

Course Title	TOPOLOGY IN CONDENSED MATTER
Instructor	Angelo Carollo
N of hours	15
Description	Introduction to topological phenomena in condensed matter physics
Contents	<ul style="list-style-type: none"> • Band structure, Topology and Symmetry. Bulk-Edge correspondence • Topological Superconductors, Majorana Fermions and 4p Josephson effect. Andreev Reflection. • Brading and Topological quantum computation • Thouless pumps and winding invariant. • Quantum Hall effect. Landau levels, edge states. • Quantum Hall Effect on the lattice and Dirac Hamiltonian. • Haldane model, Berry curvature, and Chern number, Pontryagin Invariant. • Chern insulators, Spin-Hall effect. • General approach to topological classification.