# . – Higher Algebra

## prof.ssa Clara Franchi

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

The aim of the course is to present to students the basic notions of the Theory of groups.

At the end of the course, a student is expected to know the fundamental concepts and results of the Theory of groups. He will be able to use the basic concepts and properties of groups to formulate logic deductions and solve easy exercises.

***COURSE CONTENT***

* Recall of the fundamental concepts and results: groups, subgroups, normal subgroups, quotients groups, groups homomorphisms, homomorphisms theorems, symmetric groups.
* Composition series and Jordan-Hölder Theorem.
* Group actions.
* Sylow’s Theorems and p-groups.
* Direct products, semi-direct products and central products of groups.
* Soluble and nilpotent groups.
* Components and generalised Fitting subgroup.
* The general linear group.

***READING LIST***

Notes given by the teacher.

***TEACHING METHOD***

Lectures and exercise sessions.

***ASSESSMENT METHOD AND CRITERIA***

The exam consists of an oral test on the programme of the course.

The aim of the exam is to test the degree of assimilation of the concepts, the results and the proofs presented during the Higher Algebra course, by means of an exposition and a discussion of some items of the program, not excluding references to prerequisites or links to different topics.

Evaluation of the oral test will be based on the correctness of the concepts and results presented, their logic and methodologic accuracy, and the correctness and strength of the exposition. Assimilation of the concepts and the personal reworking will also be considered.

***NOTES AND PREREQUISITES***

A sufficient knowledge of the basic concepts of the Algebra course and some interest in the topic are expected.

Prof. Clara Franchi meets the students in her room, before or after every lecture, and on appointment.

*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.*