



HIGHER GEOMETRY

Enrollment year	2018/2019
Academic year	2018/2019
Regulations	DM270
Academic discipline	MAT/03 (GEOMETRY)
Department	DEPARTMENT OF MATHEMATICS "FELICE CASORATI"
Course	MATHEMATICS
Curriculum	PERCORSO COMUNE
Year of study	1°
Period	1st semester (01/10/2018 - 18/01/2019)
ECTS	6
Lesson hours	48 lesson hours
Language	Italian
Activity type	ORAL TEST
Teacher	BONSANTE FRANCESCO (titolare) - 9 ECTS
Prerequisites	The contents of the Algebra 1, Geometry 1 and 2, Linear Algebra courses and of the Analysis courses of the first two years of the Laurea in Mathematics curriculum
Learning outcomes	The course is an introduction to the basic concepts and methods of differential geometry
Course contents	<p>Differentiable manifolds: tangent and cotangent spaces, vector fields and differential forms, vector fields and coordinates: the Frobenius theorem, Lie groups and Lie algebras.</p> <p>Topics in differential topology: Sard's lemma, the deRham theorem.</p> <p>Riemannian geometry: riemannian manifolds and Levi-Civita connections, curvature, geodesics, completeness, the theorems of Hopf-Rinow and Whitehead; Jacobi fields.</p> <p>Complex manifolds (if time allows): holomorphic functions of several complex variables and their basic properties, meromorphic functions,</p>

	complex manifolds, Kähler manifolds
Teaching methods	Lectures
Reccomended or required readings	<p>Notes by Gian Pietro Pirola.</p> <p>Frank Warner: "Foundations of differentiable manifolds and Lie groups". Graduate Texts in Mathematics, 94. Springer-Verlag, New York-Berlin.</p> <p>Manfredo Perdigao Do Carmo: "Riemannian Geometry", Birkhaeuser.</p> <p>Boothby, William M.: "An introduction to differentiable manifolds and Riemannian geometry". Pure and Applied Mathematics, No. 63. Academic Press, New York-London, 1975.</p> <p>Th. Broecker and K. Jaenich: "Introduction to differential topology".</p> <p>Milnor, J.: "Morse theory". Annals of Mathematics Studies, No. 51 Princeton University Press, Princeton, N.J. 1963.</p> <p>D. Huybrechts: "Complex geometry. An introduction". Universitext. Springer-Verlag, Berlin, 2005.</p>
Assessment methods	Oral exam
Further information	Oral exam
Sustainable development goals - Agenda 2030	\$ b legenda sviluppo sostenibile