Electrical Network Analysis Laboratory (formerly known as Signal and Network Lab) is one of the important laboratories, useful for both 'Electrical Engineering' & 'Electronics & Communication Engineering' of under graduate students. The laboratory experiments in Electrical Network Analysis course are dedicated for practical understanding of signals and networks theory concepts. Linking the theory with practice, it is very important to motivate the students for learning theory and to encourage them to use this theoretical knowledge in practical activity. In this lab both hardware and simulation based experiments are conducted. Curriculum of the 'Electrical Network Analysis Laboratory' course in the Electrical Engineering department is designed to give a fundamental understanding in practical cases on two port networks, attenuator circuit, transient circuit analysis, signal generation and Laplace transform. This course is a one-semester course since 2009. Every week students have classes in the laboratory with three lecture periods. The credit point of this Lab is two. Students usually work in groups, but separate reports have to be prepared and presented to the instructor for individual assessment. Mostly digital type instruments are provided to meet the objectives of the laboratory. For simulation design, computers are provided. We use MATLAB based circuit simulation software. In the hardware lab, students can design different types of electrical circuits using different passive components like resistors, inductors and capacitors with DC power supply. They learn here how to use a multimeter, function generator, cathode ray oscilloscope or digital storage oscilloscopes. Apart from hardware design, by writing different programmes using MATLAB programming code, they can generate different signals, simulate Laplace transform methods, and analyze transient analysis. Also, they are encouraged to design their own hardware circuitry to apply their learning in practical model designing.

ELECTRICAL NETWORK ANALYSIS LABORATORY OBJECTIVES:

The objective of Electrical Network Analysis laboratory is to impart hands on experience in circuit design, verification of result in different type of network analysis, study of circuit characteristics and simulation of different signals, Laplace and its inverse transform and transient response of R-C, R-L circuit. It also aims to introduce a circuit simulation software tool MATLAB. It enables the students to gain sufficient knowledge on the programming and simulation of Electrical circuits.

OUTCOMES: Upon the completion of Electrical Circuit and simulation practical course, the student will be able to attain the following:

- Familiarity with two port network and circuit analysis techniques.
- Analyze complicated circuits using different T and π type network and attenuator circuits.
- Acquire skills of using MATLAB software for electrical circuit studies.
- Determine the Laplace and inverse Laplace transform, different signal generation.
- To analyze transient response for R-L and R-C or combination of both type circuits for step input
- To enhance the research motivation, encouraged to design their own hardware model.