



WebSights

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WebSights features reviews of select sites presenting physics teaching strategies, as well as shorter announcements of sites of interest to physics teachers. All sites are copyrighted by their authors. This column is available as a web page at <http://PhysicsEd.BuffaloState.Edu/pubs/WebSights>. If you have successfully used a site to teach physics that you feel is outstanding and appropriate for *WebSights*, please email me the URL and describe how you use it to teach. The person submitting the best site monthly will receive a T-shirt.

The Whysguy popular science demonstration video clips and PBS's Wired Science:

Matt Salens of University of Illinois at Urbana-Champaign physics appears in video segments on local television (WCIA's Morning Show) every Wednesday, and an archive of more than 300 of his clips is freely accessible at <http://www.whysguy.net> (I had to start, stop and re-stream several to make them work). These five-minute and under clips feature popular (sometimes dangerous) physics demonstrations and explanations, including weather, optics, technology and driving phenomena, making ice cream and electrophori, various LN₂ demos, potato cannon, trebuchets and explosions etc. Dan Graf of Hornell H.S. physics says the clips are very engaging for his students, particularly conceptual physics students. I enjoyed the clips on electricity and electrical safety particularly.

Contributed by Dan Graf of Hornell High School

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Freely downloadable physics textbooks:

Ben Crowell of Fullerton College, CA, has made his *Light and Matter* introductory physics text sequence (for life-science students, with optional calculus) freely available for download under the Creative Commons License from <http://www.lightandmatter.com>. My students are now reading from the *Optics* text from that set, a topic not treated in our class text. Others in that series include *Newtonian Physics*, *Conservation Laws*, *Vibrations and Waves*, *Electricity and Magnetism*, and *The Modern Revolution in Physics*. Crowell also provides instructor's resource materials and two other works based on conservation laws from his site.

The classic and historically important text *Practical Physics* (1922) by Robert Millikan and Henry Gale is available from the Internet Archive <http://www.archive.org/details/practicalphysics00millrich>, and was reviewed online by John Denker in PHYS-L at <https://carnot.physics.buffalo.edu/archives> (search on gale). Some 1000 freely downloadable electronic texts and out-of-copyright facsimiles of physics texts are now online at <http://www.archive.org>; (search the word physics and select texts as media type) including many classics and much dated material.

Posted to PHYS-L by John S. Denker, jsd@av8n.com, with comments by several Phys-L contributors.

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College tuition funding for HS students and others interested in teaching physics as a career:

There are a variety of government-sponsored college and university tuition reimbursement and loans forgiveness programs as well as scholarships available to individuals seeking careers teaching grades 7-12 Science, Technology, Engineering and Math (STEM). Most such programs require the recipient to perform service as a working STEM teacher for a minimum period of time after graduation and may require this service take place in federally designated high needs schools (many urban and rural but not many suburban schools). The U.S. Department of Education maintains a searchable database of high needs schools at <https://www.tcli.ed.gov/CBSWebApp/tcli/TCLIPubSchoolSearch.jsp>. STEM teachers teaching at these high-needs schools may be eligible for U.S. Federal Perkins and Stafford student loan forgiveness of up to \$17,500 of loans incurred in programs leading to their teacher certification over five years of service; details at <http://www.ifap.ed.gov/dpclletters/GEN0414.html>.

Some U.S. state departments of education have programs underwriting tuition for grades 7-12 STEM teachers, and require a term of service in that state in return. For instance, if you are willing to work in NY State for five years, the state will pay your (SUNY equivalent) tuition for up to four years to a New York institution for a program leading to STEM teacher certification. See <http://tinyurl.com/2odvta> or your state department of education website <http://www.ed.gov/about/contacts/state/index.html?src=In>.

Approximately 70 U.S. teacher preparation institutions hold current National Science Foundation (NSF) Robert Noyce Scholarship program awards; these awards pay significant amounts for post-baccalaureate, career-changing and undergraduate STEM majors changing to teacher preparation programs. Noyce grant award holding institutions are listed and described at <http://tinyurl.com/348vo7>. Recipients agree to teach in high needs schools after program completion. Though these are some of the largest, many other funding opportunities exist for Gr7-12 physics teacher candidates; you are encouraged to check with your local HS Guidance office and your state department of education. DOI: 10.1119/1.2834543