

Study programmes: PhD Studies – Astronomy and Astrophysics			
Course name: Modern instruments and methods in astronomy			
Lecturers: Stevo Šegan			
Status: Optional			
ECTS: 9			
Attendance prerequisites: None			
Course aims: Teaching students the development and application of the state of the art scientific and professional achievements in observational methods and data processing in astronomy and qualifying them for creative scientific work.			
Course outcome: After completing the course, student has advanced knowledge about modern astronomical instruments and methods and is capable to do independant scientific research.			
Course content: Introduction: general theory; basic equations; instruments and methods of ground and space astronomy; instruments of high and low energetic balance; worldwide telescopes and optical and radio interferometry; instruments and methods in the infrared part of electromagnetic spectrum; instruments and methods for cosmic x and gamma radiation; adaptive optics and interventions in the theory of instruments; systems of astronomical tracking and registration; combined systems; direction of development and comparisons; low energetic instrumental systems and gravitational telescopes.			
Literature:			
1. P. Bourke, Image and data processing, 2004, ESO Special report 2006.			
2. K Seidelman et al., Explanatory supplement of astronomical almanac, 1992			
3. S. Šegan, Astronomske efemeride, 2006.			
Number of hours: 10	Lectures: 4	Tutorials: 6	
Teaching and learning methods:			
Frontal, group, practical work			
Assessment (maximal 100 points)			
Course assignments	points	Final exam	points
Lectures	20	Written exam	-
Exercises / Tutorials	30	Oral exam	20
Colloquia	-	Written-oral exam	-
Essay / Project	30		