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1. Nature and subject of Biophysics.

Nature and subject of Biophysics. Sub-areas of Biophysics. Medical Biophysics. Brief view of the history and development of Biophysics.

2. Thermodynamics.

Subjects of thermodynamics. Basic thermodynamic terms. Thermodynamic system, variables, state, thermodynamic equilibrium, conjugate variables, total and partial derivatives.

3. Equilibrium thermodynamics.

The laws of thermodynamics. Mathematical formulation of the first law. Limitations of the first law. Second law. Phenomenological definition of entropy.

4. Order and probability information and entropy.

Thermodynamic probability and entropy. Boltzmann equation of entropy. Statistical definition of entropy. Shannon relation of information content. Maxwell demon.

5. Thermodynamic potentials.

Internal energy. Entalpy. Helmholtz free energy. Gibbs free energy. Chemical and electrochemical potentials.