



Course and Examination Fact Sheet: Autumn Semester 2015

5,255: Mathematics for Economists

ECTS credits: 3

Overview examination/s

(binding regulations see below)

Decentral - Written examination (100%, 90 mins.)

Attached courses

Timetable -- Language -- Lecturer

[5,255,1.00 Mathematics for Economists](#) -- English -- [Mahmoud Ola](#)

Course information

Course prerequisites

- Assessment level Mathematics I and Mathematics II

Course content

The knowledge gained in the Mathematics Assessment Level courses will be deepened with a particular view on economic applications. This course is especially useful for students studying economics and for those intending to continue with a Master in Economics or the Master in Quantitative Economics and Finance (MiQE/F). New mathematical concepts will be introduced and examples of their economic applications will be illustrated. Topics include: selected topics from mathematical analysis; dynamic systems and stability; microeconomic optimization.

Course structure

1. Topics in Mathematical Analysis:

- Taylor polynomials in one and two variables; Taylor's Theorem
- Quadratic forms and definite matrices
- Complex numbers

2. Dynamic Systems and Stability

- Linear difference equations with constant coefficients
- General properties of differential equations
- Linear and separable differential equations
- Stability
- Systems of differential equations in two variables; Lyapunov Stability Theorem
- Systems of linear differential equations with constant coefficients

3. Microeconomic Optimization

- Method of Lagrange multipliers for optimization problems with several constraints
- Implicit function theorem
- Envelope Theorem
- Convex analysis and Kuhn-Tucker Theorem

Course literature

- Lecture slides on studynet

- Lecture notes on studynet

- Selected Chapters of "Mathematics" by Enrico De Giorgi



Additional course information

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Examination information

Examination sub part/s

1. Examination sub part (1/1)

Examination time and form

Decentral - Written examination (100%, 90 mins.)

Remark

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Examination-aid rule

Extended Closed Book

The use of aids is limited; any additional aids permitted are **exhaustively** listed under "Supplementary aids". Basically, the following is applicable:

- At such examinations, all the pocket calculators of the Texas Instruments **TI-30** series and bilingual dictionaries without hand-written notes are admissible. Any other pocket calculator models and any electronic dictionaries are inadmissible.
- In addition, any type of communication, as well as any electronic devices that can be programmed and are capable of communication such as notebooks, tablets, PDAs, mobile telephones and others, are inadmissible.
- Students are themselves responsible for the procurement of examination aids.

Supplementary aids

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Examination languages

Question language: English

Answer language: English

Examination content

- Topics in Mathematical Analysis
- Dynamic Systems and Stability
- Microeconomic Optimization

Examination relevant literature

- Lecture notes
- Lecture slides
- Selected Chapters of "Mathematics" by Enrico De Giorgi



Please note

We would like to point out to you that this fact sheet has absolute priority over other information such as StudyNet, faculty members' personal databases, information provided in lectures, etc.

When will the fact sheets become binding?

- Information about courses and examination time (central/decentral and grading form): from the start of the bidding process on 20 August 2015
- Information about decentral examinations (examination-aid rule, examination content, examination relevant literature): after the 4th semester week on 12 October 2015
- Information about central examinations (examination-aid rule, examination content, examination relevant literature): from the start of the enrolment period for the examinations on 02 November 2015

Please look at the fact sheet once more after these deadlines have expired.