University of St.Gallen

Course and Examination Fact Sheet: Autumn Semester 2015

7,300: Mathematics

ECTS credits: 3

Overview examination/s

(binding regulations see below)
Decentral - Written examination (100%, 90 mins.)

Attached courses

Timetable -- Language -- Lecturer
7,300,1.00 Mathematics -- English -- De Giorgi Enrico

Course information

Course prerequisites

Topics of the assessment lectures Mathematik A and Mathematik B (cf. assessment book by Enrico De Giorgi).

Course content

Quantitative methods provide the foundation for many of the theoretical advancements of modern economics. The course introduces mathematical tools and methods used in economic analysis. The lectures combine theoretical parts with exercises.

Content

I. Optimization and Sensitivity Analysis

- Implicit Function Theorem

- Optimization under Constraints

- Envelope Theorem

- Convex Optimization

II. Optimal Control

- Maximum Principle

- Transversality Conditions

- Current Value Hamiltonian

III. Selected Topics in Measure Theory

- Riemann-Stieltjes Integral

- Lebesque Measures

- Measurability of Functions

- Lebesque Integral

IV. Selected Topics in Probability theory

- Probability spaces

- Random variables

- Expectations

Course structure

1. Lecture on Tuesday and Wednesday during the first 6 weeks of the term.

2. The written exam will take place during the semester break.

Course literature

De Giorgi, Enrico (2015): Mathematics, Lecture Notes (slides).

Additional Literature:

•Boyd, Stephen and Vandenberghe, Lieven (2004): Convex Optimization, Cambridge University Press.
•Kamien, Morton I. and Schwarz, Nancy L. (1991): Dynamic Optimization, North-Holland.
•Simon, Carl P. and Lawrence, Blume (1994): Mathematics for Economists, W.W. Norton and Company.
•Durett, Rick (2010): Probability: Theory and Examples, Cambridge University Press, 2010.
•Grimmett, Geoffrey and Stirzaker, David (2001): Probability and Random Processes. Oxford University Press.

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
The exams take place during the semester break.

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
No additional aids.

Examination languages
Question language: English
Answer language: English

Examination content

I. Optimization and Sensitivity Analysis

- Implicit Function Theorem
- Optimization under Constraints
- Envelope Theorem
- Convex Optimization

II. Optimal Control

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III. Selected Topics in Measure Theory

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- Measurability of Functions
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IV. Selected Topics in Probability theory

- Probability spaces
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- Expectations

Examination relevant literature

De Giorgi, Enrico (2015): Mathematics, Lecture Notes (slides)

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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.