

Review of “Handbook of Biomedical Instrumentation, Third Edition”

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The popular book in Biomedical engineering by Dr. R.S. Khandpur has recently published its third edition.^[1] The first edition, published in 1987 and the second edition coming out in 2003 became the main textbook in most of the introductory courses of Biomedical Engineering (BME) undergraduate programs around the globe. The third edition is aimed at serving the same purpose as the earlier ones, i.e. to provide a broad summary of the continuously growing field of BME.^[1] The dynamics of the second since the primary editions published are reflected via major changes within the third edition.

The book is into three main parts: (i) Measuring, monitoring and recording instruments (chapter 1-18), (ii) Modern Imaging systems (chapter 19-24) and (iii) Therapeutic equipment (chapter 25-35). In the first part, measuring, monitoring and recording instruments section, the author updated the section with recent development in signal processing microelectronics, micro-electromechanical systems as well as portable and implantable monitoring devices. Now a day, technology has made it possible to develop single chips for ECG/EEG monitors. In the management of health facilities, chapter 9, biomedical telemetry and telemedicine has been divided into two chapters. In new edition chapter 12 on “Telemedicine Technology”, has an edition with present-day wireless technologies like the use of tablets and smart phones in the health sector.

In the second part of the book, detailing Modern imaging system section, many topics have been reviewed with further explanation. They added the new radiology techniques i.e. gamma knife, cyberknife, multislice CT scanner, new sensors, digital radiography and PET scanner which are being extensively used in the modern healthcare systems.

In the third section, which is related to ‘Therapeutic equipment’, these

chapters are updated with the latest portable devices for the health management of patients in the hospital as well as homes (including nursing homes). These concepts have been properly elaborated while revising the text of this section. For implantable devices, modern health uses neurological stimulation to treat pain, epilepsy and bladder control, etc. In all these sections, the current text has been thoroughly updated, revised and better demonstrated for proper understanding of the readers.

Modern medical science is focusing itself to develop new methods of diagnosis and treatment of the diseases. They heavily depend on the medical devices. Therefore, we need to understand about the devices’ use, services and their maintenance. This book remains an admirable and recommended textbook for BME professionals and students. In the last two decades, the development in the medical instruments has been well reflected in its text. Each chapter includes working phenomena and clear block diagrams of Bio-medical instruments, which make it more attractive. In the end of the book, a list of references is given to detail about the sources of texts. This can help the reader to appropriately search for subject of their interest for additional material.

In conclusion, despite the above observations, this book is recommended for all BME members include engineers, students and academicians. It is comprehensive guide for the developers of medical instruments. Overall, the book is well written in simplified language and equipped with appropriate pictograms.

REFERENCES

1. Khandpur RS. Handbook of biomedical instrumentation, 3rd ed. (ISBN:9789339205430), 2014, McGraw Hill Education, Pvt. Ltd., New Delhi, India. 1987.

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