



A First Course on Electronic Engineering

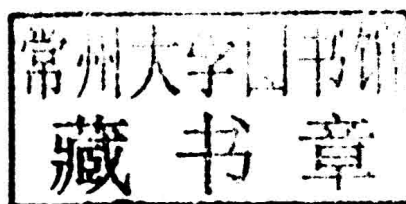
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Alpha Science

A First Course on Electronic Engineering

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**A First Course on
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Preface

This book is an outgrowth of the lecture materials prepared by the authors for various courses of electronic engineering in graduate level engineering programs. This book has been written with the philosophy that, it may be used as a ready reference for students undertaking the study of Electronic Engineering, either in the first year or advanced levels in the graduation program. It also provides coverage for some other courses, including foundation/bridging courses which require the study of Electronic Engineering.

The organisation of the book is in the following format with the aim of facilitating quick access to information.

Chapter one covers the basics of semiconductor physics and its applications in Electronics. Second chapter deals with the principle of operation of PN junction diodes and a few of its common circuits. Third chapter gives a detailed description of various diodes which is used for special purposes. These diodes are different from general purpose PN junction diodes in construction. The constructional details as well as its principle of operation of special purpose diodes are mentioned in chapter three in detail. Chapter four describes the fundamental operation and characteristics of Bipolar Junction Transistor. Fifth chapter covers generally used transistors like FET, MOSFET and UJT with its constructional features and characteristics.

Sixth chapter gives a description of amplifier circuits including power amplifiers and multi-stage amplifiers. Seventh chapter gives an account on opamps and opamp based wave form generators and converters. Comparators are also being discussed in this chapter. Eighth chapter deals with various oscillators including crystal oscillators. Chapter nine gives a detailed view and analysis of multivibrators. Tenth chapter discusses about various power semiconductor devices and its applications including Electric drive control, both AC and DC.

Various AC and DC power supplies are inevitable for any electronic or electrical system which is mentioned. Chapter eleven. Now-a-days, most of the electronic equipments are digital in nature. Chapter twelve deals with the basic principles of Digital Electronics and basic digital modules. The drive for extreme reduction in the size of electronic circuits has lead to the development of micro electronic circuits called the Integrated Circuits. Thirteenth chapter covers integrated circuits and logic

families. Chapter fourteen deals with the basics of Electronic Communication which includes AM, FM and PM techniques. Chapter fifteen gives an account on principles of Mobile Communication.

Chapter sixteen discusses about basic Satellite Communication System and subsystems of a satellite in detail. Seventeenth chapter deals with Electronic Instrumentation and it begins with various types of transducers and proceeds with measurement and analysis devices. Most of the physical parameters are analog in nature but nowadays most of the electronic systems are digital in nature. Hence, for procuring and processing of these physical parameters, we often need Analog to Digital Converter (ADC) and Digital to Analog Converter (DAC). Chapter eighteen covers ADC and DAC. Nineteenth chapter gives an account of various consumer electronic devices like television, DTH and digital audio.

Even though, this book is considered as a comprehensive one, it is not a textbook replacement, but rather a reinforcement and reminder of material learned as a student. I sincerely hope that the final outcome of this book help the students in developing an appreciation for the topic of analysis of basic Electronics and Communication.

An extensive bibliography to guide the students to further sources of information on Electronics and Communication is provided at the end of the book. This book is unique for its diversity in contents, clarity and precision of presentation and overall completeness of its chapters.

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