

MATLAB AND SIMULINK BASED BOOKS

Incorporating Real-Time Implementation into Signal Processing Laboratories



DSP education is being challenged to move students beyond theory to DSP implementations. Dr. Mark A. Yoder, professor of electrical and computer engineering at Rose-Hulman Institute of Technology, addresses this need with multimedia signal processing labs in which students use Simulink® and Real-Time Workshop® to design and implement programs onto DSP chips that synthesize music in real time.

“The exciting thing about Simulink is how easy it is to go from a model to running code,” Dr. Yoder says. “Working in C, it took students twelve lab periods to get to the same point they can get to in three labs using Simulink. Simulink enables students to implement algorithms on real DSP hardware without having to write the code by hand, letting them focus on optimization techniques while working at a higher level.”

The labs are complemented by Dr. Yoder’s textbook *Signal Processing First*, which is available in English, Korean, Greek, and simplified and traditional Chinese.

Signal Processing First

By James H. McClellan,
Ronald W. Schafer, and Mark A. Yoder

Textbooks Worldwide Support Introductory Programming Courses Using MATLAB

Programming skills are fundamental components of any engineering or computer science program. To be effective programmers today, students also need to learn problem-solving skills. As a result, many universities teach MATLAB® in introductory-level programming courses. Recent textbooks that support this trend include:



Einstieg in das Programmieren mit MATLAB

(Entrance into Programming with MATLAB)
By Ulrich Stein
Carl Hanser Verlag, 2007
Language: German

Learning Programming Using MATLAB

By Khalid Sayood
Morgan & Claypool Publishers, 2007

Ready to Use MATLAB & Simulink Programming

By Takanobu Aoyama
Kodansya, 2007
Language: Japanese

MATLAB Programming for Engineers, 4e

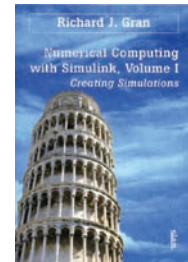
By Stephen J. Chapman
Cengage Learning, 2008

Integrating Model-Based Design into the Controls Curriculum

In automotive, aerospace, industrial equipment, and other industries, engineers use Model-Based Design to model, simulate, implement, and verify their embedded control systems. In response to this trend, controls courses and laboratories are increasingly using Model-Based Design to teach future engineers to implement control strategies in hardware. Recent textbooks that support this trend include:

Biped Robot Simulation with MATLAB & Simulink and Model-Based Design

By Hiroumai Mita
Mainichi Communications Inc., 2007



Numerical Computing with Simulink, Volume I: Creating Simulation

By Richard Gran
SIAM, 2007

Digital Integrated Circuits: Design-for-Test Using Simulink and Stateflow

By Evgeni Perelroyzen
CRC Press, Inc., 2007

Resources

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