

ICTP DIPLOMA PROGRAMME IN MATHEMATICS 2012-13

Algebraic Topology

F. Villegas & L. Göttsche (10 lectures : 15 hrs)

Homotopy of paths. The fundamental group. Covering spaces, universal cover.
Fundamental groups of the circle

Simplicial homology. Singular homology. Homotopy invariance. Exact sequences.
Excision. Mayer-Vietoris sequence. Homology groups of spheres, and projective
spaces.

Applications of homology: Brouwer Fixed-point theorem

TEXTBOOKS:

A. Hatcher, *Algebraic Topology*, Cambridge University Press, Cambridge 2002.

J.R.Munkres, *Topology, Second Edition*, Prentice Hall, Upper Saddle River, NJ, 2000.

J.W.Vick, *Homology Theory: An Introduction to Algebraic Topology*,
Second Edition, Graduate Texts in Math. 145, Springer-Verlag, Berlin-New York, 1994.