



Syllabus

Towards Optical Nanoscopy - 93902

Last update 23-09-2019

HU Credits: 1

Responsible Department: Structural & Molecular Biochemistry

Academic year: 0

Semester: 1st Semester

Teaching Languages: English and Hebrew

Campus: E. Safra

Course/Module Coordinator: Dr Eitan Lerner

Coordinator Email: eitan.lerner@mail.huji.ac.il

Coordinator Office Hours:

Teaching Staff:

Dr. Eitan Lerner

Course/Module description:

The cell includes compartments observable by standard light microscopy, but also

proteins, nucleic acids, metabolites and their complexes of nanometer-scale, that are hard to be observed with good resolution.

The Nobel prize in Chemistry for 2014 was given for developments that allowed getting resolutions better than the light resolution limitation. Since then, the field has been updated to be Nanoscopy rather than Microscopy - observing cellular entities of single nanometer size. In this course we will learn about super-resolution microscopy, the different techniques and capabilities, and about what applications the near future holds for us.

Course/Module aims:

Learning outcomes - On successful completion of this module, students should be able to:

Understanding the principles of microscopy and super-resolution microscopy/nanoscopy and knowing the different methods available today.

Attendance requirements(%):

100

Teaching arrangement and method of instruction: Workshop

Course/Module Content:

Tuesday 22/10/2019: Introduction to microscopy & image creation; resolution & contrast.

Wednesday 23/10/2019: Fluorescence microscopy: confocal & nonlinear microscopy

Thursday 24/10/2019: Super-resolution microscopy & single molecule detection.

Required Reading:

Fundamentals of Light Microscopy and Electronic Imaging/ Douglas B. Murphy and Michael W. Davidson

Modern Biophysical Chemistry/ Peter Jomo Walla

Additional Reading Material:

Course/Module evaluation:

End of year written/oral examination 0 %

Presentation 0 %

Participation in Tutorials 100 %

Project work 0 %

Assignments 0 %

Reports 0 %

Research project 0 %

Quizzes 0 %

Other 0 %

Additional information:

The course will be graded passed/not passed based on presence in lectures.