

Digital VLSI Design with Verilog: A Textbook from Silicon Valley Polytechnic Institute

By John Michael Williams

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This book is structured as a step-by-step course of study along the lines of a VLSI integrated circuit design project. The entire Verilog language is presented, from the basics to everything necessary for synthesis of an entire 70,000 transistor, full-duplex serializer-deserializer, including synthesizable PLLs. The author includes everything an engineer needs for in-depth understanding of the Verilog language: Syntax, synthesis semantics, simulation and test. Complete solutions for the 27 labs are provided in the downloadable files that accompany the book. For readers with access to appropriate electronic design tools, all solutions can be developed, simulated, and synthesized as described in the book. A partial list of design topics includes design partitioning, hierarchy decomposition, safe coding styles, back annotation, wrapper modules, concurrency, race conditions, assertion-based verification, clock synchronization, and design for test. A concluding presentation of special topics includes System Verilog and Verilog-AMS.

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Editorial Review

Review

“As the title states, this is a textbook for a graduate course on digital design. … the text is mostly oriented to the professor, providing a perfect tool to drive the course. The text is well structured by weeks and class sessions … needed to cover most of the aspects involved in an introductory digital design course. … I am sure that students using this book will learn enough to start working in any Silicon company.” (Javier Castillo, Computing Reviews, March, 2015)

From the Back Cover

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- Covers the entire Verilog language – using most of it in practice;
- Provides 27 lab exercises, with complete and tested answers;
- Explains and emphasizes synthesizability, wherever it pertains to language features;
- Develops as a major project a synthesizable 70,000-gate SerDes;
- Presents synthesis-relevant usage of *SystemVerilog*, and the basic functionality of *Verilog-AMS.*

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About the Author
After spending some years at sea in the U. S. Navy, John Michael Williams returned to school for degrees at Columbia University, the University of Chicago and Southern Illinois University, eventually studying human vision in postdoctoral study at the University of Michigan. He moved to California in 1982 and spent significant work time as an applications engineer at Daisy Systems and then at Compass Design Automation. After attending various physics-related classes at Stanford, he began teaching at Silicon Valley Technical Institute, where he wrote the first edition of "Digital VLSI Design with Verilog" and many other course workbooks which now are posted at Scribd. He moved to Oregon a few years ago, where he remains mostly retired.

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