

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 culturing, plating, and identification (Gram staining)
- Blood testing and typing
- Dissection
- DNA extraction
- DNA gel electrophoresis
- Fingerprint and hair analysis
- Karyotyping
- Applied math
- Micropipetting
- Microscopy
- Standard curve creation and utilization

### **Clinical Skills**

- Bloodwork analysis
- Blood drawing
- Blood pressure measurement and analysis
- Clinical empathy
- Heart rate measurement and analysis
- HIPAA legislation and implications understanding
- Scientific terminology and abbreviation usage
- Patient questioning, record keeping and documentation
- Pedigree construction and analysis
- Controlled bleeding techniques
- Triage

### **Equipment and Software Proficiencies**

- ArcGIS
- TinkerCAD
- Microsoft Office (Excel, Word, PowerPoint)
- Probes and sensors (temperature, respiration, heart rate)
- Data acquisition software (Graphical Analysis)
- Light microscope
- Gel electrophoresis
- Micropipettors
- Electronic balance

## 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

## Design Process Skills

- Solve a problem using an iterative design process
- Work collaboratively on a design team to design a product or solve a problem
- Document in detail the design process used to solve a problem or design a product
- Develop a detailed and comprehensive design brief
- Brainstorm to generate creative ideas and potential solutions to a problem
- Carry out a plan to compare alternate solutions and select the best solution path
- Evaluate a design solution with respect to design criteria and constraints

## Professional Skills

- Team collaboration
- Peer review and feedback
- Project management
- Problem-solving
- Oral communication and presentation
- Technical writing
- Ethical reasoning

## Course Knowledge

- Bioethics
- Biomedical science careers
- Body systems (selected) anatomy and physiology
- Cancer biology
- Cell biology
- Crime scene investigation
- Disease treatment and prevention
- Drug design
- Emergency medicine and medical surge
- Forensic investigation, manner, mechanism and cause of death
- High throughput screening (HTS)
- Homeostasis and positive and negative feedback mechanisms
- Infectious disease transmission
- Inheritance
- Interrelationship between body systems, health, and disease
- Mitosis and meiosis
- Molecular biology
- Pathology of disease: infectious, hereditary, and physiological diseases
- Protein synthesis
- Punnett squares

### **Course Knowledge (cont.)**

- Relationship between DNA, mutations, protein structure, and disease or dysfunction
- Relationship between genes, chromosomes, and DNA
- Restriction fragment length polymorphisms (RFLP) analysis
- Structure of DNA

### **Engagement Experiences**

- Laboratory investigations
- Case studies
- Instant challenges
- Simulations
- Role playing
- Digital design: podcasts, videos, etc.
- Thought experiments
- Design thinking