

**Titolo del corso:** Advanced Topics in Holomorphic Function Theory

**Docente:** Nicola Arcozzi

**Membro del collegio proponente:** Nicola Arcozzi

**Ore frontali di lezione:** 20

**Periodo di lezione:** January-March 2026

**Settore disciplinare del corso:** MATH-03/A Analisi matematica

**Tipologia di corso:** Base

**Modalità di verifica dell'apprendimento:** Homework sets and seminar

**Abstract del corso:** The course goes through some chapters of complex analysis in one variable, assuming the student is familiar with the basics of holomorphic theory: e.g. powers series, Cauchy-Riemann equations, meromorphic functions, and complex integration, integrals with residues. Measure theory, Fourier series and the basics of functional analysis, especially Hilbert spaces, are assumed to be known.

**Programma del corso:** Riemann mapping theorem and Carathéodory extension theorem; harmonic and sub-harmonic functions; zeros and growth of holomorphic functions;  $H^p$  spaces; Beurling's theorem on the invariant subspaces for the shift; ideals and Carleson's corona theorem; C. Fefferman's  $H^1$ -BMO duality theorem. The choice of the topics might somewhat vary depending on the interests and the background of the class.