580402S BIOMEDICAL IMAGING METHODS (1 - 4 ECTS)
Spring 2015

Lectures (16 h):

April 8, 2015
12:15 – 13:00 Seppo Vainio: Introduction to biomedical imaging.
13:15 – 15:00 Renata Prunskaitė-Hyyryläinen: Basics of optical projection tomography (OPT) and its applications for ex vivo research.

April 10, 2015
13:15 – 15:00 N.N.: Basics of magnetic resonance imaging (MRI) and applications for ex vivo and in vivo research.

April 13, 2015
08:15 – 10:00 Simo Saarakkala: Basics of FTIR and Raman spectroscopy and their applications for ex vivo research.
10:15 – 11:00 Simo Saarakkala: Polarized light microscopy.

April 14, 2015
08:15 – 09:00 Simo Saarakkala: Basics of computed tomography (CT).
09:15 – 11:00 Sakari Karhula: Applications of micro-CT imaging for ex vivo and in vivo research.

April 15, 2015
12:15 – 14:00 Matti Kinnunen: Optical coherence tomography (OCT).
14:15 – 15:00 Zoltan Szabo: Ultrasound imaging of small animals.
15:15 – 16:00 Raija Sormunen ja Ilkka Miinalainen: Electron microscopy.

Demonstrations (8 h):

April 20, 2015
09:15 – 11:00 Demonstration I (4 groups)

April 21, 2015
09:15 – 11:00 Demonstration II (4 groups)

April 22, 2015
09:15 – 11:00 Demonstration III (4 groups)

April 23, 2015
12:15 – 14:00 Demonstration IV (4 groups)

Zoltan Szabo: Ultrasound imaging of small animals in vivo
Renata Prunskaitė-H.: Optical projection tomography ex vivo
Sakari Karhula: Micro-CT imaging ex vivo
Joonas Oinas: FTIR imaging ex vivo

**Practical exercise + report:**
Practical exercise will be conducted with the FTIR imaging microscope located at the Linnanmaa campus. It includes hands-on measurements and analysis of biological samples ex vivo. There is a possibility to measure and analyze your own tissue samples.

Times for the practical exercise will be agreed after the first lecture.

**Written final exam:**
Written final exam will be organized on May 8, 2015 at 09:00 – 12:00. It will be based on the materials given from lectures, demonstrations, and practical exercise. The exam will be graded in a scale of 1-5.

**Obtained credits:**
- Participating all the lectures: 1 ECTS
- +participating all the demonstrations: 2 ECTS
- +conducting the practical exercise and report: 3 ECTS
- +taking the final exam 4 ECTS