

Study programmes: Bachelor studies – Astronomy and Astrophysics			
Course name: Instruments and techniques of astrophysical observations			
Lecturers: Dragana Ilić			
Status: Compulsory			
ECTS: 7			
Attendance prerequisites: None			
Course aims: Acquiring general and specific knowledge of instruments and technique conducting astrophysical observations.			
Course outcome: Student has basic knowledge of instruments and techniques of astrophysical observations and is capable for scientific research in this field.			
Course content: Basics of acquiring astrophysical data. Properties of different observational data (photons, gravitational waves, cosmic rays, neutrino). Influence of Earth atmosphere to astronomical data. Active and adaptive optics. Properties of telescope optical elements. Telescope objectives, diffraction, and limiting angular resolution. Magnification, field of view, eyepiece. Telescope optical schemes. Telescope aberrations. Different telescope mounts. Gamma-ray and x-ray telescopes. Ultraviolet telescopes. Infrared telescopes. Radio telescopes. Neutrino telescopes. Properties of optical filters and classification. Spectrometers and basic properties, spectral resolution and light gathering power. Different design of spectrometers. Basics of optical prism (angular and linear dispersion, theoretical resolving power). Diffraction grating and theoretical resolving power. Fourier spectrometer. Atomic resonant spectrometer. Detectors. Main characteristics of detectors. Eye. Photographic emulsion. Photoelements. Photomultipliers. Detectors of gamma and x-rays. Detectors of infrared radiation. Detectors of radio radiation.			
Literature: 1. C.R. Kitchin “Astrophysical Techniques“, 2008, CRC Press 2. S.B. Howell “Handbook of CCD Astronomy“, 2000, Cambridge University Press 3. И. Винце “Колектори”, 2014 (у штампџ)			
Number of hours: 6	Lectures: 4	Tutorials: 2	
Teaching and learning methods: Group work			
Assessment (maximal 100 points)			
Course assignments	points	Final exam	points
Lectures	10	Written exam	
Exercises / Tutorials	15	Oral exam	50
Colloquia			
Essay / Project	25		