



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR
OIL TECHNOLOGICAL AND PHARMACEUTICAL RESEARCH INSTITUTE
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Report on the Awareness Session on Virtual Labs for Life and Pharmaceutical Sciences

Presented by: Dr. V. Sankar,
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Target audience: All the pharmacy final year and Pharm.D students

Organized by: JNTUA, IEEE Ananthapuramu Subsection

1. Introduction

The session focused on the implementation of **Virtual Labs** in the field of **Life and Pharmaceutical Sciences**, emphasizing their relevance, objectives, and integration into academic curricula. Dr. V. Sankar, an advocate of virtual learning technologies, led the discussion, highlighting how Virtual Labs enhance education and research through **remote-access simulation-based experiments**.

2. Key Objectives

The main objectives of the session were:

- Understanding the **philosophy** behind Virtual Labs.
- Exploring **statistical insights** on their usage across educational institutions.
- Learning how to **integrate Virtual Labs** into the existing curriculum.
- Identifying **future developments** and research opportunities.

3. What are Virtual Labs?

Virtual Labs are **web-based platforms** that provide **remote-access, simulation-based experiments** in various scientific and engineering disciplines. They allow students to perform experiments **anytime, anywhere, on any device** without the need for physical laboratories.

Benefits of Virtual Labs

- **Enhance learning outcomes:** Improve **higher-order skills** like analysis and synthesis.

- **Increase accessibility:** Available across different locations and institutions.
- **Cost-effective:** Reduces the need for expensive physical lab infrastructure.
- **AICTE Approved:** Recognized by **AICTE's model curriculum** and incorporated by several universities.

4. Relevance to Science and Engineering

- **Classroom learning** is limited to theoretical understanding, while **physical experiments** focus on lower-order skills.
- Virtual Labs supplement traditional learning by providing hands-on experience through **simulated experiments**.
- They are an **essential teaching aid** rather than just a complementary tool.
- Current adoption levels in universities range from **38% to 68%** in curricula mapping.

5. Implementation and Future Prospects

The Virtual Labs initiative is a **joint effort of premier institutes** like IITs, IIIT Hyderabad, NITs, and other institutions under the **National Mission on Education through ICT (NMEICT)**. The project currently supports:

- **166 Labs** across **13 disciplines**.
- **Interactive and immersive** experimental setups.
- Opportunities for students and faculty to **participate in lab development, internships, and skill-oriented courses**.

Proposed Actions

- Universities should **integrate Virtual Labs** into their regular academic schedules.
- Faculty should **encourage students** to use Virtual Labs for assignments and projects.
- Collaboration between institutions for **training programs and workshops**.



6. Conclusion and Takeaways

The session emphasized that **Virtual Labs are the future of engineering and scientific education**, offering an engaging and **cost-effective solution for practical learning**. Dr. V.Sankar highlighted the need for **more institutions to adopt Virtual Labs** and encouraged faculty and students to **actively participate** in their development and implementation.