

2024

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## Advanced Econometrics III (TIC10045)

### Praktische informatie

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Cursuscode

TIC10045

Studiepunten

4 EC

Voertaal

Engels

Thema's

- MSc of Philosophy in Economics (research)
- Research Master Business Data Science (joint degree)
- Tinbergen Institute Research Master in Economics joint degree

### Cursusbeschrijving

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Inhoud

*Instructors:* Prof. Dr. H.P. Boswijk (UvA) and Prof. Dr. S.J. Koopman (VU)

*Course content:* Several major advances in time-series econometrics and likelihood-based inference have occurred in the past years. These advances have provided a major breakthrough in the modeling of time series using advanced up-to-date econometric methodologies. The first part of the course aims to provide a thorough understanding of linear time series models, including frequency domain analysis, multivariate models and co-integration; it also covers GARCH models. The second part focusses on state space models and the Kalman filter, discussing signal extraction, maximum likelihood estimation and dynamic factor models. Various empirical illustrations in economics and finance will be discussed. *Book*

Leerdoelen

Learning goals for this course: students should have an understanding of, ability to apply, judge, and communicate

1. Basic model formulation and method development in time-series econometrics
2. Derivation of statistical properties of time-series models and methods, and the role of assumptions
3. The empirical application of time-series methods, and interpretation of results

Extra

- Brockwell, P.J. and Davies, R.A. (1987). Time Series: Theory and Methods, New York: Springer-Verlag
- Harvey, A.C. (1989). Forecasting, Structural Time Series Models and the Kalman filter, Cambridge University Press
- Shumway, R.H. and Stoffer, D.S. (2000). Time Series Analysis and Its Applications, New York: Springer-Verlag

### Studiematerialen

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Verplicht materiaal

- Boek  
J. Durbin, S.J. Koopman  
Time Series Analysis by State Space Methods

Oxford University Press

Durbin, J. and Koopman, S.J. (2012). Time Series Analysis by State Space Methods, Second Edition, Oxford University Press

- Canvas  
Van der Vaart, A.W. (2022). Statistical Time Series. Lecture notes, TU Delft (available via Canvas).

#### Aanbevolen materiaal

- Boek  
P.J. Brockwell, R.A. Davies  
  
Time Series: Theory and Methods  
  
Brockwell, P.J. and Davies, R.A. (1987). Time Series: Theory and Methods, New York: Springer-Verlag
- Boek  
A.C. Harvey  
  
Forecasting, Structural Time Series Models and the Kalman Filter  
  
Cambridge University Press  
  
Harvey, A.C. (1989). Forecasting, Structural Time Series Models and the Kalman filter, Cambridge University Press
- Boek  
R.H. Shumway, D.S. Stoffer  
  
Time Series Analysis and Its Applications  
  
Shumway, R.H. and Stoffer, D.S. (2000). Time Series Analysis and Its Applications, New York: Springer-Verlag

## Ingangseisen

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#### Vereiste voorkennis

Only accessible for Master's students who are registered at TI. For further information please contact Tinbergen Institute <https://www.tinbergen.nl>

#### Ingangseisen cursusinschrijving

Je moet voldoen aan de volgende eisen

- Ingeschreven voor één van de volgende opleidingen
  - Economics (Research)
  - M.Phil. in Economics
  - Research Master Business Data Science (joint degree)
  - Tinbergen Institute Research Master in Economics (JD)

## Werkvormen

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#### Werkvormen

- Lecture

## Onderwijsperiode

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### Inschrijfperiodes

- Blok TI-BLOK4

Inschrijfperiode

1 augustus 2024 t/m 19 april 2025 23:59

Uitschrijfperiode

t/m 19 april 2025 23:59

Start onderwijs

3 maart 2025

## Docenten

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### Contactpersoon

- KP Mc Grane

### Coördinator

- C Deurloo, MSc
- KP Mc Grane

## Toetsen

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### Toetsvorm

written exam (85%) and homework assignments (15%).

### Toetsen (resultaat in OSIRIS)

- Written examination, assignment(s)

Weging

100

## Toetsinschrijving

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### Written examination, assignment(s)

- Blok TI-BLOK4