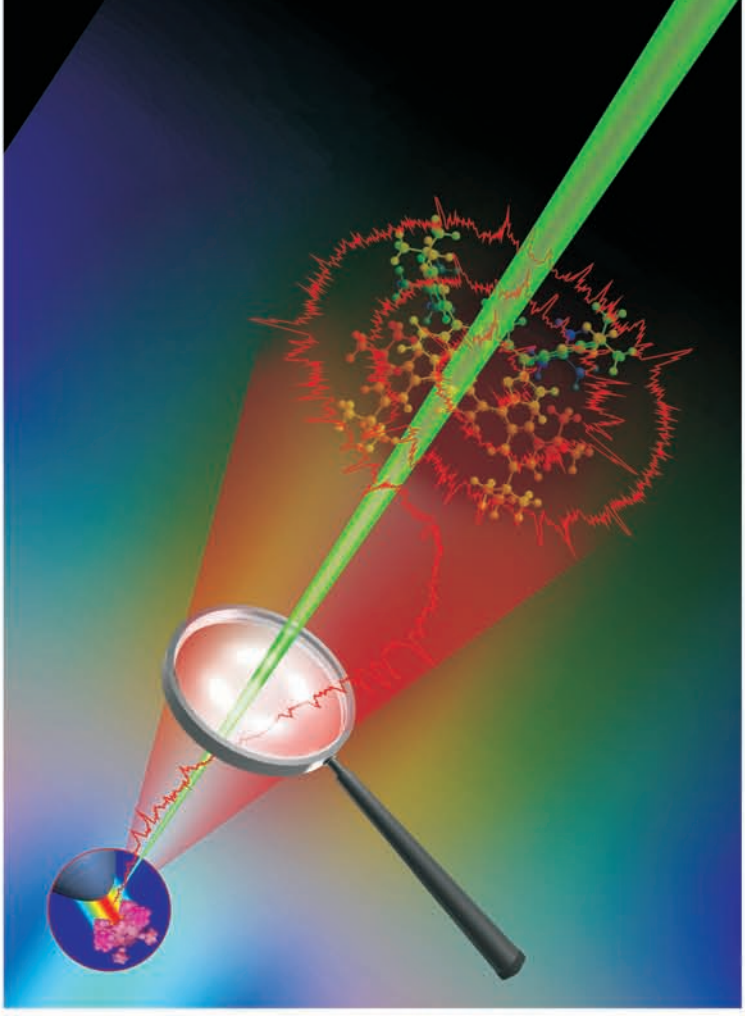

2nd Edition

A Textbook of

ENGINEERING PHYSICS PRACTICAL

Dr. Ruby Das | C.S. Robinson | Dr. Rajesh Kumar | Prashant Kumar Sahu

A Textbook of

Engineering Physics Practical

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By

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Preface to the Second Edition

Engineering, the science of measurement, is the offspring of physics which plays the primary role in each branch of engineering and is generally taught during the first two or three years of these courses in various technical universities, NITs and IITs. The facts predicted by theories are brought nearer to the truth through practicals. It is in the laboratory that physics students learn to practice the activities of scientists—asking questions, performing procedures, collecting and analyzing data, answering questions, and thinking of new questions to explore.

This book grew out of the lectures delivered in theory and practical classes by us to the students at the Bhilai Institute of Technology, Durg (Chhattisgarh). Along with the CSV Technical University practical syllabus, the book attempts to give a comprehensive account of a large number of other important experiments in engineering physics as well. The first edition of the book published in 2010 and it is indeed a matter of great satisfaction that the book has been received well by the academic community in central India. While using the book in the undergraduate laboratory course for engineering students, we felt the necessity of revising its certain portions.

In the Second Edition the following revisions have been done:

1. Several diagrams have been replaced in various chapters by blending careful presentation of fundamental concepts and methods of physics.
2. The concept of measuring least count in screw gauge is now more clear.
3. Measure of capillary tube diameter is redrawn. Corrections have been made in current-intensity characteristic graph of photoresistor and NOT gate electrical switching circuit.
4. In experiment 16 many points have been added in the procedure to make it clearer.
5. An alternative method to determine the forbidden energy gap of P-N junction diode material has been added.

The organization of the book remains the same. Any further suggestions for improvement of the its contents are most welcome.

—AUTHORS

Preface to the First Edition

The basic fundamental Physics forms the foundation of engineering and technology. Physics, and natural science (being a description of the nature around us) in general, is a reasonable enterprise based on valid experimental evidence, criticism, and rational discussion. It provides us with knowledge of the physical world, and it is an experiment that provides the evidence that grounds this knowledge. Experiment plays many roles in science. One of its important roles is to test theories and to provide the basis for scientific knowledge. Experiment can provide hints toward the structure or mathematical form of a theory and it can provide evidence for the existence of the entities involved in our theories.

This book has been written with the specific aim of presenting the subject-matter in the simplest possible manner keeping in view the difficulties and the limitations of the average students. The completely redesigned, pedagogically consistent artwork and diagrams integrate seamlessly with the text to help "more visual" learners better visualize key concepts. The difficult experiments are explained in a simple language with the help of neat diagrams. We feel that if a student does all these thoroughly, the subject will appear to be friendly and enjoyable.

It is earnestly hoped that students and teachers of physics, engineering and technology will find the book useful. The authors will appreciate any genuine and authentic suggestions, for the substantial improvement of the book. All available standard books on the subject have been freely consulted during the preparation of this book. We acknowledge gratefully our indebtedness to the authors and publishers of different books on the subject. Authors are thankful to the management of Bhilai Institute of Technology for providing all facilities in the laboratory. We thank the members of our family for their support and encouragement. Finally we are grateful to Laxmi Publications, (P) Ltd, New Delhi, for taking keen interest in the publication of this book.

—AUTHORS

Foreword

"Physics is the Father of all branches of Engineering and Technology." The physicist discovers scientific principles and invents devices to describe and explain them. The technician applies and magnifies these devices for human convenience and comfort. There is no branch of engineering or technology in which one or other physical principle is not applied on a scale never contemplated by the discoverer. Knowledge of Physics is so interwoven with engineering studies that one cannot think of pursuing engineering studies without the knowledge of Physics. Study of Physics is essential for students and practitioners of engineering and technology to develop them in proper understanding of physical phenomenon, scientific temper and engineering aptitude. Thus, it becomes immensely important to develop zeal among the students by creating an innovative ideas and thoughts. Obviously the laboratories are the best corners for inculcating such habits.

The authors have judiciously opted to jot down their ideas and work in the form of a textbook on Practical Physics which is of utmost importance to students. Such type of book was under very much demand and I am of strong belief that the demand can be fulfilled by the present book. Moreover, this book will definitely reduce the gap between the theoretical aspects of Physics and its practical counterpart which is the need of the day. In short, the book is an indispensable reference to faculty members and laboratory instructors and an invaluable aid to students.

I am pleased and honoured to have been asked to write the foreword for this book. The authors should be congratulated for providing this valuable reference book for the would be technocrats.

Dr. M. K. Kowar
Director,
Bhilai Institute of Technology,
Durg, Chhattisgarh

ASSESSMENT OF PRACTICAL SKILLS IN ENGINEERING PHYSICS

For BE-Ist year Examination of Chhattisgarh Swami Vivekanand Technical University

EVALUATION SCHEME

Examination	*Duration*	*Marks*
Internal (college based) Evaluation 1. Testing of practical skill 2. Record of practical results 3. Viva	1½ hrs (per week)	20
External Examination (Examiners are appointed by the University)	1½ hrs (one experiment will have to be performed)	40
Total	3 hrs	60

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ENGINEERING PHYSICS LABORATORY

DO'S

1. Obtain copy of the syllabus of your Engineering Physics lab.
2. Always be regular in practical classes and complete your work within the given schedule. In all twelve turns (two periods, total of 90 minutes per turn = 24 periods) shall be scheduled in the whole semester and there are ten experiments to be performed from different branches of Engineering Physics.
3. Write down the experiments in your practical file in the same manner as given in this book.
4. Handle all the instruments carefully. Students found involved in any kind of misplacement or breakage of lab instruments may be liable to fines.
5. Bring calculator, graph paper (if required) and the observation copy regularly in your lab periods. At the end of the period submission of observation copy is a must for getting attendance.
6. Concentrate on each line written in this book, go through the experimental set-ups and fill all the observation tables mentioned. Show calculations in the given manner. Prepare answers of viva-voce.
7. Display a disciplined behavior. This should reflect in your manners and even in your talks. For any quest regarding the Engineering Physics practical, discuss with Teacher in-charges.
8. The award of sessional marks in the examinations is largely dependent on the attendance in the theory and practical classes as well as in internal marks obtained by your performance in the lab, which is entered by the teachers in the enclosed internal invaluation chart for teacher incharges. So, batch-wise get your readings checked by the teacher before leaving the lab.

DON'TS

1. Do not enter the lab without your observation copy in which your name, batch number and turn number is mentioned.
2. Do not try to manipulate your readings for getting errorless results. Instead of that learn how to perform the experiments and discuss your results with the Teacher incharges.
3. Do not avoid the mentioned precautions to be measured in performing each experiment.
4. Do not request for your choice in performing experiment at the time of practical examination. Anyone experiment shall be asked.

❑❑❑

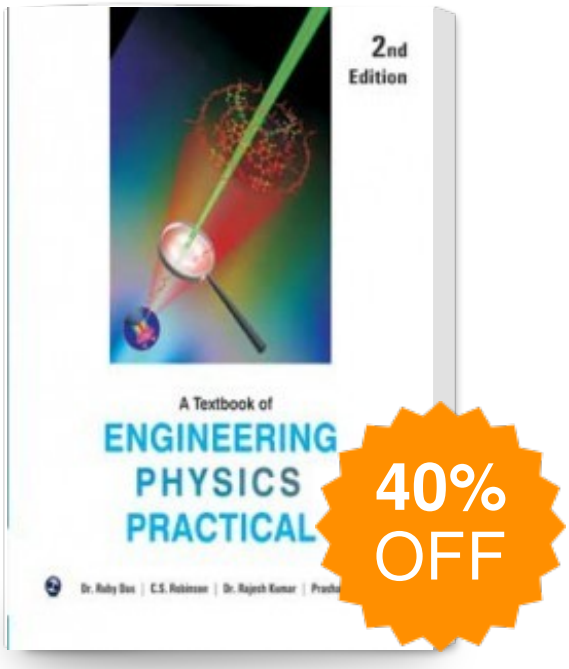
RECORD OF THE EXPERIMENTS PERFORMED

Name of the Student : .....
Class/Section : .....
Roll No. : .....

S.No.	*Experiment No.*	*Experiment Name*	*Date*	*Page*	*Signature/Remarks*

❑❑❑

A Textbook of Engineering Physics Practical



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