

The basics of spherical astronomy and astrometry - course description

General information	
Course name	The basics of spherical astronomy and astrometry
Course ID	13.7-WF-FizP-BSAA-S17
Faculty	Faculty of Physics and Astronomy
Field of study	Physics
Education profile	academic
Level of studies	First-cycle studies leading to Bachelor's degree
Beginning semester	winter term 2019/2020

Course information	
Semester	3
ECTS credits to win	6
Available in specialities	Astrofizyka komputerowa
Course type	obligatory
Teaching language	english
Author of syllabus	dr hab. Wojciech Lewandowski, prof. UZ

Classes forms					
The class form	Hours per semester (full-time)	Hours per week (full-time)	Hours per semester (part-time)	Hours per week (part-time)	Form of assignment
Lecture	30	2	-	-	Exam
Class	30	2	-	-	Credit with grade

Aim of the course

Introduction to spherical trigonometry, spherical astronomy and astrometry. Presentation of the Earth's atmosphere influence on the astronomical observations.

Prerequisites

The knowledge of planar trigonometry. Basic knowledge about the solar system mechanics and the stellar physics

Scope

Astronomical methods of describing the motions on the celestial sphere – the Sun, the Moon, planets and asteroids, Astronomical coordinate systems. Time in astronomy. The influence of earth's atmosphere on astronomical observations. The aberration of light and heliocentric parallax. Proper motions of celestial objects. Motions of planets and asteroids on the celestial sphere.

Teaching methods

Classic lecture and computational exercises during class

Learning outcomes and methods of their verification

Outcome description	Outcome symbols	Methods of verification	The class form
Student has basic knowledge about the spherical trigonometry. He is able to describe the motions of astronomical objects on the celestial sphere. He can define and characterize the coordinate systems used in astronomy. He can name and describe the various time calculations used in astronomy. He can point and explain the phenomena in the earth's atmosphere that can influence astronomical observations. He can define the proper motion of astronomical objects. He is able to explain the methods used to assess the orbital parameters of solar system bodies from the astrometric measurements	K1A_W01 K1A_W03 K1A_W05	an exam - oral, descriptive, test and other	Lecture
Student can solve basic problems appearing in spherical trigonometry. He is able to transform astronomical coordinates between the various coordinate systems. He is able to solve basic problems concerning the celestial sphere motions: calculation of the celestial objects coordinates as seen from a given spot on earth at a given time.	K1A_U01 K1A_U05 K1A_U08	- a written assignment - an evaluation test	Class

Assignment conditions

Lecture: Oral exam, passing condition – positive grade.

Class: written test – solving computational exercises; passing condition – positive grade.

Positive grade from class is needed to take part in the exam.

Final grade: average of the exam grade and the class grade (50/50).

Recommended reading

[1] R.M. Green, Spherical Astronomy”, Cambridge University Press 1999

[2] W. M. Smart, Textbook on spherical astronomy, Cambridge University Press 1999.

Further reading

Notes

Modified by dr hab. Piotr Lubiński, prof. UZ (last modification: 19-02-2020 17:11)

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