National Institute of Technical Teachers' Training and Research, Bhopal

PROGRAMME BRIEF

- **Title of the Programme: Design of Virtual Lab Experiments in Applied Sciences**
- **Programme code: ASE-5**
- **Programme duration: 10-07-2023 to 14-07-2023**
- **Venue: NITTTR, Bhopal**

1. **Rationale:** Simulation software has been increasingly used in areas of engineering, technology and research as per applications. Engineering degree/diploma programme students are expected to skilled in running various simulation software / virtual lab experiments. There is availability of number of Open educational resources and open source simulation software. Design of simulation/ Virtual experiments for engineering lab is a chore for faculty and present outcome-based curriculum. This training programme cum workshop intends to train the participants in designing applied science Virtual experiments.

2. **Programme Outcomes:**

   i) Use SCILAB Model based design (MBD) Tool boxes to design simulation experiments.

   ii)Use OER's to design virtual lab experiences.

   iii) Use Microsoft excel to design virtual lab experiments.

3. **Programme Content:** Basics of SCILAB, Console, Editor, Files , function, Matrix function , Graphics , Xcos and its Tool boxes, Model Based designing (MBD), Coselica tool box. Simulation Lab experiment with OER's (Phet, Vlab,) Simulation Lab experiment with OER's (Chem collective, Concordia), Virtual experiment with Microsoft excels

4. **Instructional Strategy:** The programme is expected to be highly interactive. Participative strategies will be employed. Input sessions, practice sessions, presentations with feedback, assignments, test etc. are planned

5. **Target Group:** Faculty of Applied Science & Electronics Engineering

6. **Coordinator & Faculty details:**

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7. **Tentative Programme Schedule:**

Day	Session I	Session II	L U N C H B R E A K	Session III	Session IV
	10.00 AM-11.30 AM	11.45 AM - 13.15 PM		2.15 PM - 3.45 PM	4.00 PM -5.30 PM
Monday	Inauguration, Participants Expectations, and Overview of program and Project work	Introduction to Design of Virtual lab experiments, OER's SCILAB		Design of virtual lab experiences • Virtual lab design Template	**Task 1** Identify the virtual lab experiences for respective course curriculum
Tuesday	Design of simulation Lab experiment with SCILAB • SCILAB demonstrations • Console **Task 2 a**: design of experiment using SCILAB from selected course			Introduction to the simulation tools, OER's • PhET simulations • Simulations available for Science & Engineering **Task 3 a** • Design a simulation experiment using PhET Sims	
Wednesday	Design of simulation Lab experiment with Vlab, Task -3 b			Xcos and its Tool boxes, Model Based designing (MBD), Task 2b	
Thursday	Virtual experiment with Microsoft Excel			Chem collective, Concordia **Task- 5**	
Friday	Practice session on design of experience with MS excel	Practice session on design of experience with OER's		Compilation and Submission of Tasks and presentation	Achievement test and Feedback & Valedictory