

ENVIRONMENTAL ENGINEERING, B.S.

The Department of Civil and Environmental Engineering offers a B.S. Environmental Engineering (BSEnvE) degree program, an excellent degree choice for students who are interested in the sustainable design, construction, and operation of systems and facilities that:

- Treat and distribute safe and reliable drinking water
- Recover material, nutrient, and energy resources from wastewater and solid waste
- Protect and restore wetlands, streams, lakes, and groundwater
- Allocate water resources for urban, rural, and recreational use
- Protect and develop coastal shorelines and stream banks
- Manage stormwater and minimize risk of flood events
- Reduce, reuse, and recycle solid wastes
- Minimize the production of and provide treatment of industrial and agricultural wastes
- Minimize the production of and provide treatment of industrial air emissions
- Protect society from the impacts of climate change, such as rising sea levels and increasing frequency and severity of severe weather events
- Slow down or reverse climate change via
 - Alternative sources of energy such as solar, wind, geothermal and biofuels
 - Recovery of carbon and other greenhouse gases from industrial air emissions

The operation of these facilities is being rapidly integrated into the Internet of Things with real-time “big data” collection systems for automated control. This makes it possible for society to rely on smart infrastructure, including systems that will reduce water consumption, save energy, and improve community resiliency in the wake of natural and human-caused disasters.

All of the above items require a core knowledge in mathematics, statistics, physics, chemistry, biology, geology, computer science and computer design tools, as well as breadth in different environmental engineering disciplines. Environmental engineers perform their work in a multidisciplinary setting requiring strong written and verbal communication skills, understanding of professional and ethical obligations coupled with risk management and decision-making, and commitment to lifelong learning and professional licensure. Their daily work also requires a commitment to sustainability – the need to meet today’s needs while also allowing future generations to meet their environmental health, public health, and society’s economic health needs.

To meet accreditation policies, eligibility for the program is limited to those students who

- matriculated into UW-Madison’s College of Engineering in the Fall 2020 semester or later, and
- expect to graduate no sooner than December 2023.

Students not meeting the above criteria are encouraged to consider the Environmental Engineering Option of the BS Civil Engineering degree program. Additional options for these students include the BS Geological Engineering degree program and the Natural Resources

and Environmental Engineering Option of the BS Biological Systems Engineering degree program.

VISION

Develop and maintain a learning community that pursues new knowledge and understanding, and provides innovative and sustainable solutions to human and ecological needs.

MISSION OF BACHELOR OF SCIENCE IN ENVIRONMENTAL ENGINEERING (BSEnvE) PROGRAM

Create, integrate, and transfer environmental engineering knowledge and practice in the development of professionals, leaders, and citizens that help define and serve societal and environmental needs by applying this knowledge and practice in an effective and sustainable manner.

ENVIRONMENTAL ENGINEERING PROGRAM EDUCATIONAL OBJECTIVES

Prepare BSEnvE graduates to contribute to their communities through the following career and professional accomplishments:

1. Design and construct both natural and built processes and systems to efficiently meet determined needs using technical knowledge; modern tools; design principles; ethical practice; and communication, leadership, and team skills.
2. Utilize measurement and analysis tools along with experimental data in investigating natural and built systems.
3. Understand and incorporate economic, environmental, political, social, safety and global considerations in design, investigation and construction of natural and built systems.
4. Engage in lifelong learning to keep pace with the continuous evolution of policies, procedures, technologies and tools for engineering analysis, design, and decision making.
5. Serve others through participation in professional and/or civic activities and responsibilities.