

Environmental Engineering

STARTING SALARY (FOR CIVIL ENGINEERING): \$51,793

MEDIAN INCOME \$80,890



Fresh air to breath, water to drink and healthy food to eat is usually the job of many types of engineers – primarily environmental, civil, chemical, manufacturing, and agricultural and biological engineers. It is easy to take air, water and food for granted if you have never been without them or never been exposed to people or places without them. However, having fresh air, water and healthy food is critical to continuing life on this planet.

Environmental engineering, which was often called sanitary engineering prior to 1970, focuses on the development of a sustainable future, preventing pollution, assessing the environmental impact of everything, water distribution systems, recycling methods, sewage treatment plants, and pesticide prevention. This fast-growing field offers a challenging and satisfying chance to protect the health and safety of people and our environment. These earth-friendly professionals concern themselves with preventing and fixing problems caused by industrialization. They concentrate on delivering better environmental conditions for the public through knowledge, research, a caring attitude, and common sense. One of the most rewarding aspects of being this type of engineer is that because there is such a large need for sustainability on every level, you can make a difference right away – from the first day on the job right through the rest of your career.

Air pollution is a problem worldwide. According to the World Health Organization, 70,000 people in the United States die from air pollution every year. That is twice as many as the number that die in traffic accidents.

Air quality has different effects on plants, animals and humans. In humans, poor air quality can lead to cancer, asthma and birth defects. Under the Clean Air Act, the EPA establishes primary air quality standards to protect public health, including the health

Job Outlook

Employment of environmental engineers is projected to grow 15 percent from 2012 to 2022, faster than the average for all occupations. State and local government concerns regarding water should lead to efforts to increase the efficiency of water use.

Industries with the highest levels of employment in this occupation:

1. Architectural, Engineering, and Related Services
2. Management, Scientific, and Technical Consulting Services
3. State Government (OES Designation)
4. Federal Executive Branch (OES Designation)
5. Local Government (OES Designation)

Top paying industries for this occupation:

1. Federal government, excluding postal service
2. Architectural, engineering, and related services
3. Management, scientific, and technical consulting services
4. Local government, excluding education and hospitals
5. State government, excluding education and hospitals

Source: US Bureau of Labor Statistics

of “sensitive” populations such as people with asthma, children, and older adults. The EPA also sets secondary standards to protect public welfare. This includes protecting ecosystems, including plants and animals, from harm, as well as protecting against decreased visibility and damage to crops, vegetation, and buildings.

Cleaning the air and water are usually jobs for environmental engineers. Environmental engineers use the principles of biology and chemistry to develop solutions to environmental problems. They are involved in water and air pollution control, recycling, waste disposal, and public health issues. Environmental engineers conduct hazardous-waste management studies in which they evaluate the significance of the hazard, advise on its treatment and containment, and develop regulations to prevent mishaps. They design municipal water supply and industrial wastewater treatment systems, conduct research on the environmental impact of proposed construction projects, analyze scientific data, and perform quality-control checks. Environmental engineers are concerned with local and worldwide environmental issues. Some may study and attempt to minimize the effects of acid rain, global warming, automobile emissions, and ozone depletion. They also may be involved in the protection of wildlife. Many environmental engineers work as consultants, helping their clients to comply with regulations, prevent environmental damage, and clean up hazardous sites.

These engineers must be excellent communicators and team players. They must be able to work well with others because their work often includes collaborating with environmental scientists, urban planners, hazardous waste technicians, politicians, attorneys and other specialists. They prepare, review and update environmental investigations, provide clean-up recommendations, monitor projects, prepare forecasts and budgets and inspect sites for operational effectiveness and to ensure pollution compliance.

Environmental engineering education is a multi-disciplinary field. Students in this field will study mathematics, physics, biology, ecology, public health, geology, economics, politics, chemistry, and engineering design. Environmental engineering curriculum is very broad and requires that students understand how to apply engineering and scientific principles to the ailments of society.

Many large firms employ environmental engineers to decide how to dispose of toxic material or to control toxic emissions. Some environmental engineers inspect pollution control systems for the government; some design or inspect water treatment systems. Others develop and administer the regulations that protect health, safety, and the environment.

According to the American Academy of Environmental Engineers (AAEE), “Since environmental engineering is so intertwined with people, it is necessary that you understand how people and societies function. Through both your formal training and your activities during your college career, you need to work on developing your writing and speaking skills. Environmental engineers must be able to communicate effectively with people of all types if they are to succeed in solving problems. These skills can only be learned by doing – the more you do, the better you will become.”

More information can be found at the AAEE website at www.aeee.net. For more information about environmental engineering and preparing to work as a civil/environmental engineer, pick up a copy of *From Sundaes to Space Stations: Careers in Civil Engineering* at engineeringedu.com.

Glossary of Terms

Analyze - to study (something) closely and carefully : to learn the nature and relationship of the parts of (something) by a close and careful examination (merriam-webster.com)

Clean Air Act - a United States federal law designed to control air pollution on a national level. It requires the Environmental Protection Agency (EPA) to develop and enforce regulations to protect the public from airborne contaminants known to be hazardous to human health (Wikipedia, 26 January 2014 at 15:03)

Environmental Impact - any change to the environment, whether adverse or beneficial, resulting from a facility's activities, products, or services (epa.gov)

Industrialization - the organized action of making of goods and services for sale (thefreedictionary.com)

Monitor – to watch, observe, listen to, or check (something) for a special purpose over a period of time (merriam-webster.com)

Regulation - an official rule or law that says how something should be done (merriam-webster.com)

Sustainable - involving methods that do not completely use up or destroy natural resources (merriam-webster.com)

ABET Accredited Programs in Environmental Engineering

School Name	Location	Website	Program and Degree Name
California Polytechnic State University, San Luis Obispo	San Luis Obispo, CA, US	www.calpoly.edu	Environmental Engineering, BS
City University of New York, City College	New York, NY, US	www.cuny.cuny.edu	Earth System Science and Environmental Engineering, BE
Clarkson University	Potsdam, NY, US	www.clarkson.edu	Environmental Engineering, BS
Colorado State University	Fort Collins, CO, US	www.colostate.edu	Environmental Engineering, BS
Columbia University	New York, NY, US	www.columbia.edu	Earth and Environmental Engineering, BS
Cornell University	Ithaca, NY, US	www.cornell.edu	Environmental Engineering, BS
Drexel University	Philadelphia, PA, US	www.drexel.edu	Environmental Engineering, BS
Florida Gulf Coast University	Fort Myers, FL, US	www.fgcu.edu	Environmental Engineering, BSEnvE
Florida International University (Modesto Maidique Campus)	Miami, FL, US	www.fiu.edu	Environmental Engineering, BS
Gannon University	Erie, PA, US	www.gannon.edu	Environmental Engineering, BS
Georgia Institute of Technology	Atlanta, GA, US	www.gatech.edu	Environmental Engineering, BS
Humboldt State University	Arcata, CA, US	www.humboldt.edu	Environmental Resources Engineering, BS
Lehigh University	Bethlehem, PA, US	www.lehigh.edu	Environmental Engineering, BS
Louisiana State University and A&M College	Baton Rouge, LA, US	www.lsu.edu	Environmental Engineering, BS
Massachusetts Institute of Technology	Cambridge, MA, US	www.mit.edu	Environmental Engineering Science, BS
Michigan State University	East Lansing, MI, US	www.msu.edu	Environmental Engineering, B.S.
Michigan Technological University	Houghton, MI, US	www.mtu.edu	Environmental Engineering, BS
Missouri University of Science and Technology	Rolla, MO, US	www.mst.edu	Environmental Engineering, BS
Montana Tech of the University of Montana	Butte, MT, US	www.mtech.edu	Environmental Engineering, BS
New Mexico Institute of Mining and Technology	Socorro, NM, US	www.nmt.edu	Environmental Engineering, BS
North Carolina State University at Raleigh	Raleigh, NC, US	www.ncsu.edu	Environmental Engineering, BS
Northern Arizona University	Flagstaff, AZ, US	www.nau.edu	Environmental Engineering, BSE
Northwestern University	Evanston, IL, US	www.northwestern.edu	Environmental Engineering, BS
Oregon State University	Corvallis, OR, US	www.oregonstate.edu	Environmental Engineering, BS
Pennsylvania State University, Harrisburg, The Capital College	Middletown, PA, US	www.hbg.psu.edu	Environmental Engineering, BS
Polytechnic University of Puerto Rico	San Juan, PR, US	www.pupr.edu	Environmental Engineering, BS
Portland State University	Portland, OR, US	www.pdx.edu	Environmental Engineering, B.S.
Rensselaer Polytechnic Institute	Troy, NY, US	www.rpi.edu	Environmental Engineering, BS
Saint Francis University	Loretto, PA, US	www.francis.edu	Environmental Engineering, B.S.
San Diego State University	San Diego, CA, US	www.sdsu.edu	Environmental Engineering, BS

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School Name	Location	Website	Program and Degree Name
South Dakota School of Mines and Technology	Rapid City, SD, US	www.sdsmt.edu	Environmental Engineering, BS
Southern Methodist University	Dallas, TX, US	www.smu.edu	Environmental Engineering, BSEnE
Stanford University	Stanford, CA, US	www.stanford.edu	Environmental Engineering, BS
State University of New York at Buffalo	Buffalo, NY, US	www.buffalo.edu	Environmental Engineering, BS
State University of New York College of Environmental Science and Forestry	Syracuse, NY, US	www.esf.edu	Environmental Resources Engineering, B.S.
Stevens Institute of Technology	Hoboken, NJ, US	www.stevens.edu	Environmental Engineering, BE
Syracuse University	Syracuse, NY, US	www.syr.edu	Environmental Engineering, BS
Tarleton State University	Stephenville, TX, US	www.tarleton.edu	Environmental Engineering, BS
Texas A&M University - Kingsville	Kingsville, TX, US	www.tamuk.edu	Environmental Engineering, B.S.
The Johns Hopkins University	Baltimore, MD, US	www.jhu.edu	Environmental Engineering, BS
The Ohio State University	Columbus, OH, US	www.osu.edu	Environmental Engineering, BSEnE
The University of Findlay	Findlay, OH, US	www.findlay.edu	Environmental Safety and Occupational Health Management, BS
Tufts University	Medford, MA, US	www.tufts.edu	Environmental Engineering, BS
United States Air Force Academy	USAFA, CO, US	www.usafa.af.mil	Environmental Engineering, BS
United States Military Academy	West Point, NY, US	www.usma.edu	Environmental Engineering, BS
University of California, Irvine	Irvine, CA, US	http://www.uci.edu/	Environmental Engineering, BS
University of California, Riverside	Riverside, CA, US	www.ucr.edu	Environmental Engineering, BS
University of Central Florida	Orlando, FL, US	www.ucf.edu	Environmental Engineering, BS
University of Colorado at Boulder	Boulder, CO, US	www.colorado.edu	Environmental Engineering, BS
University of Connecticut	Storrs, CT, US	www.uconn.edu	Environmental Engineering, BSE
University of Delaware	Newark, DE, US	www.udel.edu	Environmental Engineering, BS
University of Florida	Gainesville, FL, US	www.ufl.edu	Environmental Engineering, BS
University of Georgia	Athens, GA, US	www.uga.edu	Environmental Engineering, BS
University of Miami	Coral Gables, FL, US	www.miami.edu	Environmental Engineering, BSEnE
University of Nevada, Reno	Reno, NV, US	www.unr.edu	Environmental Engineering, BS
University of New Hampshire	Durham, NH, US	www.unh.edu	Environmental Engineering, BS
University of Oklahoma	Norman, OK, US	www.ou.edu	Environmental Engineering, BS
University of Southern California	Los Angeles, CA, US	www.usc.edu	Environmental Engineering, BS
University of Vermont	Burlington, VT, US	www.uvm.edu/~cems/	Environmental Engineering, BS
University of Wisconsin - Platteville	Platteville, WI, US	www.uwplatt.edu	Environmental Engineering, BS
Utah State University	Logan, UT, US	www.usu.edu	Environmental Engineering, BS
Wilkes University	Wilkes-Barre, PA, US	www.wilkes.edu	Environmental Engineering, BS
Worcester Polytechnic Institute	Worcester, MA, US	www.wpi.edu	Environmental Engineering, BS