

Guide to Online Resources about Women in Physics, Astronomy, and Related Disciplines

Introduction

The websites collected here serve a variety of functions. The first group directly relates to women in physics and astronomy. The second group addresses women in science more generally. The third group supports and encourages students and professionals in their practice of astronomy, physics, and related disciplines. The sites are arranged alphabetically by title.

Online Resources

American Astronomical Society's Committee on the Status of Women in Astronomy

<http://www.aas.org/cswa/>

Maintained by the American Astronomical Society

This website offers a variety of information useful for practicing astronomers and astronomy students. The resources include a database of registered women in astronomy, statistics on gender, employment, and recognition, and a history of the Committee and its meeting minutes. It also includes advice on work/life balance, re-entering the profession, sexual harassment, mentoring, the two-body problem, retaining women in science, and salary negotiation.

American Physical Society's Women in Physics Program

<http://www.aps.org/programs/women>

Maintained by the American Physical Society

This website is maintained by the American Physical Society, the second largest organization of physicists in the world. It serves both the professional needs of its members, as well as the general public through education and outreach. The website of the APS Women in Physics program includes information on:

- Prizes, awards, scholarships, and fellowships, including profiles of some of the recipients
- Upcoming and past workshops and meetings
- A database of women speakers in physics
- A site visit program to universities and national laboratories
- An institutional survey of the climate for women in graduate programs
- Resources by topic
 - Academia
 - Associations and Related Links
 - Gender Equality
 - Gender Issues
 - Networking, Careers, Mentoring
 - Postdocs
 - Profiles of Women in Science
 - Recruiting and Hiring Women and Minorities
 - Statistics
 - Studies and Reports

Most relevant to teachers and students are the statistics and profiles of women in science, as well as some of the studies and reports.

Archives of Women in Science and Engineering

<http://www.add.lib.iastate.edu/spcl/wise/wise.html>

Maintained by Iowa State University

The Archives aims to preserve the heritage of American women scientists and engineers. Its website includes a list of relevant archival collections, resources for students, parents, and educators, oral history transcripts, related links, a selected bibliography of secondary sources, and a virtual exhibit titled "Today's Seeds for Tomorrow's Harvest" about women and the science of home economics.

Association for Women Geoscientists

<http://www.awg.org/about/index.htm>

This website offers many professional resources for women geophysicists in academia and industry, including information on awards, grants, mentoring and outreach programs, and employment statistics. It also includes brief profiles of women geoscientists, such as space physicist Claudia Alexander and geophysicist Vicki Cowart.

Association for Women in Science

<http://www.awis.org/>

This website is maintained by a professional organization and mostly contains information for its members. The "Resources" page can be useful for teachers and students, however. This section provides facts and figures about women's participation in science, as collected by the Association. It includes AWIS Fact Sheets with a variety of statistics, including the percentages of PhDs awarded to women by field, relative unemployment rates for male and female scientists, wage and grant differentials, and information about underrepresented groups of women within STEM fields. The Resources section also links to women's groups within STEM disciplinary societies, such as the American Physical Society's Committee on the Status of Women in Physics.

Center for History of Physics

<http://www.aip.org/history/>

Maintained by the American Institute of Physics

This website includes resources about women and physics, as well as general information that can provide a backdrop for their lives and work. The "Array of Contemporary American Physicists" includes biographical sketches of over 850 men and women physicists. It also includes institutional information and topic guides. The Online Exhibits include fully developed stories around individuals and discoveries. Exhibits include "Marie Curie and the Science of Radioactivity"; others feature on Albert Einstein, Ernest Rutherford, and Ernest Lawrence. The CHP website also links to the oral histories in AIP's Niels Bohr Library and Archives and the digital photo collection of the Emilio Segrè Visual Archives.

Contributions of 20th Century Women in Physics

<http://cwp.library.ucla.edu/>

Maintained by Nina Byers and the University of California, Los Angeles

This is the companion website to Nina Byers and Gary Williams' *Out of the Shadows: Contributions of 20th Century Women to Physics* (Cambridge, UK: Cambridge University Press, 2006). It includes many useful resources:

- Full profiles of 86 women working in or who have worked in astrophysics, atomic, molecular, & optical physics, condensed matter physics, cosmic ray physics, crystallography, physics in the public service, physics education, fluid dynamics, plasma physics, geophysics, material physics, mathematical physics, nuclear physics, particle physics, physics of beams, and space physics
- An archive of documents related to the profiled scientists
- A list of 300 women who have contributed to physics in the 20th century
- A small photo gallery featuring 19 women physicists
- "In Her Own Words," a collection of quotes from women physicists
- A bibliography of over 500 sources

Curiosity Physics Project

<http://dsc.discovery.com/tv-shows/curiosity/topics/>

A production of the Discovery Channel

This website includes 3 relevant activities. "5 Women on the Cutting Edge of Physics" features brief biographies (approximately 3 paragraphs each) of contemporary women physicists, including Lisa Randall, Shirley Ann Jackson, Wendy L. Freeman, Lene Vestegaard Hau, and Helen Thom Edwards. This is a great starting point for comparative lesson plans and research projects. The site also includes interesting quizzes, such as "Do Women Have it Harder in Physics?" and "Great Ladies in Science."

ECHO Women in Science and Engineering Project

<http://echo.gmu.edu/wise/>

Maintained by George Mason University

The ECHO project documents the career experiences of women in science and engineering by soliciting surveys to practicing professionals. The survey results and analysis are available on the website.

Emilio Segrè Visual Archives

<http://photos.aip.org/>

Maintained by the Niels Bohr Library and Archives, American Institute of Physics

This website includes over 30,000 photographs from the collections of the Niels Bohr Library and Archives at the American Institute of Physics. The collection is easily searched by name and keyword. There are hundreds of photographs of women astronomers and physicists.

For Girls in Science

<http://forgirlsinscience.org>

Sponsored by L'Oreal USA

This website offers a place "where budding scientists can learn about science in a fun and interactive way: hypothesize, experiment and draw exciting conclusions. They can connect with other girls who love science and share their ideas and dreams. They can be inspired by

women who have dreamed, created and invented before them, discover the wide range of fields that fall under 'science,' and find the tools and motivation needed to become scientists themselves." It includes biographies of women in science, information about science competitions and careers, as well as video blogs and profiles of young women scientists.

Future Morph

<http://www.futuremorph.org/>

Sponsored by the Science Council of the United Kingdom

Future Morph offers information about science careers for ages 11-13, 14-16, 16+, and parents. The website includes games, quizzes, and an "ask a scientist" section.

I Was Wondering

<http://www.iwaswondering.org/>

Maintained by the National Academy of Sciences

I Was Wondering, sponsored by the National Academy of Sciences, is "intended to showcase the accomplishments of contemporary women in science and to highlight for young people the varied and intriguing careers of some of today's most prominent scientists." Features of the website include:

- "10 Cool Scientists," including scrapbooks of early years, comic book of discovery, games (building a robot, exploring the solar system) and quotes
- "Have a Question? Ask It!", which allows students to pose questions to scientists
- Time Travel Timeline of 25 Women Pioneers in Science including:
 - Marie Curie, physicist
 - Lise Meitner, physicist
 - Jocelyn Bell Burnell, astronomer
 - Mimi Koehl, biophysicist
 - Heidi Hammel, astronomer
 - Shirley Ann Jackson, physicist

This website was inspired by the Women's Adventures in Science book series. A discussion of the books and activities from this website would make a nice lesson plan for elementary and middle school students.

Maria Mitchell Association

<http://www.mariamitchell.org/>

This website includes information about Maria Mitchell's life and work. It includes a historical photograph collection and a selected bibliography. MMA maintains the historic Mitchell House, as well as two observatories on Nantucket.

NukeMap 3D

<http://nuclearsecrecy.com/nukemap3d/>

Maintained by Alex Wellerstein, American Institute of Physics

This website allows users to simulate a variety of nuclear explosions over their locations of choice. This activity pairs well with discussions of Lise Meitner and nuclear physics, as well as lessons on the women working on the Manhattan Project.

Rocket Girls and Astronettes

<http://www.prx.org/pieces/41129-rocket-girls-and-astro-nettes>

Produced by Richard Paul and Soundprint

This audio documentary includes three sections on women in science, women in the space program, and NASA's first female astronauts. Shuttle astronaut Ellen Collins narrates. It includes commentary from women scientists and astronauts, who discuss the support and discrimination they experienced in their careers. A transcript of the radio program can be found here: <http://www.prx.org/pieces/41129/transcripts/104185>.

ScienceGrrl

<http://sciencegrrl.co.uk/>

This website is maintained by a "broad-based, grassroots organisation celebrating and promoting women in science; a network of people who are passionate about passing on our love of science on to the next generation." The website includes a news page with blog posts, events (UK only), resources about science careers, and information about forming local chapters of ScienceGrrl.

Society of Physics Students

<http://www.spsnational.org/>

Maintained by the American Institute of Physics

This website offers resources for students interested in or pursuing degrees in physics. It provides useful information about professional development and meetings, as well as scholarships and awards.

Under the Microscope: Where Women and Science Connect

<http://www.underthemicroscope.com/>

A production of the Feminist Press at City University of New York

This website "collects stories from women involved with science, technology, engineering, and math with the goal of publishing a survival guide for young women in science." The main sections of the website include "Leveling the Playing Field," featuring articles addressing bias and discrimination; "Charting a Career Path," featuring articles about entering and staying in STEM careers; "Achieving Work/Life Balance," featuring articles about managing personal and professional commitments; "Paying it Forward," featuring articles about encouraging women in science; and a blog. It also includes ready-made lesson plans and discussion questions for two books on women in science, prepared for both high school and college-level students.

- Discussion Questions for *The Madam Curie Complex: The Hidden History of Women in Science* by Julie des Jardins
 - College Level, prepared by Professor Shirley Hune, professor, Educational Leadership and Policy Studies, University of Washington
<http://www.underthemicroscope.com/madame-curie-complex-college-discussion-questions/>
 - High School Level, prepared by Megan Twiddy, Environmental Science and Biology teacher
<http://www.underthemicroscope.com/resources-madame-curie-complex-high-school-discussion-questions/>

- Discussion Questions for *Women in Science: Then and Now* by Vivian Gornick
 - College Level, prepared by Professor Shirley Hune, professor, Educational Leadership and Policy Studies, University of Washington
<http://www.underthemicroscope.com/women-in-science-college-discussion-questions/>
 - High School Level, prepared by Megan Twiddy, Environmental Science and Biology teacher
<http://www.underthemicroscope.com/women-in-science-high-school-discussion-questions-2/>

Women in Acoustics: Breaking Barriers in Sound

<http://www.acosoc.org/WIA/index.htm>

Maintained by the Women in Acoustics Committee, Acoustical Society of America

This site offers information about mentorship and outreach programs, as well as travel grants for young investigators. It also profiles “honored women” in ASA, including physicist Illene J. Busch-Vishniac.

Women in Astronomy

<http://www.astro.utoronto.ca/AALibrary/womenbib.htm>

Maintained by the Department of Astronomy and Astrophysics, University of Toronto

The resources on this website are divided into four main sections. Part I includes links to professional organizations and meetings, general historical information, as well as biographies and obituaries of prominent women astronomers. Part II is a bibliography of relevant sources compiled in 1997 by Jean Louis Trudel. Part III is an update to the bibliography made by Marlene Cummins in 2004. Part IV is a selection of Vera Rubin’s personal recommendations. This website is an excellent starting point for lesson plans and research projects.

Women in Astronomy: An Introductory Resource Guide

<http://www.astrosociety.org/education/astronomy-resource-guides/women-in-astronomy-an-introductory-resource-guide/>

Maintained by the Astronomical Society of the Pacific

This resource is a great place to begin research on women in astronomy. The Resource Guide is comprised of an annotated bibliography, sources on selected women astronomers (living and deceased), and general web resources about women in science.

Women in Science

<http://womeninscience.history.msu.edu/>

Maintained by the Department of History, University of Michigan

The website contains a collection of documents either written by or relating to women in science. This includes Émilie du Châtelet’s correspondence and her French translation of Newton’s *Philosophiæ Naturalis Principia Mathematica* (still the only full French translation of the work). The page also includes detailed biographies of eight female scientists and a list of online resources for women in science.

Women in Science: A Selection of 16 Significant Contributors

<http://www.sdsc.edu/ScienceWomen/>

Presented by the San Diego Supercomputer Center

This website profiles 16 women in science after whom the computers at the San Diego Supercomputer Center are named. Each profile includes a short biography and a photograph. Astronomers and physicists on this website include Annie Jump Cannon, Helen Sawyer Hogg, Maria Goeppert Mayer, and Lise Meitner.

Women in Science Flickr

<http://www.flickr.com/photos/smithsonian/sets/72157614810586267/>

Maintained by the Smithsonian Institution

This website includes over 350 photographs of women scientists from the collections of the Smithsonian Institution. Unfortunately this site is not easily searchable.

Women Scientists Past and Present

<https://sites.google.com/site/womenscientistsinhistory/home>

Maintained by Karen F. Alexander-Cistrunk, elementary school science teacher

This website includes a single lesson plan for a week-long activity about women in science. It involves a very brief PowerPoint presentation about women in science (approximately 6 slides). The goal is for students to use the online resources of the Library of Congress to add to the PowerPoint. The students work in groups to answer questions such as:

1. What do I know about women scientists?
2. What are some inventions that have been created by women?
3. What can I learn from this lesson on women scientists?
4. What can I take from this lesson to further my interest in the sciences?

The lesson is designed around the Stripling Model of Inquiry. The scope of this lesson could easily be limited to women in astronomy and physics.

Women's Caucus of the History of Science Society

<http://hsswc.weebly.com/index.html>

Maintained by the members of the History of Science Society

This website includes two useful features. First, the Syllabus Project is a repository for syllabi for college courses relating to women and science. The syllabi can be searched for readings on women astronomers and physicists. Second, the Resources page links to online historical digital collections, which include biographical collections, bibliographies, databases, as well as relevant museum exhibitions.

World History of Science Online

<http://www.dhst-whso.org/>

Sponsored by the Commission on Bibliography and Documentation, International Union of History and Philosophy of Science/Division of History of Science and Technology

This website contains resources on the history of science by subject area, including Women in Astronomy and Women in Science.

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