Medical Interventions 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
- Micropipetting
- DNA extraction
- Restriction enzyme digest
- DNA gel electrophoresis
- Protein gel electrophoresis
- Hydrophobic Interaction Chromatography (HIC)
- Bacterial transformation

Clinical Skills

- Karyotyping
- Quantitative Enzyme-linked Immunosorbant Assay (ELISA) analysis
- Interpretation of audiograms
- Blood typing
- Tissue typing

Equipment and Software Proficiencies

- Microsoft Office (Excel, Word, PowerPoint)
- Vernier probes and sensors
- Data Acquisition Software (Vernier Logger *Pro*)
- Microscope
- Thermal cycler

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 Topics

- Over-arching themes:
  - Homeostasis
  - Biomedical science careers
  - Bioethics
  - Design process
  - Interrelationship between body systems and health/disease
  - Current and future medical interventions
- Infectious disease
  - Epidemiology
  - Bioinformatics/DNA sequence analysis
  - Antibiotic mode of action and antibiotic resistance
  - Bacterial transduction, transformation, and conjugation
  - Physics of sound and anatomy and physiology of the ear
  - Hearing loss and audiograms
  - Cochlear implant technology
  - Vaccine production and mechanism
- Innovative medicine
  - Prenatal screenings
  - Gene therapy
  - Reproductive technology
  - Xenotransplantation and tissue engineering
- Molecular biology
  - Recombinant DNA technology and genetic engineering
  - DNA microarrays
  - Restriction Fragment Length Polymorphisms (RFLP) and marker analysis
  - Single Nucleotide Polymorphisms (SNPs) and pharmacogenetics
  - Biomanufacturing of human proteins
- Cancer genetics, diagnostics, and treatment
  - Diagnostic imaging
  - Histology
  - Statistical analysis

  - Biofeedback therapy
  - Prosthetic limb technology
  - Nanomedicine
  - Clinical trials
- Organ transplant
  - End Stage Renal Disease
  - Organ allocation policies and organ transplant
  - Laparoscopic surgical techniques
  - Antigen/antibody interactions
  - Pedigree construction/analysis