MSEN 6338 - Advanced Theory of Semiconductors: Electronic Structure and Transport

MSEN 6338 Advanced Theory of Semiconductors: Electronic Structure and Transport (3 semester credit hours) This course discusses: 1. The electronic structure of semiconductors and small semiconductor structures starting from basic condensed-matter theory; 2. The nature of elementary excitations (such as phonons, plasmons, interface and surface excitations, etc.) in terms of the many-body, second quantization language; 3. The interaction of electrons with these excitations, as well as photons; and, 4. The equations which govern electronic transport at the nanometer scale. Recommended prior coursework: one or more semesters of graduate quantum mechanics or equivalent. (3-0) T