

## **Innovations in Teaching Learning**

**Course Instructor – Mr. Ganesh K.**

**2020-21 Even**

### **Wireless communication**

- **Usage of labAlive web based simulators for teaching wireless communication course.**  
LabAlive is an innovative tool for digital learning provided by **Dr.-Ing. Erwin Riederer of Bundeswehr University Munich, Germany.**

Website-<https://www.etti.unibw.de/labalive/#experiments>.

LabAlive portal for communications engineering topics provides a platform for simulating experiments related to various communication topics. Learners can **experience hands-on** with lab applications that offer scopes, spectrum analyzers and much more. Each lab program implements the specific signal processing of a selected experiment. These web applications need Java runtime.

This web based java application is used to teach **OFDM, Fast Fading – Multipath propagation, Doppler Shift in wireless communication**

- **Usage of multimedia resources** to provide a bigger picture of different layers of OSI reference model and working of internet protocol.

**How the internet works, how packet switching works? 3D Animation video**

<https://www.youtube.com/watch?v=B0NI5LRNyN4>

Usage of **virtual laboratory portal** to teach wireless communication

Link – <https://www.vlab.co.in/>

### **Digital Communication**

- **Usage of web based simulators for teaching digital communication courses**

LabAlive is an innovative tool for digital learning provided by **Prof. Dr.-Ing. Erwin Riederer of Bundeswehr University Munich, Germany.**

Link – <https://www.etti.unibw.de/labalive/#experiments>.

Couse instructor has used this web application to teach analog and digital modulation schemes along with simulations.

## **Usage of web based Java applet for teaching antennas for communication.**

Falstad antenna simulation demonstrates waves generated by antennas and antenna arrays in two dimensions.

Link – <https://falstad.com/antenna/>

## **Usage of graphic calculator for visualization of different waveforms**

Desmos online graphing calculator is used to graph functions, plot data, evaluate equations, explore transformations.

Link – <https://help.desmos.com/hc/en-us>

## **2020-21 Odd**

### **Digital Image Processing**

#### **Usage of Snapseed Android App for interactive activity in teaching Digital Image Processing**

Snapseed is a complete and professional photo editor developed by Google. In this course, it is used to analyse different parameters of the test image like brightness, contrast, color variations, histogram. Students were provided with the installation link to install in their mobile.

[https://play.google.com/store/apps/details?id=com.niksoftware.snapseed&hl=en\\_IN&gl=US](https://play.google.com/store/apps/details?id=com.niksoftware.snapseed&hl=en_IN&gl=US)

#### **Activity related to programming with scilab for image manipulation**

Scilab is a free and open-source, cross-platform numerical computational package and a high-level, numerically oriented programming language. IPCV – Scilab Image Processing & Computer Vision, is a module of Image Processing and Computer Vision Toolbox for Scilab 6.0. I have given introduction to usage of this toolbox in scilab along with programming.

Students were assigned tasks related to image filtering with Scilab.

<https://www.scilab.org/software/atoms/image-processing-computer-vision> and  
<https://atoms.scilab.org/toolboxes/IPCV>

### **Electronic Devices**

#### **Assignment of Course Project for students of Electronic Devices course**

For the Electronic Devices course, students are asked to make a group of 4 members and a circuit is assigned for each of the group. A document of 12 projects containing circuit diagram, explanation and reference link has been compiled along with another course coordinator Dr. Jayadevappa B. M. This document is shared with students for implementation.

### **Usage of Multisim simulator to show the simulation of circuits**

*Multisim Live* is a free, online circuit simulator that includes SPICE software, which lets us create, learn and share circuits and electronics online. It is used to analyze and visualize the output of different circuits in Electronic Devices and Instrumentation Lab course.

### **Usage of EveryCircuit Android circuit simulator**

EveryCircuit is highly interactive circuit *simulator* and schematic capture tool. Real-time circuit *simulation* and analysis can be done. It provides an option to visualize different circuit parameters in interactive manner with dynamic user input.

<https://everycircuit.com/circuit/5698839272488960/pro>