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WebSights offers a selection of sites appropriate for teaching a standard topic year-long introductory physics survey course. Next month will feature sites for teaching introductory electromagnetics. All sites are copyrighted by the authors. This column is also 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 site and how you use it for possible inclusion in our column. The person submitting the best site monthly will receive a T-shirt.

Web Resources for Teaching Waves and Electrostatics

The Mechanical Universe. Fifty-two half-hour university physics lessons streamed as video-on-demand free of charge. Programs 16-18 address harmonic motion, resonance, and waves; 28 & 29 address static electricity and electric fields. A great review reference for teachers before teaching a topic, or as enrichment or a makeup assignment for high ability students. http://www.learner.org/progdesc/series42.html.

Wave and pulse visualization websites exist for slowing down and closely examining the phenomena. One very complete collection is that of Dan Kettering; see http://www.kettering.edu/~drussell/Demos/reflect/reflect.html for some examples. Other tutorial collections with animated wave visualizations exist at http://www.physicsclassroom.com/mmedia/waves/wavesTOC.html and http://www.wiley.com/college/halliday (select an edition, then Student Companion site, then browse Concept Simulations for a list of all of these visualizations; this is a roundabout entry but gets you to a large collection of simulations for most introductory physics topics). I project these in class to inspire and support student discourse. *Suggested by Stuart Walker.*

Michael Wittman's Wave Diagnostic Test and other physics education research (PER) resources on waves, plus curriculum materials, tutorials, and a collection of wave movies can be had from http://perlnet.umephy.maine.edu/materials/index.html. A mixture of introductory and intermediate wave problems can also be found from Joe Redish's Maryland site at http://www.physics.umd.edu/perg/abp/think/oscil/index.html.

Construction of simple electrostatic devices and in-class analysis of electrostatic phenomena. There are many wonderful electrostatic machines constructable from inexpensive materials and Bob Morse, physics master of St. Alban's, has produced the definitive curriculum guides for this, starting with his book *Teaching About Electrostatics*, published by AAPT (http://www.aapt.org/Store). My students assembled web pages of these activities at http://physicsed.buffalostate.edu/SeatExpts/index, but recently Bob has expanded these activities with video descriptions at http://www.tufts.edu/as/wright_center/fellows/bob_morse_04. Due to their outstanding reliability under adverse conditions, I have students experiment with and analyze the Ne bulb electrophorus and sticky tape interactions, using Chabay & Sherwood's calculus-based approach (from their Wiley text *Electric and Magnetic Interactions*) to introduce calculus for finding E due to an extended strip of sticky tape. Chabay and Sherwood's text contains friendly analyses of these simple experiments, and my students particularly enjoy the analysis of the mechanism underlying sparks in air. This text really helps develop the use of atomic-level models and explanations for macroscopic phenomena. *Suggested by M. Belling, B. Morse, D. MacIsaac.*

The history of electrostatics is filled with interesting and colorful characters, particularly Ben Franklin, whose writings are referenced extensively by Morse's site. The Franklin Institute in Philadelphia has a very nice site at http://www.fi.edu/franklin/rotten.html. The AIP recently produced a site celebrating 100 years of the electron at http://www.aip.org/history/electron.

A nice JAVA applet drawing E fields about charge distributions you create is at http://www.gel.ulaval.ca/~mbusque/elec. An extended shockwave-centered tutorial on electricity and magnetism can be found at http://ippex.pppl.gov/interactive/electricity.