COURSE OUTLINE

Numerical course code | LTTO.00.002
Title | Environmental Remote Sensing I
Faculty/Department | LTTO Faculty of Science and Technology, Tartu Observatory
Amount of credits (1 ECTS = 26 hours) | 3 ECTS
Duration in semesters | 1
Final assessment | differentiated (A, B, C, D, E, F, not present)

Courses to which LTTO.00.002 is a compulsory prerequisite
LTTO.00.009 Remote Sensing of Environment II (3 ECTS)

Curricula containing this course
Physics (84703) | mas. 2019/2020

Objectives
To survey modern remote sensing methods and their possible applications in estimating and monitoring of environmental variables and to learn to apply the remote sensing methods.

Learning outcomes
The participants knows:
1. the main approaches used in modern remote sensing technologies (active and passive) and their application possibilities.
2. how to use remote sensing data to analyse and monitor environment
3. how to apply remote sensing data to describe various parameters and their change in vegetation, water and atmosphere
4. main functions to use image processing software SNAP and Google Earth Engine platform
5. main techniques for image processing
   - image classification
   - integrating remote sensing image with field measurements
   - change detection
   - timeseries
   - calculating various parameters/indexes

Brief description
Introduction into the physical fundamentals of modern remote sensing. The methods of remote sensing and their applications in estimating the parameters of vegetation, atmosphere and water bodies and of change detection are reviewed. As a practical work, data from Sentinel series satellites are analysed with SNAP software and data from Landsat archive is explored using Google Earth Engine platform.

Course is suitable for everyone independent from their specialization.