

Syllabus

for course at advanced level

Time Series Econometrics for Finance
Tidsserieekonometri för finansiering

**7.5 Higher Education
Credits**
7.5 ECTS credits

Course code:	FE4143
Valid from:	Spring 2022
Date of approval:	2021-11-08
Department	Stockholm Business School
Main field:	Företagsekonomi
Specialisation:	A1N - Second cycle, has only first-cycle course/s as entry requirements

Decision

This syllabus has been approved by the head of Stockholm Business School, Stockholm University 2021-11-08.

Prerequisites and special admittance requirements

Bachelor of science 180 credits, of which 60 credits in business administration and 30 credits in economics; or 60 credits in economics and 30 HE credits in business administration; 7,5 credits in mathematics, 7,5 credits in statistics; English 6 / English B, or the equivalent

Course structure

Examination code	Name	Higher Education Credits
4143	Time Series Econometrics for Finance	7.5

Course content

This course is a foundation course in Time Series Econometrics. Time series data are commonly encountered in finance, as well as in marketing and sales, where observations are recorded over time. Since time series data are different in terms of their nature to cross sectional data studied in foundation econometrics, Time Series Econometrics has become a specialized field of study over the last 60 or so years, and as such requires a different set of tools for analysis.

The course provides students with an in-depth knowledge of some fundamental concepts in time series econometrics and outlines a few common difficulties that arise when dealing with time series data in theory as well as in practice. The course is designed to bring students that have not had any exposure to time series data and/or analysis up to speed and to offer a more detailed treatment to students that are already familiar with some time series concepts. The course covers the following foundation topics in time series: Autoregressive Moving Average models (ARMA), non-stationarity, unit-roots and decompositions of time series, Vector Autoregressions (VARs), Cointegration and Vector Error Correction models (VECMs), as well as estimation and forecasting with such models.

Learning outcomes

The overall aim of the course is to equip students with a solid knowledge in Time Series Econometrics which will be relevant for the empirical part of the students' Master's thesis projects.

Upon successful completion of this course, the student shall be able to:

Knowledge and understanding

1. Understand the main properties of time series data and which econometric techniques are appropriate for the respective analysis of such data.
2. Demonstrate ability to understand concepts such as, stationarity, unit-roots and spurious regression.

Skills and abilities

3. Demonstrate ability to estimate appropriate time series models such as ARMA, VAR and VECM models.
4. Demonstrate ability to perform analytic derivations and transformations of time series models.

Judgement and approach

5. Demonstrate ability to evaluate the appropriateness of the specific econometric models used in finance and consult existing literature to implement and/or extend these models as required.

Education

The teaching consists of lectures that incorporate analytical as well as computer exercises, and requires a significant portion of self-study on the part of students.

The course workload is 200 hours, equivalent to 7,5 higher education credits.

The language of instruction is English.

Teaching takes place on campus, unless otherwise specified by the course director.

For more detailed information, please see the study guide, published on the learning platform when the course commences.

Forms of examination

a. Forms of examination

Assessment for the course will be continuous and is carried throughout the different course activities. Each assessment task is weighted in relation to its importance in the overall assessment of the course. The student's results from the different assessment tasks are added up to a total course score that will then translate into the final grade for the course.

Assessment tasks

The course contains the following weighted assessment tasks:

1. Individual written examination: assesses intended learning outcomes 1, 2, 3, 4, and 5; constitutes 70% of total course points.
2. Two individual assignments consisting of analytical calculations and computer-based exercises: assesses intended learning outcomes 3, 4 and 5; constitutes 30% of total course points.

The examination is conducted in English.

If the student has a certificate from Stockholm University with a recommendation for special support, the examiner has the opportunity to give an adapted test or let the student complete the test in an alternative way.

b. Grading scale

Grading takes place according to a criterion-referenced seven-point grading scale:

- A = Excellent
- B = Very good
- C = Good
- D = Satisfactory

E = Sufficient

Failed grades

Fx = Failed, some more work required

F = Failed, much more work required

c. Grading criteria

The course's grading criteria are designed as overall assessments, combined qualitative descriptions of what the student is expected to do in order to demonstrate how well the course's learning outcomes are achieved. A higher grade-level presupposes the abilities at lower levels.

A (Excellent)

The student demonstrates ability to evaluate and relate to the content of the course from a comprehensive, critically reflective perspective, as well as to transfer and apply insights in new, meaningful contexts.

B (Very Good)

The student demonstrates ability to, from an overarching and coherent perspective of the field, understand and use concepts to explain how different aspects of the course relate to each other, interconnect and become meaningful.

C (Good)

The student demonstrates ability to discuss the content, tasks and complex issues dealt with in the course from several well-developed but mainly independent perspectives.

D (Satisfactory)

The student demonstrates satisfactory ability to discuss the content, tasks and complex issues dealt with in the course in a way that, albeit in-depth and elaborate, is decidedly one-dimensional.

E (Sufficient)

The student demonstrates sufficient ability to discuss the content, tasks and complex issues dealt with in the course in a way that is decidedly one-dimensional.

Fx (Fail)

The student's knowledge, skills and abilities display minor flaws, overall or in significant parts.

F (Fail)

The student's knowledge, skills and abilities display major flaws, overall or in significant parts.

d. Final grade

A course comprises 0–100 course points. Receiving a passing grade requires at least 50 course points from individual assessment tasks. The scale for the final grade is tied to fixed score intervals: A: 90–100; B: 80–89; C: 70–79; D: 60–69; E: 50–59; Fx: 45–49; F: 0–44. The grades correspond to the total score points a student obtains (over a total of 100) for all the weighted assessment tasks combined as part of the continuous assessment for the course. Current rounding rules are applied.

Each assessment task is awarded 0–100 points. The score for a single assessment task is the number of points multiplied by its percentage weight, and the combined total of score points for all weighted assessment tasks for the course are added up to a final score between 0 and 100 which then translates into a corresponding final course grade between A and F.

All assessment tasks are assessed on a 100-point scale.

The student is responsible for completing the course's assessment tasks, that a sufficient amount of course points is earned and a passing course grade is obtained. If a passing course grade is not obtained during the course's first scheduled occasion, the course's weightiest assessment task can be taken at the course's second scheduled occasion, with retained course points from the course's other assessment tasks. All other assessment tasks are offered once during the course.

If 45–49 course points are achieved, a grade Fx is obtained. If less than 45 course points are achieved, a grade F is obtained.

A student who after the course's two regular exams does not obtain a passing grade lose the course points

obtained and is referred to re-register at a later course instance.

Re-registration implies that:

- first-time registered students have priority access to the course's group registration;
- the weightiest individual assessment task can be re-assessed without attendance at any of the course's other learning activities and without points from the course's other assessment tasks accredited.

e. Forms of examination

For each course instance, two examination opportunities are normally offered within one year. If during an academic year, a course instance is missing, at least one examination instance is offered.

A student who has taken two examinations in a course or course component without obtaining a pass grade is entitled to the nomination of another examiner, unless there are special reasons to the contrary. The request is made to the director of studies. Students who have received the lowest grade E may not undergo a re-examination for higher grades.

Students receiving a passing grade may not retake the final examination or complete a previously not completed assessment task to attain a higher grade. A passing grade may not be turned into a failing grade upon the request of a student.

Assessment tasks which are not submitted on time are not assessed.

Interim

If the course is discontinued, or its contents are substantially altered, students have the right to be examined according to this syllabus once per semester for three further semesters.

Limitations

This course may not be included in a degree together with a course, taken in Sweden or elsewhere, of identical or partially similar content.

Misc

The course is included in Master's Programme in Banking and Finance 120 credits.

Exemption from an assessment task is granted if the student presents a written certificate (e.g. a medical certificate), whereupon the student may re-sit the assessment task at a later date decided by the head of course, and while maintaining previously acquired course points.

The application for exemption should be submitted to the director of studies immediately after, or during planned absences well before the date when the assessment task is carried out. A granted exemption expires at the end of the immediately following semester.

Required reading

Course literature and other teaching materials are specified on the course's webpage no later than two months prior to the course commences.