MTSI - Materials Science

MTSI 500. Survey of Mat Science. 1 Credit. (1 Sem) F,S
Topics offered at the graduate level which are not covered in regular courses focusing on relevant specialty areas of materials science and engineering research. Students will participate in preparing and presenting discussion material.

MTSI 501. Advanced Materials Science I. 4 Credits. (4 Lec) F
Ionic and covalent bonding; quantum mechanical foundation of the cohesion of solids, evolution of band structure; three dimensional crystallography including point groups, stereographic projections, Bravais lattices and space groups; crystalline defects; and the foundation of defect chemistry in ionic crystals.

MTSI 502. Adv Materials Science II. 3 Credits. (3 Lec) S
Fundamental principles of how materials are designed and synthesized to achieve specific performance. The team taught course is broken up into three 12-lecture segments. Each segment will cover a specific topic including ceramics, polymers, magnetic materials, biomaterials, glasses, etc.

MTSI 511. Thermodynamics of Materials. 3 Credits. (3 Lec) F
Advanced thermodynamic principles are presented in the context of materials science and processing. The course focuses on the application of thermodynamic principles to materials structure, properties and processing. Subject matter includes elements of solution thermodynamics and application to equilibrium diagrams.

MTSI 512. Kinetics Phase Transformations. 3 Credits. (3 Lec) S
Treatment of mechanisms controlling the rates of structural/chemical changes in materials. Quantitative diffusion theory and the behavior of surfaces and interfaces. Nucleation and growth as a mechanism for phase transformations and application of phase transformations in materials manipulation and processing.

MTSI 551. Adv Material Character I. 2 Credits. (2 Lec) F

MTSI 552. Adv Material Character II. 3 Credits. (3 Lec) S

MTSI 594. Seminar. 1 Credit. (1 Lec; 1 cr max) F,S
Font Notice
This document should contain certain fonts with restrictive licenses. For this draft, substitutions were made using less legally restrictive fonts. Specifically:

Times was used instead of Adobe Garamond Pro.

The editor may contact Leepfrog for a draft with the correct fonts in place.