INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

1. **Name of the Academic Unit: Physics**

2. **Subject Name: Interactive Physics Laboratory L-T-P: 0-0-3 Credits: 2**

3. **Pre-requisites: None**

4. **Syllabus and reference books:**

Syllabus:

Instead of routine experiments the students will be given goal-oriented projects in groups for the whole semester. These projects will involve one or more concepts of basic Physics. The students will be asked to design and create portable working models, which would demonstrate the application of concepts of basic Physics. These models could be Mechanics, Electromagnetism or Optics based. For example, one could try to design a double pendulum showing parametric resonance or showing chaos [1]. Alternatively, one could attempt to see modes of vibrating membranes of different shapes [2]. One could design an isochronous pendulum. Department's portable lathe, 3D printer and other accessories could be used for designing and fabrication of these models. At the end of the semester there will be presentations by the students about their models.

Space for entering the syllabus

Reference Books:

As it is a laboratory course there are no particular textbooks for the subject. Concepts could be learnt from any standard textbook of Physics at undergraduate level.

[1] Chaos in a double pendulum, T. Shinbrot, C. Grebogi, J. Wisdom and J. A. Yorke, Am. J. Phys. 60, 491 (1992)

[2] Vibration of a circular membrane, L. W. Casperson and M-A. Nicolet, Am. J. Phys. 36, 669 (1968)

5. **Lecture-wise break-up:**

Sl. No.	Topic	No. of lectures
1.		
2.		
3.		
4.		
…		
	Total number of hours	

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Commented [U2]: Please enter the details (use Arial 12 font)

Commented [U3]: Please enter the pre-requisites (subject name and subject no. in Arial 12 font)

Commented [U4]: 1.Please type the syllabus and reference books in the box provided below.

Please use "**Arial**" font with a font size of "**12**" and a **line spacing of 1.0** for syllabus and reference books.
Please use Justified Text (Ctl+J)" for the content entered in the boxes
Reference books should be numbered as 1), 2), 3) …..
Please provide all bibliographic details for the reference books

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