Biophysics of respiratory system

1. Laws describing the behavior of gases:
   - Laplace's law,
   - Henry's law,
   - Dalton's law,
   - general gas equation.

2. Mechanics of breathing:
   - the breathing cycle, the role of the intrapleural and intrapulmonic pressure
   - lung compliance and its determinants, elastic properties of lung tissue
   - surface tension and pulmonary surfactants, alveolar pressure, volume relationship

3. Airflow and mechanical energy balance, the work of breathing

4. Respiratory gas exchange: behavior of gases in liquids, diffusion of gases in the lung,
determinants of gas diffusion