

Doctoral Course 2021

Title: *Boolean Algebras and measure theory*

Professor: Prof. Hector Freytes

Hours: 20 ore.

Chronogram: 10 lessons of 2hs. Starting on 4 May, 2021 and continues every Tuesday until 6 July, 2020.

Modality: online and in presence by using Ms-teams platform.

Short description and program: The subject of the course is to study the Boolean algebra structure in measure theory.

The program of course is as follows:

Part 1: Boolean Algebras

1. *Lattice order structure*
2. *Boolean algebras as bounded distributive complemented lattice*
3. *Sigma-complete and complete Boolean algebras*
4. *Powerset and sigma algebras*

Part 2: Measure spaces

1. *Measure spaces*
2. *Complete measure spaces*
3. *Subadditive functions*
4. *Outer measures*
5. *Caratheodory Extension Theorem*
6. *Han Extension Theorem*
7. *The element of Lebesgue measure.*

Preliminary knowledge: it is needed elementary notions of algebra and calculus of several variables.

Bibliography

[1] Burris, S., Sankappanavar, H.P.: A Course in Universal Algebra. Graduate Text in Mathematics, vol. 78. Springer, New York (1981)

[2] Halmos P. Lectures on Boolean Algebras, D. Van Nostrand Company, Inc, Princeton, New Jersey, (2013).

Language: English or/and Italian.