The Hebrew University of Jerusalem

Syllabus

CALCULUS A (EXTENDED) - 71740

Last update 16-09-2017

HU Credits: 7

Degree/Cycle: 1st degree (Bachelor)

Responsible Department: environmental economics & management

Academic year: 0

Semester: 1st Semester

Teaching Languages: Hebrew

Campus: Rehovot

Course/Module Coordinator: Dr. Anna Gourevitch

Coordinator Email: anna.gourevitch@mail.huji.ac.il

Coordinator Office Hours: Wednesday 13:00-14:00

Teaching Staff:

Dr.

Course/Module description:
  The real numbers; Functions; Limits; Derivatives; Mean Value Theorem; Linear Approximation; Investigation of functions.

Course/Module aims:
  Introduce the functions of a single variable; Define limits; Define the derivative; To know the fundamental theorems of the differential calculus; Investigate functions.

Learning outcomes - On successful completion of this module, students should be able to:
  Calculate limits of single variable functions; Calculate derivatives; Investigate a function; Prove simple mathematical proofs using the fundamental theorems of the Calculus.

Attendance requirements(%):
  100

Teaching arrangement and method of instruction: Lecture and exercises

Course/Module Content:
  -Introduction-The real numbers :groups of numbers- Sup , Inf , Max ,Min.
The function-Domain ,Image ,One to one functions ,Bounded functions ,-
 Monotonic functions ,Odd and Even functions , Inverse functions ,Periodic functions,

Elementary functions.-Limits.
-Continuity-The theorem of Cauchy .The Theorem of Weirtrass .
-Derivatives :Differentiation rules ,The chain rule ,Derivatives of inverse functions.
Higher order derivatives .The theorems of Fermat , Rolle ,Lagrange and L'Hopital.
Critical points and extreme values .Convexity ,Concavity .The tangent line approximation .Taylor's formula.

Required Reading:
 חוברת סיכומים ותרגילים:
 חדו"א מורחב א' + ב' - קרביצקי וריבלין- רחובות תשע"ו

Additional Reading Material:
סטוף יונתן -מתמטיקה לכלכלנים א'(1988). הוצאת אקדמון , ירושלים .
אנטון הוארד חדו"א א'-האוניברסיטה הפתוחה.
קון וזעפרני - חדו"א 1 + 2 (1993). הוצאת בק,

Course/Module evaluation:
End of year written/oral examination 100 %
Presentation 0 %
Participation in Tutorials 0 %
Project work 0 %
Assignments 0 %
Reports 0 %
Research project 0 %
Quizzes 0 %
Other 0 %

Additional information: