



Birla Institute of Technology & Science, Pilani

Hyderabad Campus

Second Semester 2021 - 2022

Course Handout (Part II)

Date: 15/01/2022

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 F244

Course Title: MODERN PHYSICS LAB

Instructor-in-charge: **V. Satya Narayana Murthy**

Instructors: Subhash N. Karbelkar, Akhil U Nair, Geetika Sahu

Scope and Objective of the course

The aim of the course is to introduce to students important experiments in Modern Physics which includes Quantum Mechanics, Optics and Nuclear Physics. The objectives are to supplement textbook learning with experimental demonstration and to impart experimental skills with particular emphasis on data collection and analysis of data.

1. Experimental Notes

Experimental notes will be uploaded on COURSE MANAGEMENT SYSTEM where necessary. Students should also consult the lab and instruments manual and follow appropriate experimental procedure.

2. Course Plan

List of Experiments

S.No.	Experiment
General Physics	
1	Quincke's tube
2	ESR
3	Frank Hertz experiment
4	Geiger Muller counter
5	Thermal conductivity
Optics	
6	Brewster's angle measurement
7	e/m determination
8	Zeeman effect
9	Millikan's oil drop experiment
10	Photoelectric effect



4. Evaluation Scheme

Components	Duration	Weightage (%)	Date and Time
Day to day performance and analysis		40	
Lab practical (if, offline) or data analysis of an experiment with includes quiz (if, online). Date will be announced in the lab.	50 minutes	20	
Comprehensive Practical (if, offline) or data analysis of an experiment which includes quiz (if, offline).	1 hour	40	

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

6. Notices: All notices will be displayed on the Physics Group Notice Board._

General conduct rules and guidelines

You need to maintain a *Record Note Book* and each experiment has to be written up according to the format given in the table below. This note book will be evaluated according to the given scheme.

Apart from this you should maintain a *lab note book* in which you will record the sequence and the observations as you perform the experiment which may include successful steps, and erroneous procedures.

The record must contain the following parts if relevant.

No.	Component
1	Aim / Objective
2	Introduction Figure or diagram a) Physics of the phenomenon b) About the Instrument
3	Experimental method
4	Data Collection
5	Analysis & Result a) Curve fitting b) Calculation & Error estimation c) Plotting, labeling the axes and units
6	Explanation for the agreement or



	disagreement of the result with theory
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Marking scheme:

Active participation during the day or days of the experiment will be considered for awarding marks for performance. If the student is present for both the days of the experiment and has shown the observations taken on these both the days and these are signed by the instructor a maximum of 15 marks will be awarded. *No marks will be awarded if a student visits the lab for the sake attendance.*

A detailed check list for every experiment will be uploaded on CMS giving essential calculations/graphs etc to be submitted for evaluation and deductions if a part is not done during submission. Normally, complete submission must be done within one week of the day of performance (same day as the last day of performing that experiment or the next working session day if it is a holiday)

Student can take one more turn (I e the next lab session) to complete/correct any of the original submission. 2 marks will be deducted at the time of resubmission as a token of late submission.

Extension of submission or resubmission times may be given only on justified grounds (same as for make up grant).

1. You should understand the reading material before performing the experiment. There will be a quiz on the day's experiment.
2. You are not allowed to write the quiz if you are late by more than 5 minutes.
3. You should repeat each experiment at least three times to estimate the error in your measurement. Error analysis should be done for all the experiments.
4. You have to write the record in your own words. Copying from internet and from other records is not allowed. If two or more records matter and data are same or copying from some other source is found you will be awarded zero marks for record.
5. Cell phones have to be switched off during the lab hours.
6. In this course, you will be graded for the scientific process and not for the final answer. Therefore, it is important to maintain academic and personal integrity. Ethical violations include cheating on lab data, plagiarism such as copying from sources from the internet, reuse of assignments, unauthorized collaboration, alteration of graded assignments, forgery



and falsification, lying, facilitating academic dishonesty. Report any violations you witness to the instructor.

7. **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.

Instructors
PHY F244

