural breaks. Breaks in the mean, variance and coefficients will be introduced. One-time breaks, multiple breaks and smooth structural change will be discussed. Methods to test for the presence of breaks will be introduced, including tests for single structural breaks and tests for multiple breaks. Estimation and confidence intervals for breaks will be introduced, including single and multiple breaks.

Day 3: Nonlinear Time Series. The third lecture will focus on nonlinear time series models, in particular the threshold autoregressive (TAR) model. Formulating nonlinear models, estimation of nonlinear models, and tests for nonlinearity and threshold effects will be discussed. Forecasting from nonlinear models will also be addressed.

Day 4: Model and Forecast Selection. The fourth lecture will introduce methods for selection of time series models. Information criterion (AIC, BIC, PLS, cross-validation) will be derived and compared. The theory of model selection will be developed based on minimizing mean-squared error and mean-squared forecast error.

Day 5: Model and Forecast Combination. The final lecture will introduce methods for model and forecast combination. Traditional methods, including Bates-Granger weights and Granger-Ramanathan weights will be reviewed. Modern methods including Bayesian model averaging and AIC weights will be introduced. Current methods including Forecast model averaging and leave-h-out cross validation will be covered. The theory of forecast combination will be developed based on minimization of mean-square forecast error, and information criterion as estimates of MSFE. Forecast combination methods will be present for both one-step and multi-step forecasts, for point forecasts and for forecast intervals and densities.

Practical Lab Sessions. The afternoon sessions will be devoted to empirical exercises. Students will estimate time-series models on real data, make forecasts, forecast intervals, and implement model selection and combination methods.

Instructor

Bruce E. Hansen was a student of Peter Phillips at Yale University, receiving his Ph.D. in 1989. He is currently the Tryge Haavelmo Professor of Economics at the University of Wisconsin, and previously held positions at the University of Rochester (1989-1994) and Boston College (1994-1998). He was Co-Editor of Econometric Theory during 1995-2008 and Associate Editor of Econometrica for the period 1996-2008. He is a Fellow of the Econometric Society and of the Journal of Econometrics. He works in econometric methods, with main interests in econometric theory, time series, nonlinear modeling, nonparametrics, model selection and averaging, and shrinkage estimation.