

<b>Study programmes:</b> BACHELOR STUDIES – Astronomy and Astrophysics			
<b>Course name:</b> Statistical Physics 2			
<b>Lecturers:</b> Milan Knežević and other lecturers			
<b>Status:</b> Optional			
<b>ECTS:</b> 5			
<b>Attendance prerequisites:</b> Mathematics 4.			
<b>Course aims:</b> Learn the main concepts, laws and methods of equilibrium statistical physics.			
<b>Course outcome:</b> Students will be able to apply the acquired knowledge and methods in studies of equilibrium many-body systems.			
<b>Course content:</b> Central limit theorem of probability theory; stable distributions;Levy distributions. Entropy of a distribution (Shannon entropy). Relative entropy of one distribution with respect to another one. Foundation of classical statistical physics; Liouville's equation. Elements of ergodic theories. Gibbs concept of statistical enesemble. Distributions for systems described by microcanonical , canonical and grand canonical enesembles; applications to ideal systems. Fluctuations of macroscopic quantities in canonical and grand canonical ensemble. Quantum statistics of identical particles; average occupation numbers for idel bose and fermi particles. Low-temperature thermodynamics of ideal fermions. Bose-Einstein condensation. Statistics of photon gas. Classical real gases; virial expansion. Density-density correlation functions. Models of magnetisme. Ising model; exact and mean-field analysis.			
<b>Literature:</b> <ol style="list-style-type: none"> <li>1. R. Patria, Statistical mechanics, 2nd ed. Butterworth-Heinemann (1996)</li> <li>2. F. Schwabl, Statistical mechanics, 2nd ed. Springer-Verlag (2006)</li> <li>3. M. Kardar, Statistical physics of particles, Cambridge University Press (2007)</li> <li>4. R. Kubo, Statistica physics, North-Holland (1965)</li> <li>5. M.Knežević, Lecture notes</li> </ol>			
<b>Number of hours:</b> 4	<b>Lectures:</b> 2	<b>Tutorials:</b> 2	<b>Laboratory:</b> -
<b>Research:</b> -			
<b>Teaching and learning methods:</b> Lectures, example exercises, consultations, homework assignments			
<b>Assessment (maximal 100 points)</b>			
<b>Course assignments</b>	<b>points</b>	<b>Final exam</b>	<b>points</b>
Lectures	-	Written exam	30
Exercises / Tutorials	10	Oral exam	50
Colloquia	-	Written-oral exam	-
Essay / Project	10		