

COURSE SYLLABUS

FALL 2015

COURSE: CHEM 573 Nature of the Condensed Phase in Chemistry

Proposed Course Outline

1. Introduction

- How does this course vary from CHEM 371 and CHEM 373.

2. Statistical Thermodynamics

- Boltzmann Statistics
- Bose-Einstein Statistics
- Fermi-Dirac Statistics
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3. Chemistry and crystal chemistry of condensed phases (Solids)

- Classification of solids
- Crystal Systems
- Miller Indices
- Diffraction Methods
- Bragg's Equation
- Application of Bragg's equation

4. Interpretation of Solid State Phase Diagrams

- Gibbs phase rule revisited
- Two Component Systems
- Three Component Systems

5. Transport Properties of Solids

- Insulators
- Semiconductors
- Ionic Conductors / Solid Electrolytes
- Mobility, Diffusion and Partial Conductivity of Ions and Electrons
- Experimental Determination of Partial Conductivities
- Galvanic Cells with Solid Electrolytes for Thermodynamic Investigations

Department Approval: Approved by Department Head

Date: August 21, 2015