

# **MEDICAL ELECTRONICS**

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# P R E F A C E

This book is concerned with describing the application of technological methods to medical diagnosis and therapy. It is instructive to review its development through recorded history. It is apparent that the fastest advances in the application of technology to medicine have occurred in the 20th Century and with an increasing pace

Medical electronics, or more specifically the instrumentation used in physiological measurement, has changed significantly over the last few years. Developments in electronics technology have offered new and enhanced applications, especially in the areas of data recording and analysis and imaging technology. These changes have been accompanied by more stringent legislation on safety and liability

Medical electronics assures a promising future for engineering graduates in the fields of design, manufacturing and maintenance/servicing of medical electronics equipment.

A Medical Electronic Engineer uses technical expertise to analyze and solve problems in Biology and Medicine in order by implementing through electronic to provide an overall enhancement of the Human healthcare.

The approach taken here is necessarily simplified: it is our intention to provide an adequate grounding for the material in the following chapters both in its basic science and the nomenclature which may be unfamiliar to readers with only elementary biological knowledge.

Apart from the career prospects, being an element in the medical electronics field gives the engineer a sense of fulfillment by serving the human society.

This book is designed to meet the needs of electronics and communication, biomedical engineering students at the senior undergraduate, beginning graduate levels, AMIE, and those of practising engineers.

 *Mr. Y.M. Mehaboob John*

 *Ms. S. Karthigaswathini*

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the love and support of **our colleagues, family members and friends**. We are extremely grateful to one and all.

 *Mr. Y.M. Mehaboob John*

 *Ms. S. Karthigaswathini*



**Thirumigu. M.G.BHARATHKUMAR**

Founder & Chairman, Mahendra Educational Trust

## Forward

*"Computing in their capacity as a tool, computers will be but a ripple on the surface of our culture. In their capacity as intellectual challenge, they are without precedent in the cultural history of mankind".*

-Edsger Dijkstra, 1972 Turing Award Lecture

The ECE Department seeks to educate engineers who will possess the basic concepts, tools, skills, and vision necessary to enhance the technological and economic competitiveness of society. This fact, combined with the undeniable impact of Electronics and Communication Engineering on the modern world, demands an introductory college text book comparable with commonly-used textbooks in physics, chemistry, or biology. Accordingly, this book is intended to meet the need for an introductory college text in ECE. The distinctive feature of the book is that it has broader coverage of the field than is found in many texts that are currently in use.

I am delighted to note that the Faculties of Electronics and Communication Engineering of Mahendra College of Engineering Mr. Y.M.MEHABOOB JOHN along with Ms.S.Karthigaswathini have written this book on "MEDICAL ELECTRONICS" nicely, for the benefit of student community. They have accomplished this goal, and I trust their work will encourage and enlighten all who have an interest in medical applications field and the growing role on Telecommunication sector in the modern world.

**M.G.BHARATHKUMAR**

Founder & Chairman, Mahendra Educational Trust

**Dedicated**  
**to**  
**Our Family, Friends & Students**



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