The Hebrew University of Jerusalem

Syllabus

ADVANCED INFINITESIMAL CALCULUS (1) - 80315

Last update 19-10-2017

HU Credits: 6

Degree/Cycle: 1st degree (Bachelor)

Responsible Department: mathematics

Academic year: 2018

Semester: 1st Semester

Teaching Languages: Hebrew

Campus: E. Safra

Course/Module Coordinator: Prof. Michael Hochman

Coordinator Email: mhochman@math.huji.ac.il

Coordinator Office Hours: By appointment.

Teaching Staff:

Prof Raz Kupferman
Mr. Chapman Michael

Course/Module description:
Advanced course in calculus and analysis, focusing on metric spaces, normed spaces, and multivariate calculus

Course/Module aims:
Same as in learning outcomes.

Learning outcomes - On successful completion of this module, students should be able to:
Ability to prove and apply the theorems presented in the course.

Ability to understanding and explain the subjects taught in the course.

Ability to apply correctly the mathematical methodology learned in the course.

Attendance requirements(%):
0

Teaching arrangement and method of instruction: Lecture + exercise

Course/Module Content:
Metric and normed spaces. Compactness and completeness. The normed space C(K). Equicontinuity and the Arzela-Ascoli theorem. Seperailit. Derivative of a path, differential geometry of paths, existence and uniqueness of solution of ODEs. Functions between Euclidean spaces, partial derivatives, differentiability, Taylor expansion, classification of critical points via the Hessian, inverse function theorem, implicit function theorem, Lagrange multipliers.

Required Reading:
none

Additional Reading Material:
Advanced Infinitesimal Calculus" Part I by J. Lindenstrauss (in Hebrew)

Course/Module evaluation:

End of year written/oral examination 90 %
Presentation 0 %
Participation in Tutorials 0 %
Project work 0 %
Assignments 10 %
Reports 0 %
Research project 0 %
Quizzes 0 %
Other 0 %

Additional information:

none