האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

The Hebrew University of Jerusalem

Syllabus

Functional analysis - 80427

Last update 31-08-2021

HU Credits: *2.5*

Degree/Cycle: *1st degree (Bachelor)*

Responsible Department: *Mathematics*

Academic year: *0*

Semester: *2nd Semester*

Teaching Languages: *Hebrew*

Campus: *E. Safra*

Course/Module Coordinator: *Prof Evgeny Strahov*

Coordinator Email: *strahov@math.huji.ac.il*

Coordinator Office Hours:

Teaching Staff:

Prof Evgeny Strahov

Course/Module description:
Introduction to functional analysis

Course/Module aims:
To be familiar with basic definitions, examples, and theorems of functional analysis.

Learning outcomes - On successful completion of this module, students should be able to:
On successful completion of the course students will know basic definitions, examples and theorems of functional analysis, with emphasis on the space of continuous functions on an intervals and Fourier series.

Attendance requirements(%):
0

Teaching arrangement and method of instruction: Lecture+recitation

Course/Module Content:
1) Infinite-dimensional normed spaces, examples, equivalence.

2) Totally bounded sets.
Equicontinuity and the Arzela-Ascoli theorem.

3) Completion of normed spaces.

4) The Baire theorem and the existence of continuous nowhere differentiable functions.

5)The Weierstrass approximation theorem for C[0,1]. The Stone-Weierstrass theorem.

6)Infinite dimensional inner product spaces. Complete orthonormal systems. The Parseval equality.

7) Fourier series, Fejer and Dini kernels, poinwise and uniform convergence of Fourier series.

Required Reading:
no

Additional Reading Material:
no

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:
Required course in all mathematics BSC degrees except joint math-physics.
Prerequisites: 80415