Book Announcements

CHIANG, H.H., Chung Yuan Christian University, ***Electrical and Electronic Instrumentation,*** John Wiley & Sons, New York, 1984, 588 pages. $64.95.

Purpose: The purpose of this book is to present the basic theory and common-core concepts of electrical and eletronic measuring instruments. An effort has been made to emphasize complete circuits of electronic instruments so that the practical contemporary circuit-design technique will be more transparent. The book covers a systematic sequence of fundamental topics and practical applications and has been prepared with the practicing engineer in mind.

Contents: Basic electric instruments. Various meter movements. Potentiometers and resistance bridges. Capacitance bridges and their applications. Inductance bridges and their applications. Semiconductor devices and digital systems. Transducers. General description of oscilloscopes. Solid-state electronic voltmeters and multimeters. Oscillators and signal generators. Comparators, function and pulse generators. Telemetering transmitters and receivers. A typical triggered-sweep dual-trace oscilloscope. Digital multimeter design. Introduction to the TV terminal using a microprocessor. Appendices. Index.

EDWARDS, J.B. and **OWENS, D.H.,** University of Sheffield, ***Analysis and Control of Multipass Processes,*** John Wiley & Sons, New York, 1982, 298 pages. $54.95.

Purpose: The objective of this text has been to develop for control engineers, control theorists, and systems theorists basic conceptual and mathematical tools for the modelling, analysis and control of multipass systems. This class of recently identified systems possesses two novel properties: 1) repetitive operation and 2) interaction between the state and/or output functions generated during succession cycles of operation.

Contents: Examples of multipass processes. A preliminary analysis of unidirectional processes. Stability theory for linear multipass processes. Additional characteristics. Wider application of multipass system concepts. Possible future applications. References. Index.

MAHMOUD, M. and **SINGH, M.G.,** University of Manchester, ***Large Scale Systems Modelling,*** Pergamon Press, New York, 1981, 326 pages. $55.00.

Purpose: This book provides an overview of the "state of the art" of large scale systems modelling, that is, the modelling of high-dimensional systems.

Contents: Modelling and parameter estimation. Parameter estimation for large scale systems. Aggregation, state-space reduction techniques. Model simplification using frequency domain techniques. Time scale analysis. Introduction to singular perturbations.

PANDIT, S.M., Michigan Technological University, and **WU, S.-M.,** University of Wisconsin, ***Time Series and System Analysis with Applications,*** John Wiley and Sons, New York, 1983, 586 pages. $46.45.

Purpose: To avoid the considerable trial and error needed to develop a system model from experimental data, the time series is considered as the response of the system and a model of the system to the desired order is determined by least-squares fitting. The text has been prepared for senior- and graduate-level instruction.

Contents: Introduction. Autoregressive moving average models. Characteristics of ARMA models. Modelling. Forecasting. Uniform sampling of continuous systems—first order. Second order system and random vibration. AM (2,1) model and its application to exponential smoothing. Stochastic trends and seasonality. Deterministic trends and seasonality: nonstationary series. Multiple series: optimal control forecasting by leading indicator. Appendices. References. Application bibliography.

PAPOULIS, A., Polytechnic Institute of New York, ***Circuits and Systems,*** Holt, Rinehart and Winston, New York, 1980, 435 pages. $42.95.

Purpose: This book has been written as a text for a one-year, junior-level course on circuits and systems. The goal of the text has been to integrate the teaching of analog and digital system analysis.

Contents: Elements and equations. Laplace transforms, analog systems, differential equation. Z-transforms, digital systems, recursion equations. Convolution. System function, frequency response, simulation. Analog and digital synthesis. Fourier series. Fourier integrals. Index.

VIDYASAGAR, M., University of Waterloo, ***Input-Output Analysis of Large-Scale Interconnected Systems,*** Springer-Verlag, New York, 1981, 221 pages. $19.00.

Purpose: This book is intended to be a fairly comprehensive treatment of large-scale interconnected systems from an input-output point of view. However, a knowledge of elementary functional analysis is a prerequisite.

Contents: Introduction. Mathematical preliminaries. Gain and dissipativity. Decomposition of large-scale interconnected systems. Well-posedness of large-scale interconnected systems. Small-gain type criteria for L_p-stability. Dissipativity-type criteria for L_2-stability. L_2-instability criteria. L_∞-stability and L_∞-instability using exponential weighting. References. Index.

KURMAN, K.J., Warsaw Technical University, ***Feedback Control: Theory and Design,*** Elsevier, 1984, 527 pages. $90.75.

Purpose: This text is aimed at engineers who deal with feedback control on a daily basis and who wish to expand their proficiency in the application of theoretical methods to solve practical problems in the areas of testing, correction, and design.

Contents: The essence and types of automatic feedback control. Basic methods of analysis and compensation of feedback control systems: nonlinear problems. Basic methods of analysis and correction of feedback control systems: linear problems. Design of basic control systems. Remarks on the variational-gradient approach to higher-complexity problems. Index.