

# VIRTUAL LABS

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Visitors



An Initiative of  
**Ministry of Human Resource Development**  
Under the National Mission on Education through ICT



(An Initiative of MHRD, GoI under NMEICT, URL: [vlab.co.in](http://vlab.co.in))

## Philosophy

Physical distances and the lack of resources make us unable to perform experiments, especially when they involve sophisticated instruments. Also, good teachers are always a scarce resource. Web-based and video-based courses address the issue of teaching to some extent. Conducting joint experiments by two participating institutions and also sharing costly resources has always been a challenge. With the present day internet and computer technologies the above limitations can no more hamper students and researchers in enhancing their skills and knowledge. Also, in a country such as ours, costly instruments and equipment need to be shared with fellow researchers to the extent possible. Web enabled experiments can be designed for remote operation and viewing so as to enthuse the curiosity and innovation into students. This would help in learning basic and advanced concepts through remote experimentation. Today most equipment has a computer interface for control and data storage. It is possible to design good experiments around some of this equipment which would enhance the learning of a student. Internet-based experimentation further permits use of resources, knowledge, software, and data available on the web, apart from encouraging skillful experiments being simultaneously performed at points separated in space (and possibly, time).

## Objectives

1. To provide remote-access to Labs in various disciplines of Science and Engineering. These Virtual Labs would cater to students at the undergraduate level, post graduate level as well as to research scholars.
2. To enthuse students to conduct experiments by arousing their curiosity. This would help them in learning basic and advanced concepts through remote experimentation.
3. To provide a complete Learning Management System around the Virtual Labs where the students can avail the various tools for learning, including additional web-resources, video-lectures, animated demonstrations and self evaluation.
4. To share costly equipment and resources, which are otherwise available to limited number of users due to constraints on time and geographical distances.

## Salient Features

1. Virtual Labs will provide to the students the result of an experiment by one of the following methods (or possibly a combination)
  - Modeling the physical phenomenon by a set of equations and carrying out simulations to yield the result of the particular experiment. This can, at-the-best, provide an approximate version of the 'real-world' experiment.
  - Providing measured data for virtual lab experiments corresponding to the data previously obtained by measurements on an actual system.
  - Remotely triggering an experiment in an actual lab and providing the student the result of the experiment through the computer interface. This would entail carrying out the actual lab experiment remotely.
2. Virtual Labs will be made more effective and realistic by providing additional inputs to the students like accompanying audio and video streaming of an actual lab experiment and equipment.

Designed and Documented by Prof V.V. Subrahmanyam, Director, SOCIS, IGNOU

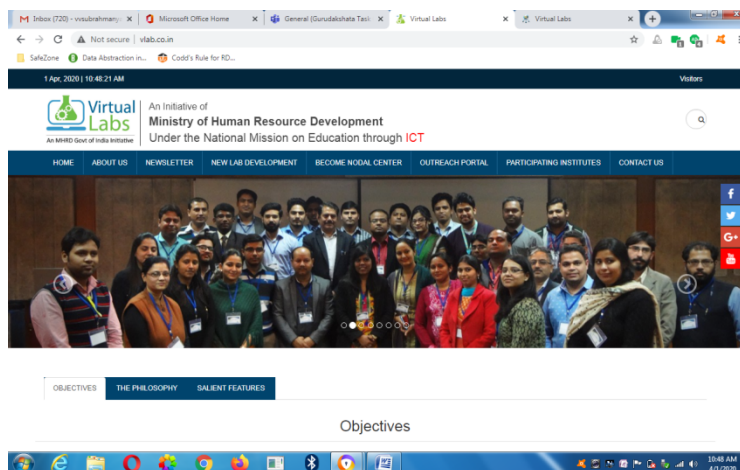
Thanks to all the participating institutions of [vlab.co.in](http://vlab.co.in) for providing such an wonderful virtual lab experience for the students.

## Participating Institutes

IIT Kharagpur, IIT Roorkee, IIT Guwahati, IIT Delhi, IIT Bombay, IIT Kanpur, IIT Hyderabad, Amrita Vishwa Vidhyapeetham, IIT Madras, DayalBagh Educational Institute, NIT Karnataka, COE Pune

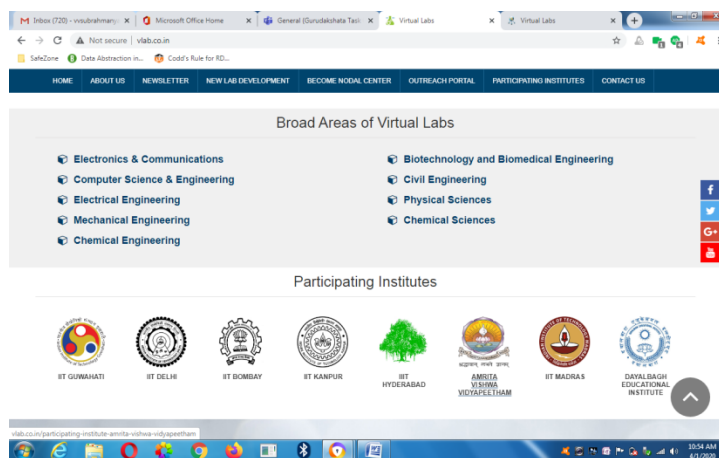
## How to Access and perform Virtual Lab??

**Step 1:** Type URL vlab.co.in. The website will have the interface as shown in fig 1:



**Fig 1:vlab.co.in**

**Step 2:** Scroll downwards on the homepage, you will find the listing of Broad Areas of Virtual Labs as shown in Fig: 2

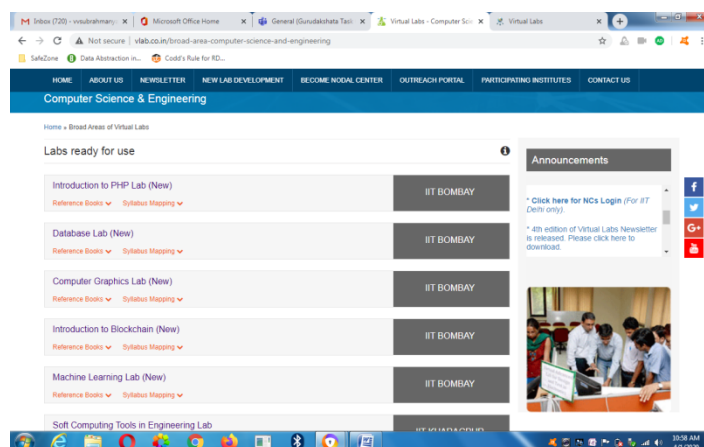


**Fig 2: Broad Areas of Virtual Labs**

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**Step 3:** Select Computer Science & Engineering. It will launch you on the page as shown in Fig: 3



**Fig 3: Computer Science & Engineering Labs**

For the shortcuts, use the following Table 1 for corresponding virtual lab facility.

**Table 1: Mapping of Corresponding Virtual Labs for BCA/MCA/PGDCA Students of IGNOU**

Course	URL
Problem Solving and C Programming	<a href="http://ps-iiith.vlabs.ac.in/">http://ps-iiith.vlabs.ac.in/</a> <a href="http://cse02-iiith.vlabs.ac.in/">http://cse02-iiith.vlabs.ac.in/</a>
Database Lab	<a href="http://vlabs.iitb.ac.in/vlabs-dev/labs/dblab/index.php">http://vlabs.iitb.ac.in/vlabs-dev/labs/dblab/index.php</a>
Computer Organisation and Architecture Lab	<a href="http://vlabs.iitkgp.ernet.in/coa/">http://vlabs.iitkgp.ernet.in/coa/</a>
Digital Logic and Design	<a href="http://vlab.co.in/broad-area-electronics-and-communications">http://vlab.co.in/broad-area-electronics-and-communications</a>
Data Structures Lab	<a href="http://cse01-iiith.vlabs.ac.in/">http://cse01-iiith.vlabs.ac.in/</a>
Software Engineering Lab	<a href="http://vlabs.iitkgp.ernet.in/se/">http://vlabs.iitkgp.ernet.in/se/</a>
Computer Graphics Lab	<a href="http://cse18-iiith.vlabs.ac.in/">http://cse18-iiith.vlabs.ac.in/</a>

You may click on various links provided on the respective websites (Introduction, Theory, Objective, Experiment, Manual, Quizzes etc., in order know further.

*Note: The lab manuals provided for you may not exactly match the problems/experiments shown in the labs, however, during this crisis time of lockdown due to COVID-19, you may practice using these Virtual Labs shown in order to perform better in your practicals. This document is just to make you practice virtually, however, after everything gets to normal the Study Centre will provide you the Computer Lab facility.*

**Happy Virtual Programming!!!**

Reference: vlab.co.in website (used for documentation and other details)

**Best Regards,**  
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