Study programmes: Master studies - Astronomy and Astrophysics

Course name: Introduction to extragalactic astronomy

Lecturers: Dragana Ilić

Status: Optional

ECTS: 8

Attendance prerequisites: None

Course aims: Acquiring advanced and specific knowledge in extragalactic astronomy.

Course outcome: Student has advanced knowledge in extragalactic astronomy: large scale structure, properties of extragalactic objects, observational aspects, catalogues and databases, and is capable for independent scientific research in this field.

Course content: Short history of extragalactic astronomy from the beginning of the 20th century. Structure and kinematics of the Milky Way. Properties of supermassive black holes and Sgr A*. Galaxy classification and Hubble sequence. Spiral galaxies. Spiral galaxy rotational curves. Elliptical galaxies. Fundamental relations (Tully-Fischer, Faber-Jackson, fundamental plane, luminosity function). Formation and evolution of galaxies. Close encounters and galaxy collisions. Active galactic nuclei (AGN). AGN classification, observational properties and unified model. Gravitational lenses. Galaxy clusters, classification and properties. Intergalactic matter. Cosmological distance scales. Methods for determining cosmological distances. Large scale structure. Contents, history and origin of the Universe. Cosmological redshift. Cosmological models. Cosmological parameters. Observational tests of cosmological models. Dark matter. Dark energy. Big Bang. Evolution of the Universe. Catalogues and databases (introduction to different databases, e.g. SDSS, NED, etc., data-mining, classification of extragalactic objects, k-correction, estimate of the mass of the supermassive black hole in AGN).

Literature:

1. Carroll and Ostlie, An Introduction to Modern Astrophysics
2. Binney, J. & Merrifield, M. 1998, Galactic Astronomy, Princeton University Press, Princeton, New Jersey
3. Sparke, L.S., Gallagher, J.S 2000, Galaxies in the Universe: An Introduction, Cambridge University Press, Cambridge
4 Ilić, D. 2006, Aktivna galaktička jezgra: primer galaksije Mrk 817, Zadužbina Andrejevic, Beograd

Number of hours: 7	**Lectures: 3**	**Tutorials: 4**	**Laboratory: -**	**Research: -**

Teaching and learning methods: Frontal / Group

Assessment (maximal 100 points)

Course assignments	**points**	**Final exam**	**points**
Lectures	-	Written exam	-
Exercises / Tutorials	30	Oral exam	50
Colloquia	-	Written-oral exam	-
Essay / Project	20		