Contributions to Open Education

About this document

This document supplements my faculty statement on Teaching & Learning. In it, I list my contributions to open education, through published open educational resources, essays and blog posts, talks, and interviews or media coverage. I have a decade-long commitment to open education, a consistent practice and reflection, motivated by the idea of using computing as a pedagogical tool and inspired by the open-source movement.

Open Educational Resources (OER) published

I have published OER for all my course materials since 2008, when I joined Boston University as an assistant professor of engineering, and all new materials since moving in 2013 to the George Washington University. Here is a list of my published OER (some, co-authored with my PhD students):

- (2009) Video collection on Fluid Mechanics, on BU iTunes: https://itunes.apple.com/us/itunes-u/fluid-mechanics-2010-eng-me303/id452560560?mt=10
- (2010) Video collection on Bio-aerial Locomotion, on BU iTunes: https://itunes.apple.com/itunes-u/bio-aerial-locomotion-ek131/id464937253
- (2011) Video collection on Computational Fluid Dynamics, on BU iTunes: https://itunes.apple.com/us/itunes-u/computational-fluid-dynamics/id452560554?mt=10
- (2012) Video collection on Computational Fluid Dynamics, on YouTube: https://www.youtube.com/playlist?list=PL30F4C5ABCE62CB61 (772,400+ added views, May 2019)
- (2013) Computable content using Python: collection of Jupyter notebooks on Computational Fluid Dynamics: https://github.com/barbagroup/CFDPython
- (2014) Computable content using Python: collection of Jupyter notebooks on Aerodynamics: https://github.com/barbagroup/AeroPython
- (2014) Computable content using Python: collection of Jupyter notebooks for the MOOC "Practical Numerical Methods with Python" https://github.com/numerical-mooc
- (2016) Computable content using Python: "The world of Jupyter" tutorial https://github.com/barbagroup/jupyter-tutorial
- (2017) One-week intensive workshop, "Essential skills for reproducible research computing" https://barbagroup.github.io/essential_skills_RRC/
- (2017–9) Computable content using Python: "Engineering Computations" https://github.com/engineersCode/EngComp

Writings on education

- February 2012, blog—This CFD class is flippin'
- July 2013, blog—Comment: "Will MOOCs destroy academia?"
- April 2014, blog—Announcing AeroPython!
- May 2014, blog—Why I push for Python
- July 2014, blog—Announcing "Practical Numerical Methods with Python" MOOC
- September 2014, blog—A collaboration to issue badges in #numericalmooc
- March 2015, on Class Central—"Why My MOOC is Not Built on Video"
- July 2015, on Class Central—"What's Open edX"
- March 2016, blog—Computational Thinking: I do not think it means what you think it means

Talks on open education and related

- Feb. 2013: BU Center for Excellence & Innovation in Teaching, CEIT Teaching Talks: "Everybody's flippin' — An update on the flipped classroom"
- Oct. 2013: National Academy of Engineering (NAE) Frontiers of Engineering Education Symposium: Flipped Classroom.
- Nov. 2014: Open edX Technology Conference, Cambridge, MA: "Teaching Numerical Computing in STEM"
- March 2015: SIAM Conference on Computational Science and Engineering, Salt Lake City, Utah: invited speaker in the minisymposium MS78 "Teaching Computational Thinking and Practice"
- July 2015: PyData Seattle "Data-driven Education and the Quantified Student."
- Sept. 2015: European Conference on Technology-Enhanced Learning, EC-TEL 2015, Toledo, Spain: invited panelist for the "HybridEd Workshop: MOOC-based Models for Hybrid Pedagogies."
- Oct. 2015: Berkeley Institute of Data Science (BIDS) Data Science Lecture Series: "Computational Thinking and the Pedagogy of Computable Content."
- Jan. 2016: Open edX Meetup in NCY, organized by IBL Studios and hosted by MacKinsey Academy, Video: https://youtu.be/o5LDo9R7eJQ
- Dec. 2016: Berkeley Institute of Transparency for the Social Sciences (BITSS) fifth Annual Meeting, Berkeley, CA, opening keynote "Pedagogical purpose of open sharing."

- Oct. 2017: Virginia Tech Destination Areas Global Speaker Series: "Teaching in STEM Disciplines: Open Source Methods"
- Feb. 2017: Teaching with Jupyter Notebooks, by Prof. Lorena Barba. Teaching for Engagement Workshop Series, GW Gelman Library
- Apr. 2018: Open Education Global Conference, Delft, Netherlands: "A Qualitative Study of Open Educational Practice using Jupyter Notebooks"
- May 2018: Jupyter Pop-up DC: "Flipped Learning with Jupyter: Experiences, Good Practices, Supporting Research"
- May 2018: Open edX Conference, Montréal, Canada: "Jupyter-based courses in Open edX: authoring and grading with notebooks"
- July 2018: SciPy Conference "Engineers Code: re-usable, open educational modules for engineering undergraduates"
- Aug. 2018: JupyterCon NY "Flipped learning with Jupyter: Experiences, best practices, and supporting research," https://conferences.oreilly.com/jupyter/jup-ny/public/schedule/detail/68412
- May 2019: "Hybrid to online with Jupyter-first course development," a 2-day workshop for faculty of University at Buffalo

Profiles, interviews, media coverage and mentions

- GW Today: "GW to Launch Scientific Computing MOOC This Fall" August 2014
- Class Central: "George Washington University adopts Open Edx to launch 3 MOOCs" August 2014
- Open edX blog: "Spotlight on: GW Professor Lorena A. Barba" 10/27/2014
- eCampus News: "Independent MOOC" reaches global audience with connected course, by Haley Goodman; October 21st, 2014
- Course Review: Practical Numerical Methods with Python by George Washington University, by Jonah Miller for Class Central, May 2015
- 4+1 Interview: Lorena Barba, by Robert Talbert (Oct. 2015): "Lorena Barba is […] a leading proponent of Project Jupyter in university STEM education."
- "Jupyter/IPython Notebooks: A Killer App in STEM Education… And An Engaging Course Proves It," IBL Studios blog, October 2015
- Interview with Lorena Barba, GW Libraries: showcases Barba's commitment to ope source and open education.

- "Learn alongside innovators, thought-by-thought, in context" By Paco Nathan (O'Reilly Director of the Learning Group), March 21, 2016—says "… Lorena is one of the most notable professors leveraging Jupyter for teaching"
- "Computable content: Notebooks, containers, and data-centric organizational learning" by Paco Nathan at Strata Conference. Says: "Computable content, first described by Lorena Barba at a 2015 lecture at the UC Berkeley Institute for Data Science, leverages Jupyter notebooks to make learning materials more powerful by integrating compute engines, data sources, etc."
- "Prof. Lorena Barba Implements An Effective Flipped Learning Experience With Jupyter" (May 2018), IBL News
- "Open Resources Such as Jupyter and Open edX Transform STEM Education, Proves Prof. Barba" (May 2019) IBL News

Open book

"Teaching and Learning with Jupyter" http://go.gwu.edu/jupyter4edu

Lorena A. Barba, Lecia J. Barker, Douglas S. Blank, Jed Brown, Allen B. Downey, Timothy George, Lindsey J. Heagy, Kyle T. Mandli, Jason K. Moore, David Lippert, Kyle E. Niemeyer, Ryan R. Watkins, Richard H. West, Elizabeth Wickes, Carol Willing, and Michael Zingale

New journal

I founded and am Editor in Chief of *The Journal of Open Source Education*, https://jose.theoj.org, a scholarly journal with a formal peer-review process, publishing computational learning modules and educational software. Since July 2018, it has published 16 articles, and currently has 7 more under review.

Links for Lorena A. Barba

- Website: https://lorenabarba.com
- University faculty profile (includes educational background): https://www.seas.gwu.edu/lorena-barba
- LinkedIn profile: https://www.linkedin.com/in/lorenabarba
- GitHub: https://github.com/barbagroup
- Twitter: https://twitter.com/lorenaabarba?lang=en
- Figshare: https://figshare.com/authors/Lorena_A._Barba/97553
- Medium: https://medium.com/@lorenaabarba
- YouTube: https://www.youtube.com/user/lorenabarba