

Faculty	Ingegneria
Bachelor	Mechanical Engineering (La Spezia)
Year/Semester	1/I e II

Course Title	Mathematical analysis 1
ID Course Code	56584
Course Credits (CFU)	12
Scientific-Disciplinary Sector	MAT/05
Course Type	mono-disciplinary course
Lecturer-in-charge	PARODI Franco

Learning Outcomes:

The aim is to achieve good knowledge of differential and integral calculus for one or two variables functions.

Course Organisation Details

Real numbers, decimal representation, errors.

Functions of one real variable. Elementary functions and their graphs. Composed and inverse functions. Limits of functions. Linearization, differentiation. Derivatives: monotone and convex functions. Continuous functions. Zeros of functions: bisection and Newton algorithms. Taylor polynomial, maxima and minima. Integral calculus of one variable functions. Linear and separable differential equations: graphical, numerical and formal integration.

Functions of two (or more) real variables.

Graphical representation of two real variables functions. Differential calculus for two (or more) real variables functions. Integral calculus for two variables functions. Optimization of two (or more) variables functions. Some elements in Laplace transform.

Assessment	hours
Lectures	104.0
Practice	0.0
Laboratory	0.0
Integrative activities	0.0

References

F. Parodi, T. Zolezzi, Appunti di Analisi matematica, ECIG, 2007

R. A. Adams, Calcolo differenziale 1 & 2, Casa Editrice Ambrosiana, 2007

A. Bacciotti, F. Ricci, Lezioni di Analisi Matematica 1 e 2, Levrotto & Bella, 1991.

M. Bramanti, C. Pagani, S. Salsa, Analisi matematica 1 e 2 Zannichelli, 2008

Organization and examinations

Written and oral examination, partly based on intermediate written test during the course.

Pre-requisites

None