

Direzione Innovazione e Internazionalizzazione

> ID VP079_MAT

Visiting Professor Program Academic Year 2023/2024

TEACHING COMMITMENT: 24 hours

COURSE TITLE Topics in Mathematical Logic: functional analysis

TEACHING PERIOD 2nd term

SCIENTIFIC AREA Mathematical Logic

LANGUAGE USED TO TEACH English

COURSE SUMMARY

Hilbert spaces and Banach spaces, and their linear operators; spaces of measurable functions (including classical ℓ_p and L_p spaces); the Banach-Steinhaus, Hahn-Banach and Open Mapping theorems; representation results (theorems of Riesz and Banach-Mazur); compactness results (Arzelà-Ascoli and Alaouglu's Theorem); separability, reflexivity, and stability à la Krivine. Time permitting, the continuous-logic viewpoint of Banach structures and Gowers' Conjecture on "non-pathological" Banach norms.

LEARNING OBJECTIVES

Recognize inner product spaces, explain inner product spaces, recognize Hilbert spaces, explain the normed space which is not an inner product space, identify orthogonal sets, understand the notion of orthogonal complement and the decomposition of the space, explain total sets, explain main

theorems for normed spaces, explain Hahn -Banach teorem, identify open mapping theorem, explain closed gragh theorem.

TUTORSHIP ACTIVITIES

N/A

LAB ACTIVITIES

OTHER ACTIVITIES BESIDES THE COURSE N/A

VISITING PROFESSOR PROFILE

Demonstrable experience in analysis and mathematical logic established through research publications, teaching, and student supervision.

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