

PhD Course in advanced microscopy and Biophotonics at DaMBIC, University of Southern Denmark  
22<sup>th</sup>-26<sup>th</sup> January 2018.

## **BMB207: Biophotonics (5 ECTS)**

STADS: 01010201

### **Level:**

PhD course

### **Prerequisites:**

Bachelor's degree in biology, chemistry, physics, molecular biology or medicine.

### **Responsible teachers:**

Jonathan R. Brewer, Lektor, Ph.d.

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### **Learning objectives:**

#### *Course introduction*

Bioimaging plays an important role in modern biosciences not only as a tool for research but also as a means to improve medical treatments. The main objective of this course is to provide the theoretical basis of bioimaging together with some “hands on” laboratory practice. The goal of the course is to teach the students general principles of fluorescence and light microscopy as well as to demonstrate principles behind advanced fluorescence and imaging techniques as well as a short introduction to image processing and analysis. There will be practical demonstrations and hands on exercises on all topics. The course is a five day intensive course taking place within one week.

There will be:

1. Lectures (3 days, 10 lessons)
2. Seminars on application of technique (3 seminars)
3. Hands on practical exercises
4. Individual experimental projects
5. The students prepare a presentation of the results
6. Students presentations

#### *Expected learning outcome*

At the end of the course the student should be familiar with:

- Wide field microscopy
- Laser scanning single-photon confocal microscopy
- Two-photon microscopy
- Spinning disk confocal microscopy
- Fluorescence Correlation Spectroscopy (FCS)
- Raster Image Correlation Spectroscopy (RICS)
- Atomic Force microscopy (AFM)
- Fluorescent Lifetime Imaging microscopy
- Coherent anti Raman scattering microscopy (CARS)
- Image analysis

**Evaluation:**

Oral examination, internal evaluation by teacher on pass/fail basis.

**Date of exam:**

The ordinary exam takes place at January 27, 2017

**Teaching method:**

Intro phase: 12 hours

Skills training phase: 25 hours, hereof:

- Tutorials: 8 hours

- Laboratory exercises: 17 hours

**Language:**

This course is taught in English.

**Price:**

6000 kr for non-SDU participants

**Registration:**

Max. 20 participants

Via SDU [SDU Student Self-Service](#)

Or contact Vita Solovyeva [vita@memphys.sdu.dk](mailto:vita@memphys.sdu.dk)