A Novel Practical Approach for Teaching Electronics for UG & PG Hearing Impaired Students

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Teaching electronics with the practical approach for any UG & PG students need really a practical environment. It is further difficult for teaching Electronic subjects along with the hands on practical knowledge for UG & PG students of hearing impaired. A novel methodology has been proposed focusing towards teaching basic electronics to hearing impaired students of UG & PG level.

In this Approach, a User Interface has been designed where the faculty can able to present an interactive user environment that has several components to enhance the teaching and learning aspects with practical approach. The designed system has as a predefined systematic procedure for teaching various topics along with the hands on experience with the blend of theory, practical and exercises. Low cost hardware with PCB has been designed for each and every experiment to demonstrate without going to further any instrumentation and provided as an integrated environment to demonstrate and impart practical aspects of bacis electronics.

Objective

- ❖ This System is designed to solve many problems by integrating experiments of each subject in an interactive way in real environment along with assistive videos, animations that are specially designed for hearing impaired students.
- ❖ This System provides the complete solution in real environment by building useful projects and product designs by integrating the theory and practical's.
- ❖ This System contains different experiments, modules, subjects that make them understand in easy and interactive way.

Layer architecture of Basic Electronics Module & Its GUI

Experiment covered by this Module

- ■ To find the value of Resistance, voltage, current, Power using Ohms Law.
- ■ To find the value of Resistance, voltage, and current using Kirchhoff's Current Laws.
- ■ To find the value of Resistance, voltage, and current using Kirchhoff's Voltage Laws.
- ■ To find the value of Resistance, voltage, and Power dissipation across Resistance R1, R2, R3, Req in Parallel.
- ■ To find the Value of Resistance, voltage, Power dissipation across Resistance R1, R2, R3, and Req in Series.
- ■ To calculate capacitance value, Charge, Energy and voltage.
- ■ To Study NPN as Switch and Amplifier.
- ■ To verify Zener Breakdown voltage.
- ■ To verify the graph of Half wave rectifier.
- ■ To verify the graph of Centre-Tap rectifier.
- ■ To verify the graph of Full Bridge wave rectifier

Working Procedure

Block Diagram

Framework Features

- ❖ Smart UI with all information about basic electronics & Its Hands on Practicals.
- ❖ Practical environment for on board interfacing various components, solve the issue of instructor presentation and provides a participatory teaching learning environment.
- ❖ A Practical interactive environment that helps to learn new technology with on board interfacing facilities by solving real world problems.

Target Audience

- ❖ Students: Who are hearing impaired & pursuing technical education
- ❖ Faculties: Who are teaching technical courses to hearing impaired students and others
- ❖ Students & Faculties of mainstream classrooms at school as well as college level

Collaborators

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