

PHYSICS

Secondary Education
Third Year
Literature and Humanities
Sociology and Economics Sections



Center for Educational Research and Development



National
Textbook

New Curricula

Republic of Lebanon

Ministry of National Education, Youth and Sports

■ P H Y S I C S ■

Secondary Education

Third Year

Sections: Literature and Humanities
Sociology and Economics

Educational Center for Research and Development



National
Textbook

New Curricula

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The National Textbook Project

By issuing the textbooks for the third year of each educational cycle, the Educational Center for Research and Development will have completed the third and last installment of books called for by the New Curricula. We are placing these books in the hands of students with the great hope that we are moving, step by step, toward the goal of acquiring sound learning, using sophisticated educational means and up-to-date methodology that encourage and reinforce individual thinking and research, acquisition of skills, development of ethical and national attitudes, the feeling of national belonging as well as the feeling of belonging to humanity at large.

The on-going revolution in information, communication and educational-aids technology has undoubtedly limited the role of the textbook and lowered the rank it used so recently to occupy. However, in our society and in many other societies, the textbook remains the basic means of education, and it is our duty to exert our utmost effort and care to come up with the best product as to form and content. Yet we should not lose sight of the fact that the textbook is not sufficient by itself but should rather be used as a stepping stone to access other sources of information. What is important is to keep a clear vision and maintain the right course toward our objective. The means should not turn into the end and the student should always remain the focus of the learning/teaching process.

No one ignores or denies the fact that textbook writing requires very high academic and educational qualifications and very wide field experience. The authors committees undeniably possess such qualities. Yet the textbooks of the last two years contained some negative aspects. Such is the nature of human work, no matter how good the intentions or how great the effort extended. Here constructive criticism constitutes a real contribution to raising the standard of authorship, minimizing errors and filling gaps. We say that, with all due appreciation and respect to all those who have contributed to the success of this project.

The Educational Center for Research and Development is embarking this year on a process of evaluating the New Curricula and related textbooks, teacher training courses and student achievement. This is a natural and necessary step now that the new system has been put into effect. This process aims at identifying the curricular objectives that have been achieved as well as those that have not been achieved, with a view to proceeding with the positive aspects and correcting the negative ones.

As part of this correction process, we plan to review the versions that have been issued in order to secure good textbooks for our students, who always deserve the best.

March 13, 2000

**President, Educational Center for
Research and Development**

Nemer FRAYHA

Preface

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Physics is concerned with the fundamental properties and behavior of matter and its relation to energy. This book provides students with some of the concepts concerning energy — forms, sources, pollution, and economy — and some astronomy.

This physics book (for Secondary Three — Humanities and Economy sections) is a straight forward presentation of four units: energy, radioactivity, universe, and petroleum. Each unit consists of three chapters except the Universe Unit which is explained in four chapters. Each chapter contains the following:

- **Objectives** for teaching the chapter, listed at its beginning. When you start your study of a chapter, be sure to read these objectives. They will help you identify and focus on what is important in the chapter.
- **Numbered sections** which are the major subdivisions of the chapter. Before you begin your reading of a chapter, go through the titles of the sections. This will help you mentally prepare for what is coming up as you study the chapter.
- *Solved examples* inserted at a few points in the text. Be sure to take time to work these questions and example exercises before going on. They help you understand the chapter section by section.
- **Reading** that widens the scope of the student and serves as general knowledge.
- **Questions** and exercises that are at the end of each chapter. They are of five kinds of ascending difficulty:
 - Definitions of some vocabulary and statements of all laws.
 - True / False statements and their corrections to check the student's deep understanding of the material in each chapter.
 - Multiple choice questions that serve as a quick and painless check on the student's grasp of the chapter contents. They serve as a warm-up for the regular exercises and have proved to be an effective learning tool. Correct answers provide reinforcement and encouragement; incorrect ones identify areas of weakness.
 - Questions that test the student's deeper understanding of the ideas of the chapter.
 - Exercises that need one or two steps to solve, and are meant to provide practice in manipulating symbols and numbers, to build confidence, and to promote an intuitive feeling for the magnitudes of the quantities involved.

We hope that this book fulfils the requirements of the new curriculum and effectively serves the purpose for which it was designed.

The Authors

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