MTSE-4070 ELECTRONIC MATERIALS

Spring 2011 Syllabus

Tuesdays 2:00-5:00 p.m. – Discovery Park, Room: D 207B,
Instructor: Professor El Bouanani       Phone: 369-8109; E-mail: bouanani@unt.edu,
Office hours: open door policy or appointment via e-mail

Text Book:

Other useful references:
• Microchip manufacturing, by S. Wolf, ISBN: 0-9616721-8-8

PLAN OF STUDY

Elementary Concepts and Electrical Conduction

statistics, Electron effective mass and Fermi Energy,

Semiconductors: Intrinsic and Extrinsic semiconductors, degenerate semiconductors,
conductivity, recombination and minority carrier injection, Schottky Junctions and Ohmic
Contacts.

Semiconductor Devices: Basics of a pn junction, Metal-Oxide-Semiconductor Field Effect
Transistor (MOSFET), Thermoelectrics, Piezoelectrics, Light Emitting Diodes (LEDs), Solar
Cells.

IC fabrication: Integrated-circuit types, Overview of semiconductor manufacturing, silicon
wafer production, thin films depositions, diffusion and ion implantation, oxidation, plasma
processing, lithography, interconnects,…

MIDTERM EXAMS:
03/1/2011 LOCATION: DP; D207B  2:00-5:00 PM
04/5/2011 LOCATION: DP; D207B  2:00-5:00 PM

FINAL EXAM (Comprehensive): 05/10/2011 LOCATION: DP; D207B  2:00-5:00 PM

GRADES: 30% Homework; 30% Midterm Exams; 40% Comprehensive Final

This is a preliminary course outline. The instructor may change material, course
content, and course pace or item sequence at any time.