ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

Biologia Cellulare e Molecolare PhD Program

# *Biocrystallography*

*Theory and basics for the determination of the three-dimensional structure of biological macromolecules using X-ray crystallography*

## Learning outcomes and Course contents

*The 15-hour course will consist of a first theoretical section, followed by a practical computational session. In the first part, students will learn the basis of macromolecular crystallography, including principles of protein crystallization, properties of the X-ray radiation and its interaction with crystalline matter. Students will also acquire knowledge on the methods for the structural determination of biological macromolecules by X-ray diffraction. In the second part of the course, students will process experimental X-ray diffraction datasets collected on protein crystals. The resulting electron density maps will be used for the refinement of the protein model with the aim of determining the final X-ray structure.*

## Teaching methods

*The theoretical section will be in form of lectures. The practical session will involve the use of students' personal computers. Those who are interested in attending the course will receive additional information for the download and installation of dedicated software.*

## Assessment methods

Multiple-choice test

## How to attend

The course is aimed in particular at 1$^{st}$-year PhD students but can also be attended by 2$^{nd}$- and 3$^{rd}$-year PhD students.

*Students who are interested in attending the course are kindly asked to register at least 10 days before the beginning of the course (2$^{nd}$ of May 2025) by sending an email at the following address: luca.mazzei2@unibo.it , with subject line "Biocrystallography_PhD_2025". Students are also asked to indicate whether they will intend to participate in person or online (in person participation is strongly recommended). A valid TEAMS link will be provided to students who will attend the course online.*