



**LUND**  
UNIVERSITY

School of Economics and Management

## **NEKG33, Economics: Mathematical Methods for Economics, 7.5 credits**

*Nationalekonomi: Matematiska metoder för nationalekonomi, 7,5  
högskolepoäng*  
First Cycle / Grundnivå

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### **Details of approval**

The syllabus was approved by The Board of the Department of Economics on 2012-06-05 and was last revised on 2022-09-13. The revised syllabus applies from 2023-01-16, spring semester 2023.

### **General Information**

This is a single subject intermediate course that can be a part of all specialisations within economics. The course is also an obligatory sub-course within NEKG11 'Economics: Level 2'. The course is optional within a number of undergraduate programmes at Lund University.

*Language of instruction:* Swedish

In some semesters the course can be taught in English, see the appropriate application catalogue.

*Main field of studies*

Economics

*Depth of study relative to the degree requirements*

G1F, First cycle, has less than 60 credits in first-cycle course/s as entry requirements

### **Learning outcomes**

#### **Knowledge and understanding**

Students shall understand:

- simple rules of algebra,
- the definition of the derivative and its geometrical interpretation,
- basic rules of differentiation,
- the general concept of a function and the elementary functions,

## Competence and skills

Students shall have the ability to independently:

- characterise, solve, and interpret simple unconstrained and constrained optimisation problems containing single or multiple choice variables,
- perform basic matrix and vector operations,
- solve linear systems of equations,
- present and discuss their mathematical knowledge with various target groups.

## Judgement and approach

Students shall have the ability to pursue further studies in economics. Students should also be able to use their mathematical knowledge to assimilate economic theory and methods.

## Course content

The course consists of basic mathematical methods that lay a foundation for further studies and applied work in economics. These tools are necessary for the formulation, analysis and understanding of economic models and issues.

The following will be treated in the course. Elementary algebra, sets, equations, limits, continuity, the derivative, the concept of a function, the elementary functions, the extreme-value theorem, extreme values of a function, partial derivatives, constrained optimisation, the method of Lagrange multipliers, vectors, linear systems of equations and integrals.

## Course design

1. Teaching: Tuition consists of lectures, supervised exercises and computer exercises.

## Assessment

1. Examination: The examination consists of a written exam that takes place at the end of the course as well as home assignments during the course. There will be further opportunities for examination close to this date. The home assignments will be graded, and the marks carried forward to examinations taken the same term.
2. Limitations on the number of examination opportunities: –

The University views plagiarism very seriously, and will take disciplinary action against students for any kind of attempted malpractice in connection with examinations and assessments. Plagiarism is considered to be a very serious academic offence. The penalty that may be imposed for this, and other unfair practices in examinations or assessments, includes suspension from the University for a specified period.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with

a form of examination equivalent to that of a student without a disability.

*Subcourses that are part of this course can be found in an appendix at the end of this document.*

## Grades

Marking scale: Fail, E, D, C, B, A.

1. Grading: Grade (Definition), Points or percentage out of maximum points, Characteristic

A (Excellent), 85–100, A distinguished result that is excellent with regard to theoretical depth, practical relevance, analytical ability and independent thought.

B (Very good), 75–84, A very good result with regard to theoretical depth, practical relevance, analytical ability and independent thought.

C (Good), 65–74, The result is of a good standard with regard to theoretical depth, practical relevance, analytical ability and independent thought.

D (Satisfactory), 55–64, The result is of a satisfactory standard with regard to theoretical depth, practical relevance, analytical ability and independent thought.

E (Sufficient), 50–54, The result satisfies the minimum requirements with regard to theoretical depth, practical relevance, analytical ability and independent thought, but not more.

U (Fail), 0–49, The result does not meet the minimum requirements with regard to theoretical depth, practical relevance, analytical ability and independent thought. Students have to receive a grade of E or higher in order to pass a course.

2. Weighting grades from different parts of the course: –

3. Grading scales for different parts of the course: –

## Entry requirements

At least 20 ECTS-credits from the introductory course in economics, of which at least 7.5 ECTS-credits in microeconomics are needed for admission till all intermediate courses in economics.

## Further information

1. Transitional regulations: This course replaces NEKG32 "Mathematical and Statistical Methods for Economics".

2. Limitations in the period of validity: –

3. Limitations: This course may not be included in the same degree as the sub-course in mathematical and statistical methods for economics within NEKA21 "Economics: Level 2", the sub-course in mathematical and statistical methods for economics within NEK231 "Economics: General Course", the sub-course in mathematical and statistical methods for economics within NEKG11 "Economics: Level 2", the course NEKB42 "Mathematical and Statistical Methods for Economics", NEK619 "Mathematical and Statistical Methods for Economics", NEKB22 "Mathematical and Statistical methods for Economics" or NEKG32 "Mathematical and Statistical methods for Economics".

4. Similar courses: This course has the same contents as the sub-course in mathematical and statistical methods for economics within NEKG11 "Economics: Level 2".

5. Limitations in renewed examination: –

## Subcourses in NEKG33, Economics: Mathematical Methods for Economics

Applies from V13

1201 Mathematical Methods for Economics, 7,5 hp  
Grading scale: Fail, E, D, C, B, A