Course Unit Descriptor

Study Programme: Bachelor Academic Degree

Course Unit Title: General Astronomy

Course Unit Code: F18OAST

Name of Lecturer(s): Assistant Professor Dusan Marceta

Type and Level of Studies: Bachelor Academic Degree

Course Status (compulsory/elective): Elective

Semester (winter/summer): Summer

Language of instruction: English

Mode of course unit delivery (face-to-face/distance learning): Face-to-face

Number of ECTS Allocated: 6

Prerequisites: None

Course Aims:

Acquiring general and specific knowledge in astronomy as the basis for attending the advanced and specific courses in the field of astronomy and astrophysics.

Learning Outcomes:

After attending the course and passing the exam, a student should have developed:

- General abilities:

The student is familiar with basic phenomena and concepts in astronomy and astrophysics, knows basic physical laws and understands the basic physical processes that take place on various celestial bodies, primarily the stars and planets. The student also has knowledge about structure and dynamics of the systems of celestial bodies.

- Subject-specific abilities:

The student is able to solve basic problems in astronomy and attend advanced courses in astronomy and astrophysics.

Syllabus:

Theory

Spherical Astronomy: Celestial sphere and its elements. Coordinate systems. Specific positions of celestial bodies in the celestial sphere. Apparent motion of the Sun, Moon, and the planets. Phenomena that alter the apparent position of the celestial body (refraction, parallax, light aberration, precession, nutation, proper motion).

Time scales: Sidereal time. Mean time (zonal, official). The irregularities of the Earth's rotation. Ephemeris time. Atomic time. Dynamical time scales. Proper and coordinate time. Universal time. Calendars.

Celestial bodies and systems of celestial bodies: Planets, asteroids, comets, stars, solar system, star associations and clusters, galaxies, Milky Way.

Basics of celestial mechanics: Newton's law of universal gravitation. Kepler's laws of planetary motion. Problems of two and three bodies. Disturbances of planetary orbits and stability of the solar system. The influence of relativistic effects - motion of the perihelion of Mercury's orbit.

Practice

Transformations of the coordinate systems. Calculation of rising, setting and transit times. Determination of the apparent motion of inner and outer planets. Calculation of the effects of refraction, parallax, light aberration, precession, nutation and proper motion on the apparent positions of celestial bodies.

Required Reading:

1. R. Green, Spherical Astronomy, Cambridge University Press, 1977.

Weekly Contact Hours:	**Lectures:** 3	**Practical work:** 2

Teaching Methods:

Lectures, group and practical work.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	**Final exam**	points
Active class participation	10	written exam	30
Practical work	20	oral exam	40
Preliminary exam(s)		…….	
Seminar(s)			

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.