

Master in Biophysics (POP Physics, UB)

## **EXPERIMENTAL TECHNIQUES IN BIOPHYSICS** (5 ECTS)

Provisionally, this document only details a list of topics and bibliography of the subject.

### **Contents:**

1. **Basic Techniques in Molecular Biology**
  - a. Centrifugation
  - b. Electrophoresis
  - c. PCR
2. **Analytic Ultracentrifugation**
3. **X-ray Diffraction**
4. **Optical and Electronic Microscopy**
5. **Spectroscopy**
  - a. Absorption spectroscopy
  - b. Emission spectroscopy: fluorescence
  - c. Lineal and circular dichroism
6. **Nuclear Magnetic Resonance**
7. **Mass Spectroscopy**
8. **Single-molecule Techniques**
  - a. Atomic force microscopy
  - b. Optical and magnetic tweezers
  - c. Fluorescence: FRET
9. **Microfluidics**
10. **Cellular Transport**
11. **Bioinformatics**

### **Bibliography:**

- Alberts et al., *Essential cell biology*, Garland publishing 1998.
- C. R. Calladine and H. R. Drew, *Understanding DNA*, Academic press 1997
- J. Watson et al, *Molecular biology of the gene*, Benjamin Cummings 2004
- K. E. Van Holde, W. C. Johnson and P. S. Ho, *Principles of Physical biochemistry*, Pearson education, 2006.