Birla Institute of Technology & Science, Pilani
Hyderabad Campus

SECOND SEMESTER 2019-2020

Course Handout Part II

Date: 06-01-2020

In addition to part-I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

Course No. : PHY F344
Course Title : Advanced Physics Laboratory
Instructor-in-Charge : Prof. Aravinda N. Raghavan
Co-instructors : Prof. V. Meenakshi, Ms. N. M. Aishwarya

Scope and Objective of the Course:

In this course, the student will learn to think like a scientist where scientific inquiry, logical reasoning and learning scientific practices will be emphasized. To engage like a scientist and to be curious about physical phenomenon entails making observations, formulating questions, gathering evidence in a reproducible manner, making scientific claims based on evidence and modelling using existing scientific knowledge, communicating results, and revising the explanation or revisiting the experiment based on critique from the community. In essence, the goal is to formally introduce undergraduate students to research through an inquiry based approach.

Learning outcomes:

A. Design experiments for a hypothesis.
B. Demonstrate lab skills related to data collection and interfacing of instruments.
C. Provide scientific reasoning on all aspects of lab related activities.
D. Analyze and model data and estimate errors in measurement.
E. Document and present the scientific findings coherently

List of experimental facilities:

No.	Experiment
1.	Differential Scanning Calorimetry
2.	Powder X-ray diffraction
3.	Hall effect measurement
4.	Forbidden band gap measurement
5.	Thermo-gravimetric analyzer
6.	Fourier Transform Infra-red spectroscopy
7.	Zeeman effect measurement

8.	Atomic force microscope
9.	Dynamical Mechanical Analyzer
10.	Low temperature electrical conductivity measurements

Evaluation Scheme:

Component	Duration	Weightage (%)	Date & Time	Nature of Component
Design of experiments		20		Open
Basic lab skills, Data collection		20		Open
Modelling and analysis		30		Open
Weekly lab work and interaction		10		Open
Final report and presentation		20		Open

Chamber Consultation Hour: None required

Notices: CMS and Physics notice board

Make-up Policy: It is applicable to the following two cases and it is permissible on production of evidential documents: (i) Debilitating illness (ii) Out of station with prior permission from the Institute.

Academic Honesty and Integrity Policy: Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.

INSTRUCTOR-IN-CHARGE