

LOGO DELLA STRUTTURA PRIMARIA

COURSE: Matematiche Complementari			
ACADEMIC YEAR: 2017/2018			
TYPE OF EDUCATIONAL ACTIVITY: Affine			
TEACHER: Pasquale Petruccio			
e-mail: p.petruccio@gmail.com		website: ---	
phone: ---		mobile (optional): ---	
Language: Italian			
ECTS: 6	n. of hours: 48	Campus: Potenza Dept./School: Dipartimento di Matematica, Informatica ed Economia Program: Matematica (LM-40)	Semester: Second
EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES At the end of the course students will be able to: <ul style="list-style-type: none"> • define the system of natural numbers through Peano's axioms, describe its main algebraic properties and introduce the notion of numbering system; • extend natural numbers with integers and rational numbers; • describe Dedekind's and Cantor's constructions of real numbers; • extend real numbers to complex numbers and quaternions; • compare the cardinality of the sets of natural numbers, integers, rational numbers and real numbers; • define the notion of invariant with respect to a transformations group; • briefly expose the main ideas of Klein's Erlangen Program. 			
PRE-REQUIREMENTS Basic algebra: elementary set theory, relations and functions, main algebraic structures (monoid, group, ring, field)			
SYLLABUS 1. Natural numbers and numbering systems (8 hours) 2. Integers and basic arithmetic (6 hours) 3. Rational numbers (4 hours) 4. Irrational numbers, real numbers and the continuum (8 hours) 5. Complex numbers and quaternions (6 hours) 6. Axiomatic approach to Euclidean geometry: from Euclid to Hilbert (8 hours) 7. The abstract geometrical space: coordinates, geometries and transformations groups, Erlangen Program (8 hours)			
TEACHING METHODS Theoretical lessons			
EVALUATION METHODS Oral examination			
TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL Pensare in Matematica. G. Israel, A. Millán Gasca. Zanichelli 2012			
INTERACTION WITH STUDENTS Appointment on request, at the end of each lesson and via e-mail			
EXAMINATION SESSIONS (FORECAST)¹ Any month, except August.			
SEMINARS BY EXTERNAL EXPERTS NO			
FURTHER INFORMATION ---			

¹ Subject to possible changes: check the web site of the Teacher or the Department/School for updates.