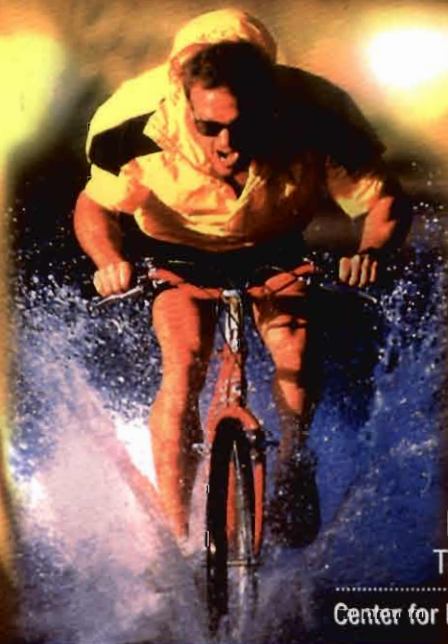


# PHYSICS

REVISED EDITION

Basic Education - Grade Eight



National  
Textbook



New  
CURRICULA

Center for Educational Research and Development



**Republic of Lebanon**

Ministry of Education and Higher Education

■  
**PHYSICS**  
■

**Basic Education**

Grade Eight

Center for Educational Research and Development



National  
Textbook

**New Curricula**

General Coordinator  
**Moustapha Yaghi**

English Version  
**Ibrahim Rachidi - Ali Abbas**

# PHYSICS

**Basic Education**  
Grade Eight

**Ibrahim Rachidi** (Coordinator)  
**Ali Abbas**  
**Ahmad Fawaz**  
**Antoine Skaf**

Center for Educational Research and Development



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# Together We Build Through Education!

The Center for Educational Research and Development (CERD) has embarked on an extensive workshop for assessing and developing the educational framework and curricula which have been placed into effect more than three years ago. With full realization of the fact that the educational cycle must continue normally through its components, and until the development process attains its aspired objectives, we are placing in the hands of students, teachers and directors of public schools, this corrected version of textbooks issued by CERD as part of the National Textbook Series.

This version is an interim stage incorporating the corrected typographical and linguistic errors discovered by CERD specialists as well as teachers and students through their daily dealings with the books. The process of assessment and development of the framework and curricula will take into consideration all the comments that have been made, or will be made, in this regard.

It is expected that once the curricula are developed and aligned with the general and specific objectives set for them, the textbooks will be realigned with the new curricular and framework requirements, including tying the content of a course to the number of teaching hours set for it during the school year, taking into consideration vertical alignment within the same course as well as the horizontal alignment with the rest of the courses.

I take this opportunity to invite all school administrators, teachers and students and all officials concerned in public and private schools alike, to promptly send their comments on these curricula and books as their contribution to enrichment of this momentous national process.

This workshop, which was launched under the kind sponsorship of His Excellency the Minister of Education and Higher Education in implementation of Decree No. 10227 embodying the educational curricula and their objectives, fits in with CERD's proclaimed new motto "Together We Build Through Education".

It is our earnest desire to see this national, all-inclusive workshop attracting the greatest amount of interest and participation to define the safest and soundest educational options that directly affect our children, as we vow to continually modernize education and develop its ways and means to keep abreast of modern developments and progress in science and technology.

**Dr. Leila MALEEHA**  
President CERD





# FOREWARD

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This new book for the students of the 8<sup>th</sup> grade of basic education is written in conformity with the contents of the new program as well as with the spirit of the objectives of the program that will be applied at the beginning of the school year 1999 - 2000.

In this book, we try hard to achieve the two specific demands of teaching physics: scientific objectivity and permanent interest in experimental work.

The students can perform all the experiments that are described in the book. We did our best to give the students all the necessary instructions, and thus the book contains adequate description of the activities that they have to carry out in class.

This book has 16 chapters covering three subjects: mechanics, waves and optics.

We have chosen a solution that allows the students to perform the activities and handle the interesting exercises.

We have concentrated on the concrete and the practical aspects of physics as well as on the technical applications.

The “further study” or “documentary activity” at the end of some chapters gives some important supplementary knowledge.

Particular attention is given to the language so as to have a precise and simple text.

As for the layout of the book, the diagrams, the figures and the photos were very carefully chosen so as to serve their objectives.

We hope this book will be clear and efficient and would motivate the students to study physics and enjoy it.

Finally we hope that our dear colleagues will be helpful in providing us with their remarks and we thank them in advance.

*The authors*

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