NAME OF THE COURSE	Astrophysics II				
Code	PMP230	Year of study	DS-1		
Course teacher	doc.dr. sc. Koraljka Mužić	Credits (ECTS)	6.0		
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			30		30	
Status of the course	mandatory	Percentage of application of e-learning	25%		

COURSE DESCRIPTION

Course objective	After completing the course, students will be introduced to the types and classification of galaxies, the basics of potential theory, stellar kinematics and dynamics of stellar systems, the structure of the Milky Way and the formation and evolution of galaxies.
Course enrolment requirements and entry competences required for the course	
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	After mastering the material, the student is expected to know: 1. Types and classification of galaxies and their composition. 2. Methods of measuring extragalactic distances, and evidence for the existence of dark matter in galaxies. 2. Fundamentals of theory of potentials, dynamics of stellar systems and stellar kinematics. 3. Structure, kinematics and dynamics of the Milky Way; 4. The origin and evolution of galaxies.
Course content broken down in detail by weekly class schedule (syllabus)	1. Galaxies: classification and observations, composition of galaxies, stellar populations. 2. Tully-Fisher relation, Faber-Jackson relation, fundamental plane, Hubble law, methods for measuring the distance of galaxies, rotational curves and evidence for dark matter in galaxies. 3. Photometry and galaxy profiles, Sersic profile. Galaxy spectra. 4. Fundamentals of theory of potentials: spherical, flattened (axisymmetric) and triaxial systems. Fundamentals of stellar kinematics (orbits, integrals of motion, Jean's theorem, Boltzmann's and Jean's equations) and dynamics of stellar systems. 5. Milky Way: structure, kinematics and dynamics (detailed analysis), stellar populations. 6. The first stars, clusters of galaxies. 7. Active galaxies. Supermassive black holes. 8. Formation and evolution of galaxies: gravitational instability, hierarchical theory of structure formation, gas influence.
Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work ☒ independent assignments ☒ multimedia ☐ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	Attendance: at least 70% of the lectures and 70% of the exercise sessions.

Screening student work *(name the*	Class attendance	0	Research	0.6	Practical training	

proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Experimental work		Report		(Other)	
	Essay		Seminar essay	1	(Other)	
	Tests	1.2	Oral exam	2	(Other)	
	Written exam	1.2	Project		(Other)	

Grading and evaluating student work in class and at the final exam	The final grade will constitute of: (1) Written exam or tests (40%) (2) Oral exam (30%) (3) Seminar (20%) (4) Discussion of a selected science article (10%).

	Title	**Number of copies in the library**	**Availability via other media**
Required literature (available in the library and via other media)	[1] D. A. Ostlie and B. W. Carrol, “An Introduction to Modern Astrophysics”, 2nd ed. Addison Wesley (2017).		
	[2] P. Schneider, „Extragalactic Astronomy and Cosmology”, Springer (2015).		

Optional literature (at the time of submission of study programme proposal)	[1] Binney & Tremaine, “Galactic Dynamics”, Princeton University Press (1987). [2] Binney and Merrifield, "Galactic Astronomy", Princeton University Press (1988). [3] Sparke and Gallagher, "Galaxies in the Universe", Cambridge University Press.
Quality assurance methods that ensure the acquisition of exit competences	Exam results statistics and student evaluation through an anonymous survey at the end of the course. The survey is conducted according to the regulations of the University of Split.
Other (as the proposer wishes to add)	