



# Hands-On Introduction to LabVIEW for Scientists and Engineers

By John Essick

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## Hands-On Introduction to LabVIEW for Scientists and Engineers By John Essick

*Hands-On Introduction to LabVIEW for Scientists and Engineers*, Third Edition, explores practical programming solutions for carrying out interesting and relevant projects. Readers--who are assumed to have no prior computer programming or LabVIEW background--will begin writing meaningful programs in the first few pages.

**Improvements to the Third Edition:** This new edition includes the following improvements:

- \* All chapters are fully updated to the latest version of LabVIEW. DAQ hardware now commonly used in instructional laboratories and self-learning is highlighted.
- \* For easy reference, seven chapters begin with a "Basics" section that explains the fundamental operation of the LabVIEW function covered in that chapter [Chapters 2, 3, 4, 7, 8, 9, 12].
- \* A new first chapter offers focused introduction to the LabVIEW programming environment. Readers construct a simple program to detect whether a given integer is even or odd [Chapter 1].
- \* Coverage of LabVIEW's text-based functions is given for both the MathScript Node and Formula Node [Chapter 4 and Appendix A].
- \* Shift register usage is illustrated through a signal-averaging program (replacing the numerical integration and differentiation programs used in previous editions) [Chapter 7].
- \* State machine program architecture is now taught in the case structure chapter (replacing the numerical integration program used in previous editions). Readers construct a state-machine guessing game and a digital oscilloscope with runtime control [Chapter 8].

- \* A nonlinear curve fitting example is included in the text [Chapter 10].
- \* The fast Fourier transform chapter opens with an Express VI-based "Quick Example" section, which gives a concise introduction to the digital spectral analysis topics of leakage and windowing. High-level mathematical coverage of these topics is moved to an appendix [Chapter 11 and Appendix B].
- \* The proportional-integral-derivative temperature control project is now given in an appendix [Appendix C].
- \* About 20 new end-of-the-chapter problems appear throughout the book.

More information about this book can be found here:

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## **Editorial Review**

### Review

"The hands-on method really allows students to learn the material in sufficient depth. I know of no other book that comes even close."--Mark Beck, *Whitman College*

"This book is exactly what I need to fill gaps in student understanding of LabVIEW."--Eric Ayars, *California State University, Chico*

"This text is the most comprehensive and readable book available for LabVIEW."--Ladimer S. Nagurney, *University of Hartford*

From the Inside Flap

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About the Author

**John Essick** is Professor of Physics at Reed College. Since 1993, he has taught computer-based experimentation using LabVIEW as part of Reed's junior-level Advanced Laboratory and used LabVIEW to carry out many research projects.

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**Gerald Hackler:**

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