QUI-42070: Termodinámica Avanzada

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Programa QUI-42070

Información general

HORARIO: 10h-12h Martes y Jueves
LOCAL: Aula Zamman

PROFESOR: Dr. Roger Coziol (rcoziol@astro.ugto.mx)

OFICINA: Departamento de Astronomía, en valenciana (al lado del CIMAT)
Apdo. Postal 144, Guanajuato, Gto. 36000
Teléfonos: 473 732- 9548 o 473 732- 9607, Gto.

Notas de cursos: **http://www.astro.ugto.mx/cursos/qui42070.htm**

Exámenes, Tareas y Evaluación

Tareas: aprox. una cada dos semanas

Exámenes: 2 exámenes parciales

Clasificación final:

Exámenes Parciales..... 60%
Tareas.....40%

Bibliografía

1. Sethna J. P., 2006:
   Statistical Mechanics:
   Entropy, Order Parameters, and Complexity
   Oxford University Press

2. **Dill, K. A. & Bromberg, S., 2003:**
   Molecular Driving Forces:
   Statistical Thermodynamics in Chemistry and Biology
   Garlan Science

3. McQuarrie D. A., 2000:
   Statistical Mechanics
   University Science Books

4. Sears, F. W. & Salinger, G. L., 1986, 3rd ed.:
   Thermodynamics, Kinetic Theory,
   And Statistical Thermodynamics
   Addison-Wesley

5. Tolman R. C. 1979:
   The Principles of Statistical Mechanics
   Dover

6. Kittel, C., 1969:
   Thermal Physics
   John Wiley & Sons

7. Yourgrau, W., van der Merwe, A. & Raw G. 1966:
   Treatise on Irreversible and statistical Thermophysics
   The MacMillan Company

8. Reif, F., 1965:
   Fundamentals of Statistical and Thermal Physics
   McGraw-Hill

Temario Termodinámica Avanzada

1. Introduction • Extremum principle • Heat work and energy • Entropy and the Boltzmann Distribution law	2. Thermodynamics • Thermodynamics driving forces • Free energies • Maxwell's relations & mixtures
3. Statistical mechanics Part 1 • Boltzmann Distribution law • Statistical mechanics of simple gases and solids Part 2 • Temperature, heat capacity • Chemical equilibrium • Equilibria between liquids, solids and gases Part 3 • Solutions and mixtures • Solvation and transfers of molecules between phases	4. Kinetics and electromagnetism Part 1 • Physical Kinetics • Chemical Kinetics and transition status Part 2 • Coulomb's law and electrostatic potential • Electrochemical equilibria Part 3 • Electrolytes • Molecular interactions
5. Phase transition and binding processes Part 1 • Phases transitions • Cooperativity Part 2 • Adsorption, Binding and Catalysis • Multi-site Cooperative Ligand Binding	6. Water • Unusual characteristics • Water as a solvent
7. Polymers • Polymer solutions • Polymer elasticity • Polymer confinement and deformations	8. Extra • Principles of probability • Series and approximations • Multivariate calculus • Legendre transform • Vector calculus