

Science, Technology, Engineering, & Mathematics (STEM)

Environmental Literacy Integration Framework

This document will assist you in incorporating environmental literacy into your CTE Pathway to enhance the program by delivering content through an environmental lens and drawing direct connections between the academic content, technical learning, and integrated CTE professional development. Environmental literacy is the desired outcome of environmental education and provides our future workforce with sound scientific information, as well as skills for critical thinking and creative, strategic problem solving.

- [What is Environmental Education?](#): EPA definition and importance of environmental education.
- [NOAA Education Strategic Plan](#): Goal One is Environmental Literacy
- [Delaware Pathways](#): Environmental literacy project page

Science, Technology, Engineering, & Mathematics (STEM)

Career Cluster	Average Wage 2020	Total Openings	Percent Total Openings	New Jobs by 2030	Annual Percent Growth
STEM	\$103,427	3,841	0.7%	156	1.0%

The STEM sector, specifically engineering and biomedical sciences, is the frontline in innovation and plays a key in influencing the direction of future sustainability efforts. Sustainability can be considered at every step of the design process, from how the research is conducted, to deciding which materials to utilize, and configuring the functionality of the ultimate product. Individuals entering this field can significantly impact human and environmental health, which makes it imperative for them to understand the lasting effects of their work. Climate change will alter conditions in the future, therefore, it should be taken into consideration when designing infrastructure, medical equipment and even medicines themselves. Understanding environmental pollutants is also critical and can be addressed by electing to use green materials, minimizing energy consumption, and taking into account the environment in which the design will exist (permeability, ventilation, etc). When entering the sector of STEM, there is a responsibility to understand all costs and benefits of a design, including the impact on the Earth. Environmental literacy is imperative to ensuring educated decision making at every step of the design process, from supply chain to implementation.

Green STEM Careers

- [5 Environmental Engineering Careers for Graduates](#): This resource by [Unity Environmental University](#) offers 10 popular sustainable agriculture jobs including the job description, average salary, and recommended degree.

Incorporating “Green methods” in STEM Careers

The following articles highlight green methods that STEM professionals can implement on the job–

- Biomedical Science:
 - [Five Priorities to Make Biomedical Science Green](#)
 - [Top 10 ways the healthcare industry can be more sustainable](#)
 - [5 Ways to Make Your Laboratory More Sustainable](#)
 - [The Life Scientists’ Guide to Lab Sustainability](#)
- Engineering:
 - [Sustainable Engineering: Design Principles for a Greener Future](#)
 - [What is sustainable engineering? Career, role & education](#)
 - [Sustainability in Engineering: Top tips to make your products more sustainable](#)
 - [Green Building Practices](#)

Delaware Community Plugins

- [Sustainable Infrastructure](#): The Delaware Prosperity Partnership is an organization that works across the engineering, science and technology sectors to promote sustainable infrastructure
- [DMEC Sustainability](#): The Delaware Municipal Electric Corporation focuses on environmental leadership and making corporate commitments to sustainable practices.
- [Leading the Way in Sustainability](#): The University of Delaware’s Office of Sustainability promotes and implements ‘green’ practices on campus as well as offering a variety of college programs focused on environmental science and supporting disciplines.
- [Delaware Sustainable Energy Utility](#) (DSEU): The DSEU is a non profit organization, supported by the Coalition for Green Capital, that focuses on lowering energy bills through the use of sustainable energy solutions.
- [Pathways To Green Schools](#): Energize Delaware and Green Building United have partnered to develop a program that assists schools in becoming ‘green’.
- [Developing a Community Sustainability Plan](#): The Resilient and Sustainable Communities League has created a framework that government offices can utilize to create their own sustainability plans.
- [Sustainable Communities](#): The Delaware Department of Resources and Environmental Control (DNREC) program focused on developing sustainable communities. (Additional information on [Green Infrastructure Basics](#))

- [Practice GreenHealth](#): This leading healthcare organization delivers environmental solutions to more than 1,700 hospitals and health systems in the United States and Canada.
- [ChristianaCare News](#): Connects the increase in certain illnesses to climate change and other worsening environmental conditions.
- [One Health](#): One Health links human, animal, and environmental health, recognizing their interdependence.
- [My Healthy Community](#): The Delaware Environmental Public Health Network tracks climate and health.

Green STEM Programs

- [Environmental Engineering](#): Delaware University offers several Environmental Engineering Bachelor Degree Programs allowing students to choose from concentrations such as biological, chemical, design & construction, etc.
- [Sustainable Infrastructure Minor](#) & [Sustainable Energy Technology Minor](#): Delaware University minor programs that introduce students to engineering concepts alongside a variety of sustainability focused classes.
- [Coastal, Green Infrastructure Design and Construction](#): The Delaware Technical Community College and the Delaware Sea Grant have partnered to provide internship opportunities in the field of environmental infrastructure.
- [Environmental Engineering Technology](#): Delaware Technical Community College offers an Associates Degree Program that provides a pathway to various positions within the environmental technology field.
- [Leadership in Energy and Environmental Design](#): Course on green infrastructure and sustainable design techniques offered by Delaware County Community College in Pennsylvania.

Resources for Educators

- Lesson plans, modules, and classroom activities
 - [NOAA Bay Backpack](#) - educational resources, action planning documents, and environmental literacy tools
 - [Bioengineering a Sustainable World Unit Plan](#)
 - [Bioengineering Lesson Plans - Botany](#)
 - [The Tradeoffs of Rare Earth Metals](#)
 - [The Interconnectedness of Humans, Plants and the Environment](#)
 - [Engineering a Sustainable World Educator Toolkit](#)
 - [Lesson Plans for an Introduction to Sustainability](#)

- o [High School, Environmental Engineering Lesson Plans](#)
- o [Sustainable Engineering Teacher Resources](#)
- o [Subject to Climate Engineering Lessons](#)

Blogs, Articles, Publications, and other Helpful Links

- Biomedical Science:
 - o [Integrating Biomedical, Ecological, and Sustainability Sciences to Manage Emerging Infectious Diseases](#)
 - o [Exploring Biomedical Solutions For A Sustainable Environment](#)
 - o [How can we reduce biomedical research's carbon footprint?](#)
 - o [How Can Biomedical Waste Management Solutions Help Reduce Waste?](#)
- Engineering:
 - [Engineering Ethics and Sustainability: Building a Responsible Future](#)
 - [What Are the Key Sustainability in Engineering and What Roles Do You Need To Recruit To Address Them?](#)
 - [Exploring Biomedical Solutions For A Sustainable Environment](#)
 - [10 Engineering Innovations Powering a More Sustainable Future](#)
 - [Key Strategies for Achieving Sustainable Supply Chains](#)

Opportunities to Enhance the Framework's Resources

- Do you know of any resources that could be added to this framework to improve environmental literacy in the STEM Pathway? Let us know!
Lisastonertorbert@gmail.com
 - o Websites on green Biomedical Science careers
 - o Certificates, courses, or other green programs in Biomedical Sciences