

Study programmes: PhD studies - Astronomy and Astrophysics			
Course name: Origin and evolution of planetary systems			
Lecturers: Bojan Novaković			
Status: Optional			
ECTS: 9			
Attendance prerequisites: None			
Course aims: Acquisition of advanced and specific knowledge about theories of formation and evolution of planetary systems			
Course outcome: Upon completion of the course, students will be able to demonstrate an understanding of advanced knowledge in formation and evolution of planetary systems. They will be able to critically analyse new models, and to understand relationships between the models. Finally, students will be able to apply knowledge to new situations to solve problems and to develop their own research program on those topics.			
Course content:			
1. Proto-planetary disks: the context of star formation, the structure of disks, passive disks, active accretion disks, the process of condensation			
2. Formation of the planets: formation of planetesimals, formation of planetary embryos, formation of gas giants, formation of Earth-like planets			
3. The evolution of planetary systems: migration of the gas disk, migration of planetesimals, interactions between the planets, the evolution of the planets due to the tidal forces			
4. The origin of the solar system: formation of inner planets, formation of Jovian planets, "Grand Tack" scenario, origin of the Earth's water			
Literature:			
1. Philip J. Armitage: 2013, Astrophysics of Planet Formation , Cambridge University Press			
2. Morbidelli, A., Lunine, J.I., O'Brien, D.P., Raymond, S.N., and Walsh, K.J: 2012, Building Terrestrial Planets , Annual Review of Earth and Planetary Sciences, vol. 40, pp. 251-275			
3. Sean N. Raymond and Alessandro Morbidelli: 2020, Planet formation: key mechanisms and global models . arXiv:2002.05756			
Number of hours: 10	Lectures: 4	Tutorials: 6	
Methods of teaching: Frontal, Group, Individual Research Approach			
Assessment (maximal 100 points)			
Course assignments	points	Final exam	points
Lectures	-	Written exam	-
Exercises / Tutorials	-	Oral exam	40
Colloquia	20	Written-oral exam	-
Essay / Project	40		