Summary
This course introduces statistical field theory, and uses concepts related to phase transitions to discuss a variety of complex systems (random walks and polymers, liquid crystals, disordered systems, information theory and error correcting codes).

Content
1. Introduction to statistical field theory
2. Random walks and self-avoiding polymers
3. Transition in liquid crystals
4. Information theory and error correcting codes
5. Disorded systems (glasses and jamming transition)

Learning Prerequisites
Recommended courses
Statistical Physics II

Learning Outcomes
By the end of the course, the student must be able to:
• Solve problems in complex systems

Transversal skills
• Assess one's own level of skill acquisition, and plan their on-going learning goals.

Teaching methods
Ex cathedra. Exercises in class

Assessment methods
written exam