

# ICTP DIPLOMA PROGRAMME IN MATHEMATICS 2014-15

## Differential Geometry

C. Arezzo (20 lectures : 30 hrs)

### - Curves in euclidean space:

- 1) Definition and comments;
- 2) curvature;
- 3) torsion.
- 4) Frenet Formulae and Fundamental Theorem of local theory of curves.

### - Regular Surfaces:

- 1) Definition and comments
- 2) Tangent plane and differential of a map
- 3) Vector fields and Gauss map
- 4) First and second fundamental form
- 5) Gauss and Mean curvature
- 6) Theorema Egregium
- 7) Geodesics

### - Introduction to manifolds:

- 1) Definition and comments
- 2) Examples and vector bundles
- 3) Covariant derivative