

OSPI Framework for CTE Green Sustainable Design and Technology Course

STANDARDS AND COMPETENCIES

C-1 Standard: Principles of Sustainability

- C-1.1 Apply understanding of systems thinking and system dynamics
- C-1.2 Define sustainability and sustainable design

C-2 Standard: Impact of Human Activities on Sustainability

- C-2.1 Understand changes in the built environment
- C-2.2 Understand changes in the natural environment (air, water, soil, flora and fauna)
- C-2.3 Understand relationship between human activities and the environment
- C-2.4 Define carbon footprint and global climate change
- C-2.5 Understand and calculate ecological footprint

C-3 Standard: Sustainable Transportation Technology and Systems

- C-3.1 Analyze and apply understanding of transportation planning
- C-3.2 Apply understanding of mass transit
- C-3.3 Apply understanding of alternative fuel vehicles
- C-3.4 Apply understanding of electric power vehicles
- C-3.5 Apply understanding of fuel cell vehicles
- C-3.6 Apply understanding of human powered transportation

C-4 Standard: Sustainable Power Generation Technology and Systems

- C-4.1 Apply understanding of energy efficiency, conservation, and reduction
- C-4.2 Apply understanding of carbon offsets
- C-4.3 Apply understanding of wind generation
- C-4.4 Apply understanding of solar generation
- C-4.5 Apply understanding of hydro generation
- C-4.6 Apply understanding of geothermal generation
- C-4.7 Apply understanding of complex smart grid systems
- C-4.8 Apply understanding of the issues surrounding nuclear power generation
- C-4.9 Apply understanding of bio fuels and bio mass (e.g.: algae, biodiesel, methane, ethanol, etc.)
- C-4.10 Identify relevant clean fossil fuel generation

C-5 Standard: Sustainable Resource, Materials, and Waste Management

- C-5.1 Apply understanding of sustainable building products (wood, metals, composites, etc.)
- C-5.2 Apply understanding of deconstruction, reducing, reusing, and recycling
- C-5.3 Apply understanding of food waste composting
- C-5.4 Apply understanding of Electronic waste practices
- C-5.5 Apply understanding of water resource issues and management

C-6 Standard: Sustainable Agricultural Systems

- C-6.1 Explain and apply issues and economics of sustainable practices in the agriculture industry including production, processing, marketing, and delivery systems
 - C-6.1.1 Apply understanding of biological integrated farming systems
 - C-6.1.2 Apply understanding of crop/livestock production
 - C-6.1.3 Apply understanding of organic farming
 - C-6.1.4 Apply understanding of sustainable forestry
 - C-6.1.5 Apply understanding of chemical use and safety (e.g. Methyl Bromide alternatives)
 - C-6.1.6 Apply understanding of Water Use (laws and practices)
 - C-6.1.7 Apply understanding of small farms and community gardens

C-7 Standard: Sustainable Ecosystem Management

- C-7.1 Apply understanding of environmental health and stewardship
- C-7.2 Apply understanding of public land management and policy
- C-7.3 Apply understanding of biological systems
- C-7.4 Apply understanding of ecosystems services measurement

C-8 Standard: Sustainable Design and Construction

- C-8.1 Apply understanding of “Cradle to Cradle Design” for buildings and products
- C-8.2 Apply understanding of reusing and recycling construction materials
- C-8.3 Apply understanding of energy efficiency practices
- C-8.4 Apply understanding of retrofitting building
- C-8.5 Apply understanding of green building rating systems (e.g. LEED and Green Building Council)
- C-8.6 Apply understanding of sustainable landscape design, installation, and maintenance

C9 Standard: Sustainable Manufacturing Practices

- C-9.1 Apply understanding of production line efficiency
- C-9.2 Apply understanding of production energy efficiency
- C-9.3 Analyze sustainable manufacturing materials (e.g. biodegradable, reusable)
- C-9.4 Apply understanding of reducing manufacturing toxic waste and emissions
- C-9.5 Apply understanding of product packing efficiency
- C-9.6 Analyze industrial materials and waste best practices (e.g. recycling manufacturing byproducts technology)

C-10 Standard: Healthy Homes and Communities

- C-10.1 Apply understanding of physical characteristics of a healthy home
- C-10.2 Apply understanding to maintaining a healthy home – alternatives to toxic household products
- C-10.3 Analyze household energy efficiency and retrofitting methods
- C-10.4 Define a healthy sustainable community
- C-10.5 Design and develop a healthy sustainable community

C-11 Standard: Sustainability in the Work Place

- C-11.1 Analyze sustainable office systems creating a healthy, efficient, and effective workplace
- C-11.2 Analyze sustainable office products
- C-11.3 Apply understanding of sustainable lighting, heating, and cooling
- C-11.4 Understand recycling in the workplace
- C-11.5 Evaluate alternatives to the five day work week
- C-11.6 Analyze the marketing of sustainability (e.g. “greenwashing” vs. real sustainability)

C-12 Standard: Your Role in Building Sustainable Communities

- C-12.1 Apply an understanding of making a difference: personal decisions and actions
- C-12.2 Apply an understanding of making a difference: collective decisions and actions
- C-12.3 Apply an understanding of the nature of change: decision-making processes
- C-12.4 Apply an understanding of the nature of change: social marketing
- C-12.5 Apply an understanding of the nature of change: research, assessment, advocacy, and action

C-13 Standard: Career Paths in Sustainability – Postsecondary Options

- C-13.1 Understand sustainability-related apprenticeship programs
- C-13.2 Understand sustainability-related 2-year college degree and certificate program
- C-13.3 Understand sustainability-related 4-year college degree programs
- C-13.4 Understand sustainability-related entrepreneurship/innovation
- C-13.5 Analyze sustainability-related business development models