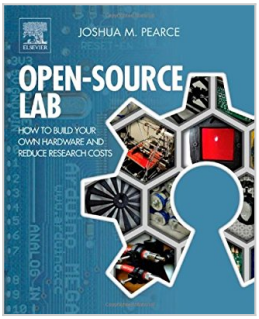

Open-Source Lab: How to Build Your Own Hardware and Reduce Research Costs

By Joshua M. Pearce

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Open-Source Lab: How to Build Your Own Hardware and Reduce Scientific Research Costs details the development of the free and open-source hardware revolution. The combination of open-source 3D printing and microcontrollers running on free software enables scientists, engineers, and lab personnel in every discipline to develop powerful research tools at unprecedented low costs. After reading *Open-Source Lab*, you will be able to:

- Lower equipment costs by making your own hardware
- Build open-source hardware for scientific research
- Actively participate in a community in which scientific results are more easily replicated and cited

- Numerous examples of technologies and the open-source user and developer communities that support them
- Instructions on how to take advantage of digital design sharing
- Explanations of Arduinos and RepRaps for scientific use
- A detailed guide to open-source hardware licenses and basic principles of intellectual property

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- Sales Rank: #931886 in Books
- Published on: 2013-11-21
- Original language: English
- Number of items: 1
- Dimensions: 9.30" h x .70" w x 7.50" l, 1.50 pounds
- Binding: Hardcover
- 240 pages

Editorial Review

Review

"…details the development of the free and open-source hardware revolution. The combination of open-source 3D printing and microcontrollers running on free software enables scientists, engineers, and lab personnel in every discipline to develop powerful research tools at unprecedented low costs."--***OverDrive.com,*** **May 2, 2014** *"Imagine that a country like Ecuador, would systematically follow the advice of Joshua Pearce in his book, Open Source Lab (Pearce, Joshua M. Open-Source Lab. Elsevier, 2013), which shows how scientific labs can be built at about 10% of the cost, by systematically opting for open scientific instruments?"*--***HuffingtonPost.com,*** **April 23, 2014** *"Overall this is a book which is focused on the development of Laboratory equipment, mainly using open-source hardware such as RepRap 3D printers and Arduino microcontrollers. It will guide the inexperienced reader making him comfortable to embrace this technological and social advances in a very practical way, resulting in very significant cost reductions for researchers and teachers."*--***RepRap Magazine,*** **March 2014** *"Research projects can benefit from do it yourself (DIY) techniques to design and build open-source hardware…The book is intended as an introductory guide on how to take advantage of the benefits of open-source hardware for science-related projects… In particular, this book focuses on the combination of open-source microcontrollers covered in Chapter 4 and open-source 3-D printing reviewed in Chapter 5."*--***PowerElectronics.com,*** **December 19, 2013** *"The open hardware movement aims to reclaim our freedom to work on, and build, the things around us by making source files available, free and modifiable…Dr. Joshua Pearce details how the manufacturing revolution, which puts 3-D printing, open-source microcontrollers and free software into the hands of the people, enables makers to develop "powerful research tools at unprecedented low costs."*--***Shareable.net blog,*** **December 3, 2013** *"Pearce intends his book to be a sort of guide to creating your own open-source lab gear. The topics he covers include software rights, best practices and etiquette for using open-source hardware, open-source microcontrollers, open-source centrifuges and spectrometers, colorimeters, and even open-source laser welding. There are also some helpful hints for those who are 3D-printing their equipment for the first time."*--***Machine Design blog,*** **December 4, 2013** *"Joshua Pearce is not one for understatement. 'This is the beginning of a true revolution in the sciences,' says the author of 'Open-Source Lab.' For cash-strapped researchers, he could be right…'Open-Source Lab' is written for a wide audience, from novices to those who are "at one with the force of open source," who can skip the introductory material and get right to work printing their own equipment."*--***Nanowerk.com, November 18, 2013*** *"3dhacker is truly impressed by the amount of work Dr. Pearce has put into Open-Source Lab. It's immediately clear how a teacher or researcher in any institution around the world can reduce their laboratory equipment costs by 60-90%. Additionally Dr. Pearce illustrates the benefits of open source hardware and how it's a must if the world wants to move at the fastest pace for scientific development!"*--***3D Hacker! online, November 18, 2013*** *"We are developing a whole range of different kinds of inexpensive high-end 3D printable scientific tools. I documented both our work and dozens of examples from the community in a book: Open-source Lab, which should be published next month. The idea of open-sourcing scientific equipment is catching on and it is really exciting to see what is going on with groups all over the world like at Tekla Labs."*--***3DPrintingIndustry.com,*** **October 18, 2013**

From the Back Cover

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development of the free and open-source hardware revolution. The combination of open-source 3-D printing and microcontrollers running on free software enables scientists, engineers, and lab personnel in every discipline to develop powerful research tools at unprecedented low costs. *Open-Source Lab* includes:

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About the Author
Dr. Joshua M. Pearce received his Ph.D. in Materials Engineering from the Pennsylvania State University. He then developed the first Sustainability program in the Pennsylvania State System of Higher Education as an assistant professor of Physics at Clarion University of Pennsylvania and helped develop the Applied Sustainability graduate engineering program while at Queen's University, Canada. He currently is an Associate Professor cross-appointed in the Department of Materials Science & Engineering and in the Department of Electrical & Computer Engineering at the Michigan Technological University where he runs the Open Sustainability Technology Research Group. His research concentrates on the use of open source appropriate technology to find collaborative solutions to problems in sustainability and poverty reduction. His research spans areas of electronic device physics and materials engineering of solar photovoltaic cells, and RepRap 3-D printing, but also includes applied sustainability and energy policy. He has published more than 100 peer-reviewed articles and is the author of the Open-Source Lab:How to Build Your Own Hardware and Reduce Research Costs.

Users Review

From reader reviews:

Kelly Neidig:

Book is to be different for every single grade. Book for children until adult are different content. As we know that book is very important for all of us. The book Open-Source Lab: How to Build Your Own Hardware and Reduce Research Costs ended up being making you to know about other expertise and of course you can take more information. It is extremely advantages for you. The reserve Open-Source Lab: How to Build Your Own Hardware and Reduce Research Costs is not only giving you far more new information but also for being your friend when you feel bored. You can spend your spend time to read your guide. Try to make relationship with the book Open-Source Lab: How to Build Your Own Hardware and Reduce Research Costs. You never sense lose out for everything if you read some books.

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