**Logic and Set Theory**

Prof. Marco Degiovanni

***COURSE AIMS AND INTENDED LEARNING OUTCOMES***

To teach students the fundamentals of Zermelo-Fraenkel set theory.

At the end of the course, students will have acquired a basic knowledge of set theory as a formal hypothetical-deductive system based on mathematics as a whole.

***COURSE CONTENT***

- Zermelo-Fraenkel axiomatic set theory. Zorn's lemma. Well ordering. Ordinal numbers. Cardinal numbers.

- The set of finite cardinal numbers. Axioms of Peano and first consequences. Natural numbers. Construction of the set of real numbers.

***READING LIST***

P. R. Halmos, *Teoria elementare degli insiemi,* Feltrinelli*, Milan,* 1976.

G. Lolli, *Introduzione alla logica formale,* *Il Mulino, Bologna,* 1991.

G. Lolli, *Teoria assiomatica degli insiemi,* *Boringhieri, Turin,* 1974.

P. Suppes, *Axiomatic set theory,* *Van Nostrand Co.*, New York, 1969.

P. Suppes, *Introduction to logic,* *Van Nostrand Co.*, New York, 1957.

Lecture notes are also handed out on the various course subjects.

***TEACHING METHOD***

Lectures.

***ASSESSMENT METHOD AND CRITERIA***

At the end of the course there will be an oral test aiming to verify students’ learning outcomes.

The oral test aims to verify the student’s level of assimilation of the concepts, results and procedures illustrated throughout the Logic and Set Theory course. Students will be thus asked to expose and discuss some of the points of the syllabus; they may also be asked to identify any connections between the several parts of the syllabus itself. The assessment of the oral test will take into consideration the following aspects: the accuracy of the illustrated procedures, their logical and methodological rigour, the explanatory efficacy and accuracy. The final evaluation will also reward the candidate’s assimilation of the concepts and their own personal elaboration.

***NOTES AND PREREQUISITES***

As it is a course on the foundations of mathematics, there are no specific prerequisites other than a familiarity with the formal aspects of mathematics itself.

*Further information can be found on the lecturer's webpage at http://docenti.unicatt.it/web/searchByName.do?language=ENG or on the Faculty notice board.*