



**SCHOOL PLAN**

<b>University Unit:</b> Engineering school		
<b>Graduate program:</b> Geospatial Sciences and Applications		
<b>Curse:</b> <input checked="" type="checkbox"/> Academic Master <input type="checkbox"/> Professional Master's <input checked="" type="checkbox"/> Doctorate degree		
<b>Discipline :</b> <b>Statistical Physics</b>		
<b>Teacher (s):</b> Sérgio Szpigel		
<b>Note:</b> <p>The Geospatial Science and Applications course is a multidisciplinary course encompassing research in Solar Physics, Terrestrial Solar Relations, Astronomy, Particle Physics and others. The course subjects reflect this multidisciplinary nature and often require more than one teacher, who specializes in topics of the same discipline.</p>		
<b>Workload:</b> 48 h	<b>Credits</b> 4	<input type="checkbox"/> Required <input checked="" type="checkbox"/> Optional <input type="checkbox"/> Elective
<b>Description:</b> Review of probability and random variables. Review of classical thermodynamics: Laws of thermodynamics, equation of state, thermodynamic potentials, Maxwell relations, phase equilibria. The formalism of statistical physics: number of states, Microcanonical, Canonical and Grand Canonical ensembles, partition function and its applications, equilibrium fluctuations. Gases: Classical ideal gas, Bose-Einstein gas and Fermi gas. Fermi gas and neutron stars. Out of equilibrium Phenomena: the Boltzmann equation and Boltzmann's H theorem. Liouville Theorem. Langevin equation. Focker-Planck equation.		
<b>Program content:</b>		
<b>Evaluation criteria</b> <p>According to the General Regulation of <i>Stricto Sensu</i> Post-Graduation, Art. 98: A - excellent: corresponds to grades in the interval between grades 9 and 10; B - good: corresponds to grades in the interval between grades 8 and 8.9; C - regular: corresponds to grades in the interval between grades 7 and 7.9; R - disapproved: corresponds to grades in the interval between degrees 0 and 6.9 "</p>		



**Bibliography:**

Salinas, S. R. A., Introdução à Física Estatística, 2a ed., Edusp, 2005.

Reif, F., Fundamental of Statistical and Thermal Physics, 2a ed., Waveland Press, 2008.

Reif, F., Statistical Physics, McGraw-Hill, 1967

Kubo, R., Statistical Mechanics, ed. Elsevier, 2004.

Pathria, R. K., Beale, P. D., Statistical Mechanics, 3rd ed., Pergamon Press, 2011.

**Schedule**

Date	Theme