

MASTER DEGREE IN MICROBIOLOGY



STRUCTURAL BIOLOGY – Instituto Superior Técnico

Objectives:

Both at the introductory and advanced level, learn about the techniques and methodologies suitable for obtaining structural and dynamic information relevant to biological systems. These will be described in the framework of their application to biological systems at the molecular level. The students will learn about the potential and range of application of the different techniques.

Program:

- X-Ray diffraction in structural biology.
- Topology and dynamics of biological systems from absorption, fluorescence and IR.
- Monolayers and lipid membranes.
- Bioelectrochemistry of redox proteins.
- Application of NMR methodologies to biomolecules.
- Molecular simulation in biophysics.
- Advanced methodologies in optical and atomic force microscopies.

Evaluation methodology

The teaching methodologies are suitable regarding the aims. About practical work only demonstrations will be carried out, since the access to specialized instrumentation is limited.

Recommended bibliography:

- Spectroscopy for the Biological Sciences , G.G. Hammes, L.D. Spicer, 2005, John Wiley & Sons
- Structural Biology: Practical NMR applications , Q. Teng, 2005, Springer-Verlag, Inc.
- Biomolecular NMR Spectroscopy , J.N.S. Evans, 1995, Oxford University Press
- Structure and Dynamics of Biomolecules , E. Geissler, E. Fanchon, J.-L. Hodeau. J.-R. Regnard, P.A. Timmins, 2000, Oxford University Press
- Artigos científicos seleccionados sobre cada um dos temas tratados.