

Several Complex Variables (Funzioni di più variabili complesse)
G. Zampieri
University of Padova, Italy
Faculty of di Mathematics, Physics and Natural Sciences
Mathematics Second Level Course

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

When: first trimester

Where: Department of Pure and Applied Maths, Padova.

Number of credits: 4

Examination: oral.

Program

(1). Analytic theory of partial differential equations. The theorem of elliptic regularity and hyperbolic propagation. Decomposition of the spectrum of singularities in plane and curvilinear waves. Non-characteristic boundary value problems: induced systems, traces. Propagation of waves in presence of obstacles: transversal and diffractive rays

(2). The Cauchy-Riemann system in domains of \mathbf{C}^n : domains of holomorphy and pseudoconvex domains. Harmonic and subharmonic functions: maximum principle, submean property. Integral representation of harmonic functions: Hopf's Lemma, the solution to the Riemann-Hilbert problem.

(3). The induced Cauchy-Riemann system on real submanifolds of \mathbf{C}^n . CR functions and CR mappings. Approximation by polynomials, CR extendibility, propagation of CR extendibility.

BACKGROUND

Basics on functions of one complex variable, differential calculus, differential geometry.

References

- 1) A. Boggess, **CR manifolds and the tangential Cauchy-Riemann complex**, CRC Press (1990).
- 2) L. Hörmander, **An introduction to complex analysis in several complex variables**, Van Nostrand Princeton (1990).
- 3) W. Rudin, **Real and complex analysis**, Mc Graw and Hill (1974).
- 4) R. Courant, D. Hilbert, **Methods of Mathematical Physics**, Vol. 2 J. Wiley New York (1989).