

Fundamentals of Electronics Book 4: (Oscillators and Advanced Electronics)

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About the Book

This Book, Oscillators and Advanced Electronics Topics, is the final book of a larger, four-book set, **Fundamentals of Electronics**. It consists of five chapters that further develop practical electronic applications based on the fundamental principles developed in the first three books. This book begins by extending the principles of electronic feedback circuits to linear oscillator circuits. The second chapter explores non-linear oscillation, waveform generation, and waveshaping. The third chapter focuses on providing clean, reliable power for electronic applications where voltage regulation and transient suppression are the focus. Fundamentals of communication circuitry form the basis for the fourth chapter with voltage-controlled oscillators, mixers, and phase-lock loops being the primary focus. The final chapter expands upon early discussions of logic gate operation (introduced in Book 1) to explore gate speed and advanced gate topologies.

Fundamentals of Electronics has been designed primarily for use in an upper division course in electronics for electrical engineering students and for working professionals. Typically such a course spans a full academic year consisting of two smesters or three quarters. As such, Oscillators and Advanced Electronic Topics, and the first three books in the series, Electronic Devices and Circuit Applications (ISBN 978-93-85909-21-4), Amplifiers: Analysis and Design (ISBN 978-93-85909-22-1), and Active Filters and Amplifier Frequency Response (ISBN 978-93-85909-23-8) form an appropriate body of material for such course.

About Synthesis:

This Volume is a Printed Version of a work that appears in the Synthesis Digital Library of Engineering and Computer Science. Synthesis books provide concise, original presentations of important research and development topics, published quickly, in digital and print formats.

Salient Features

Offers a comprehensive yet practical exploration of basic electrical and electronic concepts, hands-on applications, and troubleshooting. Has enough equations to explain the concepts, plenty of diagrams, and lucid verbal explanations.

Contains a fairly large number of solved problems and practice exercises.

Written in a clear and accessible narration, focuses on fundamental principles and their applications to solving real circuit analysis problems.

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Communication Circuits
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About the Author

Thomas Schubert: received BS, MS, and PhD degrees in Electrical Engineering from the University of California at Irvine (UCI). He was a member of the first engineering graduating class and the first triple-degree recipient in engineering at UCI. His doctoral work discussed the propagation of polarized light in anisotropic media. Dr. Schubert arrived at the University of San Diego in August, 1987 as one of the two founding faculty of its new Engineering Program. From 1997-2003, he led the Department as Chairman, a position that became Director of

Engineering Programs during his leadership tenure. Prior to coming to USD, he was at the Space and Communications Division of Hughes Aircraft Company, the University of Portland, and Portland State University. He is a Registered Professional Engineer in the State of Oregon. In 2012, Dr. Schubert was awarded the Robert G. Quinn Award by the American Society of Engineering Education "in recognition of outstanding contributions in providing and promoting excellence in engineering experimentation and laboratory instruction."

Ernest Kim: received his B.S.E.E. from the University of Hawaii at Manoa in Honolulu, Hawaii in 1977, an M.S.E.E. in 1980 and Ph.D. in Electrical Engineering in 1987 from New Mexico State University in Las Cruces, New Mexico. His dissertation was on precision near-field exit radiation measurements from optical fibers. Dr. Kim worked as an Electrical Engineer for the University of Hawaii at the Naval Ocean Systems Center, Hawaii Labs at Kaneohe Marine Corps Air Station after graduating with his B.S.E.E. Upon completing his M.S.E.E., he was an electrical engineer with the National Bureau of Standards in Boulder, Colorado designing hardware for precision fiber optic measurements. He then entered the commercial sector as a staff engineer with Burroughs Corporation in San Diego, California developing fiber optic LAN systems. He left Burroughs for Tacan/IPITEK Corporation as Manager of Electro-Optic Systems developing fiber optic CATV hardware and systems. In 1990 he joined the faculty of the University of San Diego. He remains an active consultant in radio frequency and analog circuit design, and teaches review courses for the engineering Fundamentals Examination. Dr. Kim is a member of the IEEE, ASEE, and CSPE. He is a Licensed Professional Electrical Engineer in California.