

# Welcome to the exciting world of VALUE Virtual Labs WHERE THE ONLY LIMITS ARE YOUR IMAGINATION!

**AMRITA UNIVERSITY** seeks to transform the landscape of Science and Engineering education. Through the use of virtual labs- a revolutionary technology-enhanced educational tool, laboratory learning is being extended beyond the walls of the classroom. Virtual labs are immersive **MEDIA-RICH** online learning environments, where users can perform physical laboratory experiments in a computer simulated environment

- Anytime, Anywhere. Whereas traditional physical laboratories require tremendous resources, virtual labs are **COST EFFECTIVE** whilst providing near hands on **EXPERIENCE** of experimentation. Virtual labs provide an educational experience that helps broaden learners perspective. Amrita's VALUE virtual labs apply new learning technologies that are exciting and **FUN** for the **NEW GENERATION** of students.



## Virtual

Experimentation environments using state of the art technology.



## Amrita

Amrita Research revolutionizes education through technological innovations.



## Laboratories

Laboratory experimentation through sophisticated and immersive simulations.

## Universalizing

Laboratories that are remotely triggered and accessible to Everybody, Everywhere, at Anytime!

## Education

New learning perspectives through exploration, experimentation, technology and collaboration.

## AMRITA VISHWA VIDYAPEETHAM OR AMRITA UNIVERSITY

is one of the of the youngest and most rapidly growing universities in India. Amrita is a trend setter at the forefront for technological innovation in Higher Education. Amrita University has been accredited with the highest grade 'A' by the National Assessment and Accreditation Council.

**SRI MATA AMRITANANDAMAYI DEVI**, also known as Amma, a world renowned humanitarian is the chancellor of Amrita University. Amma's words for the youth, her thoughts and values for education and research, have helped shape the university's mission and vision.

## NATIONAL PROJECT & PARTNERS

As part of the NME-ICT (National Mission on Education through ICT), an initiative of MHRD, Government of India, the Virtual Labs project is a collaborative undertaking of Amrita University, IIT's, Delhi, Kanpur, Kharapur, Bombay, Madras, Roorkee, Guwahati, IIIT Hyderabad, NITK Surathkal, COE Pune and Dayalabagh Educational Institute.

## INFORMATION & CONTACT

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## BIOTECHNOLOGY & BIOMEDICAL ENGINEERING

- Neurophysiology
- Neuron Simulation
- Biochemistry
- Population ecology
- Immunology
- Microbiology
- Molecular Biology
- Cell biology
- Bio-inspired Robotics
- Virtual Biophysics

For detailed information about all Labs and Experiments please visit our website.

## PHYSICAL SCIENCES

- Electricity & Magnetism
- Heat & Thermodynamics
- Harmonic Motion and Waves
- Modern Physics
- Optics
- Mechanics
- Electric Circuits

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## CHEMICAL SCIENCES

- Physical Chemistry
- Organic Chemistry
- Inorganic Chemistry

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## Broaden your PERSPECTIVE!

Through Virtual Labs you can **DISCOVER** the hidden properties of lasers, **EXPLORE** the mysteries of sub-atomic particles, purify water through distillation, measure the velocity of a speeding bullet, **INVENT** the next great electronic gadget, find out what chemicals are lurking in organic



compounds, wield a scalpel with the precision and grace of a skilled surgeon, **INVESTIGATE** the inner workings of brain cells and neurons, stage your own bug invasion, determine your blood type, and extract samples of DNA from living fish and much much more!

## VALUE RESEARCH

VALUE virtual labs focuses on interdisciplinary research in higher education involving Educational Psychology, Learning Science and Instructional Design. Research on both virtual and traditional classroom learning environments, pedagogy, learning and cognition explores ways to innovate and optimize student learning in Science and Engineering Education.

Our research in catering to diverse student backgrounds has shown spectacular results in: improved visualization of theoretical concepts, enhanced practical skills in experimentation, broader and deeper understanding of complex ideas, genuine curiosity to explore further.

## FEEDBACK ON VALUE VIRTUAL LABS

"Excellent as a teaching aid, to give a clear idea starting from the basics. Students feel free to do the experiment as many times as possible and as many ways as possible and will lead them to move on to innovative ideas."

Ms Subhadradevi P K, MarThoma College, Thiruvalla

"I have seen the content myself and it is world class."

Kapil Sibil, Union Minister for Human Resource Development

## VALUE VIRTUAL LAB FEATURES

- Vast collection of experiments across broad range of disciplines
- Scientific simulations
- Remotely Triggerable Experiments
- Interactive animations
- Guided videos of experimental procedures
- Illustrated theory notes
- Self evaluation quizzes
- Web based access
- Authoring platform for educators
- Resource-rich learning environment

## TYPES OF LABS

Experiments in VALUE virtual labs accessible via web include

- Computer simulated laboratory environments
- Remote Trigger Experimentation by connecting directly to physical equipments and collecting real-time data from anywhere in the world.
- Interactive animations

## laboratory learning experience ACCESSIBLE to EVERYBODY, EVERYWHERE.

## COMPUTER SCIENCES

A virtual platform for designing, deploying and implementing wireless sensor networks.

Different concepts we plan to work on are:

- Power consumption
- Transmission range
- Energy optimization
- Data collection etc.

The laboratory will allow remote users to learn the theoretical concepts in WSN:

- Wireless communication
- Propagation effects
- Write personal programs
- Load and test designer programs

## MECHANICAL ENGINEERING

### Solar Energy

Examples of Experiments:

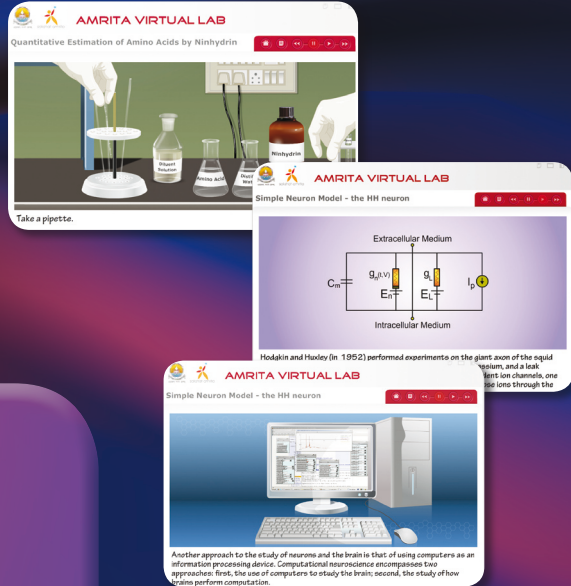
- Thermal Heat Transfer
- Comparison Of Different Types Of Materials Used In Heat Collectors

### Wind Energy

Examples of Experiments:

- Wind Turbine Plant Feasibility Study At A Given Geographic Location
- Aerodynamic Force Coefficients On A Turbine Blade At Constant Wind Speeds For A Horizontal Axis Wind Turbine Blade Profile

For detailed information about all Labs and Experiments please visit our website.



## VALUE NODAL CENTRE PROGRAM

A new venture which allows institutions the follow the VALUE project and benefit from a whole host of services and resources. Get more information: <http://amrita.vlab.co.in/nodal>

get **STARTED!**  
[www.amrita.vlab.co.in](http://www.amrita.vlab.co.in)