



HIGHER GEOMETRY

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| Enrollment year | 2017/2018 |
| 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 | 2° |
| 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> |

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| | 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 | Sibl legenda sviluppo sostenibile |