



COURSE UNIT DESCRIPTION

Course unit title	Code
ASTROBIOLOGY	

Annotation
The aims of the course are: • to familiarize students with astrophysical, chemical, and biological conditions required for life to originate and evolve on planets and in the Galaxy; • to discuss the physical aspects of intelligent life in the Universe.

Lecturer(s)	Department, Faculty
Coordinating: Dr. Renata Minkevičiūtė Other: Dr. Edita Stonkutė	Physics Faculty, Institute of Theoretical Physics and Astronomy, Saulėtekio al. 3.

Study cycle	Type of the course unit
Second	Elective

Mode of delivery	Semester or period when it is delivered	Language of instruction
Lectures, seminars	2 nd semester	Lithuanian/English

Requisites	
Prerequisites: Astrophysics	Co-requisites (if relevant):

Number of ECTS credits allocated	Student's workload (total)	Contact hours	Individual work
5	140	64	76

Purpose of the course unit: programme competences to be developed		
The aims of the course are: to introduce the main topics of astrobiology and astrophysics; to demonstrate application of the research methods used in astrobiology and astrophysics. Competences to be developed: understanding of research publications, observation data, and modelling results.		
Learning outcomes of the course unit	Teaching and learning methods	Assessment methods
Understanding of astrobiology topics and problem	Lectures, seminars, autonomous work	Cumulative mark of seminars, written and oral examination
Understanding of the research methods, used in astrophysics and astrobiology, and ability to apply them in practice	Lectures, seminars, autonomous work	Cumulative mark of seminars, written and oral examination
Ability to analyse scientific publications and use their information in research	Lectures, seminars, autonomous work	Cumulative mark of seminars, written and oral examination

Course content: breakdown of the topics	Contact hours							Individual work: time and assignments	
	Lectures	Tutorials	Seminars	Workshops	Laboratory work	Internship/work	Contact hours,	Individual work	Assignments
1. Introduction to Astrobiology.	2		2				4	4	Literature analysis, preparations for seminars
2. Galaxy's life zone. Stars and star formation. Protoplanetary disks. Exoplanets. Life zone around stars.	8		8				16	16	Literature analysis, preparations for seminars
3. Chemical elements in the Universe. Organic molecules in the interstellar space. Water and organic matter in the Solar system and comets.	8		8				16	16	Literature analysis, preparations for seminars
4. Early evolution of the Earth, first life. Panspermia. Life in the Solar system.	8		8				16	20	Literature analysis, preparations for seminars
5. Drake equation. SETI and Fermi paradox.	6		6				12	20	Literature analysis, preparations for seminars
Total	32		32				64	76	

Assessment strategy	Weight %	Deadline	Assessment criteria
Seminar presentations	50	Semester	Understanding and disclosing of the chosen topics for seminars in the astrobiology context
Examination	50	Exam session	Understanding of the major course topics

Author	Publishing year	Title	Issue of a periodical or volume of a publication; pages	Publishing house or internet site
Required reading				
A. Longstaff	2014	Astrobiology: An Introduction	1 st edition	CRC Press Taylor & Francis Group
Recommended reading				
1. Ch. S. Cockell	2015	Astrobiology: Understanding Life in the Universe	1 st edition	Wiley-Blackwell
2. Ed. V. M. Kolb	2019	Handbook of astrobiology	1 st edition	CRC Press Taylor & Francis Group
3. Eds. M. Gargaud, W. M. Irvine	2015	Encyclopedia of Astrobiology	2 nd edition	Springer-Verlag Berlin Heidelberg