Exchange programme Vrije Universiteit Amsterdam

Vrije Universiteit Amsterdam - Exchange programme Vrije Universiteit Amsterdam - 2024-2025

Exchange

Vrije Universiteit Amsterdam offers many English-taught courses in a variety of subjects, ranging from arts & culture and social sciences, neurosciences and computer science, to economics and business administration.

The International Office is responsible for course approval and course registration for exchange students. For details about course registration, requirements, credits, semesters and so on, please [visit the exchange programmes webpages](#).

Calculus 1

Course Code	X_400635
Credits	6
Period	P1
Course Level	100
Language Of Tuition	English
Faculty	Faculty of Science
Course Coordinator	dr. T.O. Rot
Examiner	dr. T.O. Rot
Teaching Staff	dr. T.O. Rot
Teaching method(s)	Seminar, Lecture, Written partial exam

Course Objective

At the end of this course the student is able to

- calculate limits, using several methods like l'Hopitals rule or the squeeze theorem
- calculate derivatives and find local extreme values
- calculate integrals, using several methods like the substitution method, integration by parts, partial fraction expansion
- verify if a function is continuous, differentiable, Riemann-integrable
- calculate and apply a Taylor polynomial
- formulate and apply several important theorems for continuous and/or differentiable functions, like the Intermediate Value Theorem, the Mean Value Theorem and the Fundamental Theorem of Calculus

Course Content

Real functions of one variable. Topics that will be treated are:

1. Preliminaries, Real functions, Trigonometric functions
2. Limits, Continuity, Intermediate Value Theorem
3. Transcendental Functions, Inverse Functions
4. Differentiation, Chain Rule, Mean Value Theorem
5. Applications of Differentiation, Extreme Values, l'Hôpital's Rule, Taylor Polynomial
6. Integration, Fundamental Theorem of Calculus, Improper Integrals

Additional Information Teaching Methods

Lectures (3 x 2 hours per week) and exercise classes (2 x 2 hours per week).

Method of Assessment

There is a midterm exam and a final exam. The midterm exam makes up for 40% and the final exam makes up for 60% of the final grade. There is one retake which covers all topics for the midterm exam and the final exam. Midterm exam or final exam cannot be retaken separately!

Literature

Adams and Essex, Calculus: A Complete Course, 10th edition, Pearson 2021, ISBN-13: 9780135732588. Older editions of the book are also fine, but please make sure that the numbering of the exercises match.

Additional Information Target Audience

1 BA