

Process Control – A First Course with MATLAB

**Pao C. Chau,
Cambridge University
Press, New York, NY, 328
pp., \$100 Hardcover, \$38
paperback, 2002**

This volume is intended as a text for an introductory course in process control. The emphasis is on grasping the basic concepts and integrating knowledge rather than on a broad coverage of the subject. It is written directly to and for the student in what the author describes as a style that is “purposely unorthodox and conversational.”

The teaching style relies heavily on MATLAB as a tool for solving the problems, but does not include “canned programs” or detailed computerized solutions (these are available through the publisher’s Web Support website). An introductory chapter on MATLAB Tutorial Sessions is appended. The student is expected to have available MATLAB with the Control System Toolbox. The tutorials are based on Version 6.1 of the former, and 5.1 of the latter. Simulink Version 4.1 is also utilized for the more complex control systems. Although the appropriate MATLAB statements are given in the example problems, the approach is not like a “cook-book.” Instead, the student is expected to learn analytical skills and apply this tool on his/her own. The student should have a background in differential equations, mass balances, and matrix analysis.

The ten chapters are: Introduction; Mathematical Preliminaries; Dynamic Response; State-Space Representation; Analysis of Single-Loop Control Systems; Design and Tuning of Single-Loop Control Systems; Stability of Closed-Loop Systems; Frequency-Response Analysis, Design of State-Space Systems and Multiloop Systems

The approach is based on classic linear systems analysis. The level is intended for the uninitiated student, with liberal use of examples, derivations and review problems in addition to the appended homework problems. A short list of nine references/further reading is included.

This book is highly recommended for a first course, especially when taught by experienced instructors who can supplement the material with additional practical applications.

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Science and Technology Ethics

**Edited by Raymond E. Spier, Routledge,
New York, NY, 247 pp., \$25.95, 2002**

This book tackles a timely and urgent topic. The popular news is full of reports related to ethical challenges in science and technology arenas, such as stem-cell research, Internet piracy, and cloning. The book includes an introduction and ten independent essays on a wide range of topics, most of which are related to current science and technology issues. A few of the essays and the introduction present general, historical, and theoretical information and analysis about ethics. Only about half of them treat scientific and technical issues, and these essays are of most interest to scientists and engineers in the specific disciplines discussed — biology, computers, nuclear engineering, military and the environment.

The Centre for Professional Ethics at the Univ. of Central Lancashire publishes an extensive series on ethics for individual professions. This book is the latest in this series, apparently intended for scientists and engineers. Perhaps the “profession” of science and engineering is too broad to be coherently addressed in one volume on professional ethics. It is difficult to imagine that this book would appeal to anyone other than an academic researcher specializing in scientific ethics and someone who had already studied the subject extensively. However, the book’s lack of coherence and wide range of unrelated topics makes its usefulness questionable.

The introduction, which does not relate to the rest of the book, is very difficult to read — if not offensive in parts due to pompous and sexist writing. Four of the essays (“The processes of science,” “Ethics and the products of science,” “Ethics in conflict” and “A social contract?”) were poorly written and did not contribute to the intent of the book. Other essays effectively presented discussions of urgent ethical issues.

The subject of ethics in general — and scientific ethics in particular — is in great need of discussion and of useful texts. Sound ethics are not innate. As has been widely learned through current events, no professional environment is immune to temptations to violate professional standards of ethics. Practicing engineers must learn about “doing the right thing” through dedicated training and practice. This book is not recommended to fulfill that need. An alternative for introductory reading and academic use is “Engineering and Environmental Ethics,” by J. R. Wilcox and L. Theodore (Wiley 1998), although hundreds of books in specific areas of science and technology ethics are also available.

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