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 $\ell_p$ 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 theorem, identify open mapping theorem, explain closed graph theorem.

TUTORSHIP ACTIVITIES
N/A

LAB ACTIVITIES
N/A

OTHER ACTIVITIES BEIDES THE COURSE
N/A

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

CONTACT REFERENT
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