# Introduction to Ring Theory (Introduzione alla teoria degli anelli)
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Department of Mathematics
Mathematics Second Level Course

It is open to students of the Master's degree in Mathematics (Laurea Specialistica), and bachelor's degree in Mathematics (Laurea triennale) and to students of the Master Mundus ALGANT program.

When: first trimester
Where: Department of Pure and Applied Mathematics, Padova.
Total number of hours: about 64 (8 credits).
Examination: exercises during the lectures, or oral.

## Description of the course
This is a first course in Rings, Modules and Category Theory.

## Program

Rings. Categories, functors. Modules and their homomorphisms, bimodules, submodules and quotients. Natural transformations. Sets of generators, maximal submodules, free modules and IBN rings, exact sequences, projective modules, tensor product of modules, projective modules over Z. Subcategories. Simple modules, semisimple modules, noetherian modules, artinian modules, modules of finite composition length. Semisimple artinian rings, artinian rings, the Jacobson radical, group representations, local rings, injective modules, projective covers, injective envelopes.

Text book: notes written by the lecturer and distributed by the lecturer.