MFT 00404

Basic PHYSICS

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Cataloguing-in-Publication Data

Perpustakaan Negara Malaysia

A catalogue record for this book is available from the National Library of Malaysia

ISBN 978-967-0021-73-7

Executive Producer: Azman Hashim. Copy Editor: Amirul Firdaus Zilah, Raihana Sulaiman. Acquisition Editor: Nur Fatihah Pahazri.
Concept & Typesetting: Siti Aishah Mokhtar. Proof Reader: Zaliha Noor
Technical Assistant: Mohd Suhairi Mohamad.

Published by:
UMK Press
Universiti Malaysia Kelantan
Office of Library and Knowledge Management
16300 Bachok, Kelantan
(Member of Malaysian Scholarly Publishing Council (MAPIM))
(Member of Malaysian Book Publishers Association (MABOPA)
Membership Number : 201903)

Printed by:
RTS Typesetting
No. 14, Jalan Jemuju Empat 16/13D,
Seksyen 16, 40200 Shah Alam,
Selangor Darul Ehsan

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PREFACE

This book was developed by the physics lecturer of the Department of Preparatory Science, Universiti Malaysia Kelantan (UMK). It has been written primarily for the student of the UMK Science Foundation. It is intended to prepare students in this programme for basic physics.

It is written in a concise point to help students to have a firm grasp of concepts in Physics. This book covers 14 topics of basic physics. To help readers grasp the material and concepts in learning physics, each chapter begins with a clear explanation of the pertinent definitions, principles, and theorems. This is followed by sets of solved and supplementary problems to provide a complete review of the materials of each chapter. The solved problems illustrate and amplify the theory and provide the repetition of basic principles vital to effective teaching. We included examples and tutorial material in each chapter to fulfil the student's needs in this program. Students can perform all the calculations in the worksheet provided in this book.

The author gratefully acknowledges her indebtedness to the Department of Preparatory Science for the continuous support and encouragement in completing this work.

Asanah Radhi

ACKNOWLEDGEMENT

First and foremost, praises and thanks to Allah, the Almighty, for His showers of blessings throughout the journey to complete the writing of the Physics Module for UMK Science Foundation.

I would like to express my deep and sincere gratitude to all committees in Jabatan Persediaan Sains and The Office of Library and Knowledge Management Universiti Malaysia Kelantan (UMK) for giving me the opportunity and providing invaluable guidance throughout the completion of this module.

I really thank my husband for his support, appreciation, encouragement and keen interest in my academic achievement. Last but not least, thanks to all students of UMK Science Foundation (intake 2021 and 2022) and my friends who directly and indirectly helped me to complete this book.

CHAPTER 1
UNITS, TRIGONOMETRY, AND VECTORS

STANDARDS OF LENGTH, MASS, AND TIME

Three fundamental quantities can be used to express the physical quantities in the study of mechanics:

Physical quantities	SI units
length,	meters (m)
mass	kilograms (kg)
time	seconds (s)

1 Metre (m)

- the distance traveled by light in vacuum during a time interval of 1/299 792 458 second.

1 Kilogramme (kg)

- the mass of a specific platinum– iridium alloy cylinder kept at the International Bureau of Weights and Measures at Sèvres, France

1 Seconds

- defined as 9 192 631 700 times the period of oscillation of radiation from the cesium atom

1 Kelvin (K)

- 1/273.16 of the temperature of the triple point of water

Derivation of fundamental quantities through multiplying and/or dividing them generate other quantity called derived quantity.

Velocity

$$\frac{displacement}{time} = \frac{l}{t} = \frac{m}{s} = ms^{-1}$$