



Electronics Course Specifications

Faculty: Computer and Informatics

Department: Scientific Computing

Program(s) on which the course is given : Bachelor in Computer and Information Sciences

Major or Minor element of programs : All majors

Department offering the program : Scientific Computing

Department offering the course : Computer Systems

Academic year / Level : 1st Year / B.Sc.

Date of specification approval : 22/3/2010

A. Basic Information

Title: Humanities

Code: BSC127

Lectures: 3 hrs/week

Tutorial: 2 hrs/week

Practical: 2 hrs/week

Credit Hours: ---

Total: 7 hrs/week

B. Professional Information

1. Overall Aims of Course:

By the end of this course, the students will be able to

- Knowing and understanding the basic electrical components: resistance, capacitance and inductances and the relation between current and voltage in each component. DC circuits and network theorems. AC circuits and the reactance, impedances, currents,



voltages, and power and phase relationships in series or parallel RC, RL or RLC circuits. Resonance circuits.

- Develop the knowledge and the skills of the students in basic properties of semiconductors, doping, pn junction and analyzing diode circuits. Rectifier circuits, filters and power supplies. Bipolar transistors and field effect transistors. Basic electronic circuits including amplifiers oscillators, operational amplifiers and its applications.
- Problem solving in electrical and electronic circuits
- Carrying out practical work to develop skills in measuring voltage, current, and resistance. Connection in DC circuits. Using oscilloscope to measure voltage and frequency variation in AC circuits. Diode circuits, rectifiers, transistor circuits, amplifiers.

2. Intended Learning Outcomes of Course (ILOs):

a. Knowledge and Understanding:

- a1- Identifying basic electrical and electronic components
- a2- . Solving DC circuits using different techniques (Kirchhoff, mesh, thevenin, Norton, superposition). Solve AC circuits
- a3- Illustrate electronic circuit such as rectifiers, amplifiers, oscillators, operational amplifiers.

b. Intellectual Skills:

- b1- Analysis of electronics circuits (resistive, capacitive, inductive).
- b2- Frequency domain analysis of analog filters (low, high, bandpass) resonance circuits.
- b3- Analysis of Diode circuits and transistor circuits



c. Professional and Practical Skills:

- c1- Design of simple circuits (resistive, capacitive, inductive)
- c2- Design of analog filters (low, high, bandpass).
- c3- Design of circuits including diodes, opamps.

d. General and Transferable Skills:

- d1- How to think about the design of different analog filters
- d2- To acquaint students with applications of electronics to computer systems

e. Attitude:

- e1- Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem



3. Contents:

Topic	No. of hours	Lecture	Tutorial/P ractical
Circuit elements	5	3	4
Analysis of resistive circuits - I	7	3	4
Analysis of resistive circuits - II	7	3	4
AC circuits under steady slate - I	7	3	4
AC circuits under steady slate – II	7	3	4
AC circuits under steady slate - III	7	3	4
Diodes - I	7	3	4
Diodes - II	7	3	4
Bipolar Junction transistors - I	7	3	4
Bipolar Junction transistors - II	7	3	4
Operational amplifiers - I	7	3	4
Operational amplifiers - II	7	3	4
Oscillators - I	7	3	4
Oscillators - II	7	3	4