

## Chem 458: Statistical Thermodynamics

*Course description:* Relationship of macroscopic properties to molecular energy levels; the molecular basis of entropy and irreversibility. Probabilities, ensembles and fluctuations. Illustration of these ideas for selected applications.

### Course Goals

Develop an understanding of the concept of the Boltzmann distribution

Develop an understanding of how quantum statistics affect the filling of energy levels in condensed systems

Develop an understanding of the second law of thermodynamics and its applications

Develop an understanding of the concept and applications of chemical potential

Develop the ability to quantify macroscopic properties based on molecular energy levels

### Program Goals

Develop the ability to apply error analysis and determine significant figures.

Develop the ability to apply mathematics to chemistry.

Develop an understanding of the use of models, their premises, advantages and limitations.

Develop competence in problem solving.