PLTW Engineering
Environmental Sustainability | Course Resume

Course resumes showcase the technical skills students obtain in each PLTW course. Each resume outlines the computational skills, analytical skills, and knowledge acquired in the course. Course resumes also detail student experience with tools, software, lab work, and engineering design. The detailed skills listed within course resumes illustrate the immediate, applicable contributions that students can make within a workplace.

Laboratory Skills

- Aseptic technique
- Bacterial plating and transformation
- Micropipetting
- DNA gel electrophoresis
- Modeling the process of Polymerase chain reaction (PCR) technique
- Distillation
- Chromatography
- Growing and monitoring plants and algae
- Water quality testing
- Immunoassay

Equipment and Software Proficiencies

- Microsoft® Office (Excel®, Word, PowerPoint®)
- Vernier® probes and sensors
- Data acquisition Software
- Microscope
- Electrophoresis equipment

Engineering Design Process

- Employ the engineering design process to develop products

Scientific Experimentation Skills

- Design and conduct reliable scientific experiments
- Analyze and interpret laboratory data
- Construct graphs (by hand and using graphing software)
- Interpolate and extrapolate data from a graph
- Draw conclusions based on experimental data
- Thoroughly and clearly communicate results and conclusions both orally and in writing

Professional Skills

- Group collaboration
- Planning and organizing
- Time management
- Problem solving
- Technical writing
- Verbal and written communication
- Decision making
- Creative thinking

Course Knowledge

- Overarching themes
  - Conservation
  - Alternative energy sources
  - Ethics
  - Access to resources

- Environmental Sustainability
  - Global prospective
  - Threats to environmental sustainability
  - Ethics

- Global Water Issues
  - Global water distribution
  - Clean water disparity
  - Water purification methods
  - Water bioremediation
  - Water filter design challenge

- Genetic Engineering
  - Global food security
  - Genetically Modified Organisms (GMOs)
  - DNA recombinant technology
  - Restriction enzyme analysis
  - Designing genetically modified food

- Renewable Fuels
  - Predicting, modeling, and monitoring energy use
  - Photosynthesis-derived energy systems
  - Algae-derived biofuel production
  - Ethanol biofuel production
  - Product purification and quantification
  - Enzyme analysis
  - Biomanufacturing plant design

Trademark Attribution: PLTW, Project Lead The Way, and the PLTW logo are registered trademarks of Project Lead The Way, Inc. Django is a registered trademark of the Django Software Foundation. VEX is a registered trademark of Innovation First International, Inc. Python is a registered trademark of the Python Software Foundation. All other brand names, product names, or trademarks belong to their respective holders.