

# Overview of ExpEYES Junior

**Spoken Tutorial Project**

**<http://spoken-tutorial.org>**

**National Mission on Education through ICT**

**<http://sakshat.ac.in>**

**Madhuri & Kaushik**

**IIT Bombay**

**28 July 2018**



# Learning Objectives



# Learning Objectives

**We will learn about,**



# Learning Objectives

We will learn about,

- **ExpEYES** webpage



# Learning Objectives

We will learn about,

- **ExpEYES** webpage
- Different experiments using **ExpEYES junior** device



# Learning Objectives

We will learn about,

- **ExpEYES** webpage
- Different experiments using **ExpEYES junior** device
- Content available in various tutorials in **ExpEYES** series



# System Requirement



# System Requirement

- **Ubuntu Linux OS v 16.04**





# System Requirement

- **Ubuntu Linux OS v 16.04**
- **ExpEYES v 3.1.0**



# System Requirement

- **Ubuntu Linux OS v 16.04**
- **ExpEYES v 3.1.0**
- **Firefox browser v 60.0**



# Pre-requisites



# Pre-requisites

- **Knowledge of basic high school Physics**



# Important Links



# Important Links

- <http://expeyes.in>



# Important Links

- <http://expeyes.in>
- <http://expeyes.in/ejun.html>



# Spoken Tutorials in ExpEYES





# Spoken Tutorials in ExpEYES

- We will briefly go through the individual tutorials in this series



# Spoken Tutorial: Introduction to ExpEYES Junior



# Spoken Tutorial: Introduction to ExpEYES Junior

**Explains,**



# Spoken Tutorial: Introduction to ExpEYES Junior

**Explains,**

- **About ExpEYES Junior device**



# Spoken Tutorial: Introduction to ExpEYES Junior

**Explains,**

- **About ExpEYES Junior device**
- **Features**



# Spoken Tutorial: Introduction to ExpEYES Junior

**Explains,**

- **About ExpEYES Junior device**
- **Features**
- **How to buy the device**



# Spoken Tutorial: Introduction to ExpEYES Junior

**Explains,**

- **About ExpEYES Junior device**
- **Features**
- **How to buy the device**
- **Installation on different operating systems**



# Spoken Tutorial: Panel Connections and Software Interface





# Spoken Tutorial: Panel Connections and Software Interface

**Explains,**



# Spoken Tutorial: Panel Connections and Software Interface

**Explains,**

- **Various terminals on the panel**



# Spoken Tutorial: Panel Connections and Software Interface

**Explains,**

- **Various terminals on the panel**
- **Accessory set**



# Spoken Tutorial: Panel Connections and Software Interface

**Explains,**

- **Various terminals on the panel**
- **Accessory set**
- **Software interface**



# Spoken Tutorial: Communicating to ExpEYES using Python



# Spoken Tutorial: Communicating to ExpEYES using Python

**Explains how to,**



# Spoken Tutorial: Communicating to ExpEYES using Python

**Explains how to,**

- **Measure AC voltage using Python**



# Spoken Tutorial: Communicating to ExpEYES using Python

**Explains how to,**

- **Measure AC voltage using Python**
- **Generate square and sine waves**





# Spoken Tutorial: Communicating to ExpEYES using Python

**Explains how to,**

- Measure AC voltage using Python
  - Generate square and sine waves
  - Measure capacitance and resistance
- using Python**



# Spoken Tutorial: Conductivity of Ionic Solutions



# Spoken Tutorial: Conductivity of Ionic Solutions

**Explains how to,**



# Spoken Tutorial: Conductivity of Ionic Solutions

**Explains how to,**

- **Measure conductivity**



# Spoken Tutorial: Conductivity of Ionic Solutions

**Explains how to,**

- **Measure conductivity**
- **Calculate resistance of ionic solutions**



# Spoken Tutorial: Electro-Magnetism



# Spoken Tutorial: Electro-Magnetism

**Explains about,**



# Spoken Tutorial: Electro-Magnetism

**Explains about,**

- **Electro-magnetic induction**





# Spoken Tutorial: Electro-Magnetism

Explains about,

- **Electro-magnetic induction**
- **Mutual induction of coils**



# Spoken Tutorial: Electro-Magnetism

Explains about,

- Electro-magnetic induction
- Mutual induction of coils
- Voltage induced by a rotating magnet



# Spoken Tutorial: Electro-Magnetism

Explains about,

- **Electro-magnetic induction**
- **Mutual induction of coils**
- **Voltage induced by a rotating magnet**
- **Resonance of driven pendulum**



# Spoken Tutorial: Characteristics of Sound Waves



# Spoken Tutorial: Characteristics of Sound Waves

**Explains about,**



# Spoken Tutorial: Characteristics of Sound Waves

**Explains about,**

- **Frequency response and forced oscillations of a sound source**



# Spoken Tutorial: Characteristics of Sound Waves

**Explains about,**

- **Frequency response and forced oscillations of a sound source**
- **Calculate velocity of sound**



# Spoken Tutorial: Characteristics of Sound Waves

**Explains about,**

- Frequency response and forced oscillations of a sound source
- Calculate velocity of sound
- Interference and beats of sound waves





# Spoken Tutorial: Steady State Response of Circuits



# Spoken Tutorial: Steady State Response of Circuits

**Explains how to,**



# Spoken Tutorial: Steady State Response of Circuits

**Explains how to,**

- **Calculate phase shift values**



# Spoken Tutorial: Steady State Response of Circuits

**Explains how to,**

- Calculate phase shift values
- AC phase shift in: RC, RL and LCR circuits



# Spoken Tutorial: Transient Response of Circuits



# Spoken Tutorial: Transient Response of Circuits

**Explains about,**



# Spoken Tutorial: Transient Response of Circuits

**Explains about,**

- **Transient response of RC, RL & LCR circuits**



# Spoken Tutorial: Transient Response of Circuits

**Explains about,**

- **Transient response of RC, RL & LCR circuits**
- **Under damped discharge of LCR circuit**





# Spoken Tutorial: Transient Response of Circuits

**Explains about,**

- **Transient response of RC, RL & LCR circuits**
- **Under damped discharge of LCR circuit**
- **RC integration and differentiation**



# Spoken Tutorial: Diode Rectifier Transistor



# Spoken Tutorial: Diode Rectifier Transistor

**Explains about,**



# Spoken Tutorial: Diode Rectifier Transistor

**Explains about,**

- **PN junction diode**



# Spoken Tutorial: Diode Rectifier Transistor

**Explains about,**

- PN junction diode
- Diode as rectifier



# Spoken Tutorial: Diode Rectifier Transistor

Explains about,

- PN junction diode
- Diode as rectifier
- Diode and LED IV characteristics



# Spoken Tutorial: Diode Rectifier Transistor

**Explains about,**

- **PN junction diode**
- **Diode as rectifier**
- **Diode and LED IV characteristics**
- **Transistor CE**



# Summary

We have learnt about,

- **ExpEYES webpage**
- **Different experiments using ExpEYES junior device**
- **Content available in various tutorials in ExpEYES series**





# Design and Development

- **ExpEYES Junior** is designed and developed by **PHOENIX** project of Inter-University Accelerator Centre, New Delhi



# About the Spoken Tutorial Project

- Watch the video available at [http://spoken-tutorial.org/What\\_is\\_a\\_Spoken\\_Tutorial](http://spoken-tutorial.org/What_is_a_Spoken_Tutorial)
- It summarises the Spoken Tutorial project



# About the Spoken Tutorial Project

- Watch the video available at [http://spoken-tutorial.org/What\\_is\\_a\\_Spoken\\_Tutorial](http://spoken-tutorial.org/What_is_a_Spoken_Tutorial)
- It summarises the Spoken Tutorial project
- If you do not have good bandwidth, you can download and watch it



# Spoken Tutorial Workshops

## The Spoken Tutorial Project Team

- Conducts workshops using spoken tutorials
- Gives certificates to those who pass an online test
- For more details, please write to [contact@spoken-tutorial.org](mailto:contact@spoken-tutorial.org)



# Forum for specific questions

- Do you have questions in **THIS Spoken Tutorial?**
- Please visit <http://forums.spoken-tutorial.org>
- Choose the minute and second where you have the question
- Explain your question briefly
- Someone from our team will answer them



# Forum for specific questions

- **The Spoken Tutorial forum is for specific questions on this tutorial**
- **Please do not post unrelated and general questions on them**
- **This will help reduce the clutter**
- **With less clutter, we can use this discussion as instructional material**



# Acknowledgements

- Spoken Tutorial Project is a part of the Talk to a Teacher project
- It is supported by the National Mission on Education through ICT, MHRD, Government of India
- More information on this Mission is available at <http://spoken-tutorial.org/NMEICT-Intro>

