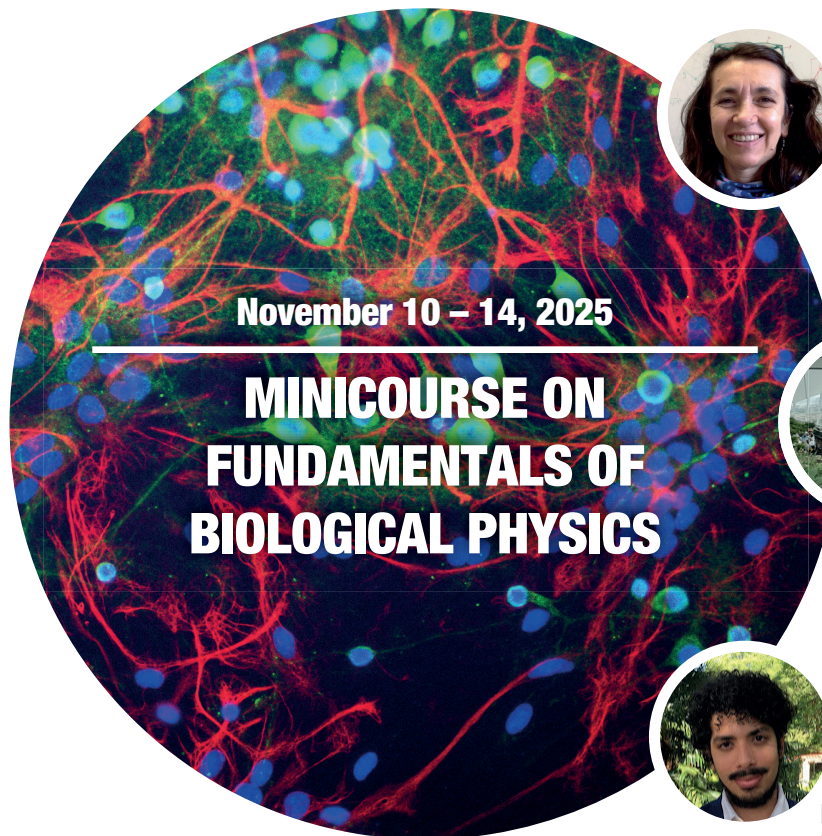




ICTP | International Centre for Theoretical Physics
SAIFR | South American Institute for Fundamental Research

Campus of IFT-UNESP – São Paulo, Brazil



November 10 – 14, 2025

MINICOURSE ON FUNDAMENTALS OF BIOLOGICAL PHYSICS



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Biological systems operate across multiple scales — from molecular signaling inside cells to population-level dynamics in ecosystems. Despite their complexity, many of these processes can be described and understood using concepts and tools from physics. In recent years, the interface between physics and biology has emerged as a vibrant research frontier, combining ideas from statistical mechanics, soft matter, information theory, and dynamical systems to tackle problems in cell biology, ecology, and collective behavior.

This minicourse will introduce key theoretical and computational approaches that have proven successful in modeling and analyzing biological systems. Topics will include diffusion and stochastic processes, phase separation in biological media, cellular signaling, active matter, and ecological interactions. The lectures will be complemented by hands-on sessions where students will work through problems and simulations under the guidance of the lecturers.

The minicourse is aimed at advanced undergraduate and early graduate students in physics or in biology with a strong quantitative background, but other interested students are also welcome to apply. No prior expertise in biological modeling is required.

There is no registration fee and limited funds are available for local expenses.

Application deadline:

October 1, 2025

**Online application and
more information:**

ictp-saifr.org/mfbp2025



serrapilheira

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