



## GEOMETRY INSTITUTIONS

<b>Enrollment year</b>	2018/2019
<b>Academic year</b>	2018/2019
<b>Regulations</b>	DM270
<b>Academic discipline</b>	MAT/03 (GEOMETRY)
<b>Department</b>	DEPARTMENT OF MATHEMATICS "FELICE CASORATI"
<b>Course</b>	MATHEMATICS
<b>Curriculum</b>	PERCORSO COMUNE
<b>Year of study</b>	1°
<b>Period</b>	1st semester (01/10/2018 - 18/01/2019)
<b>ECTS</b>	9
<b>Lesson hours</b>	72 lesson hours
<b>Language</b>	Italian
<b>Activity type</b>	ORAL TEST
<b>Teacher</b>	BONSANTE FRANCESCO (titolare) - 9 ECTS
<b>Prerequisites</b>	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
<b>Learning outcomes</b>	The course is an introduction to the basic concepts and methods of differential geometry
<b>Course contents</b>	<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
<b>Teaching methods</b>	Lectures
<b>Reccomended or required readings</b>	<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>
<b>Assessment methods</b>	Oral exam
<b>Further information</b>	Oral exam
<b>Sustainable development goals - Agenda 2030</b>	<a href="#">\$ b  legenda sviluppo sostenibile</a>