Goals for Exam 1: ECE 656, Thursday, September 21, 2017

Mark Lundstrom
Purdue University

The exam will be conducted in class. You should bring a calculator. **Only the Texas Instruments TI-30X IIS scientific calculator is allowed.** A sheet of key equations will be provided.

The exam will consist of 3-4 questions about some of the following topics.

1) A general understanding of band structure, quantum confinement, and heterostructures.

2) An ability to work out sums and integrals and be familiar with Fermi-Dirac integrals.

3) An understanding of density-of-states (DOS) – how to compute a DOS(E) and how to interpret a given DOS.

4) A general understanding of topics in scattering: transition rates, Fermi's Golden Rule, characteristic times, scattering potentials and electron-phonon coupling, etc.

5) Knowledge of the general features of scattering in common semiconductors, bulk and quantum confined structures

6) An ability to perform basic scattering-related calculations – such as transition rates and characteristic times.