



Big Sky High School Health Science Academy

What courses will students take specific to the health sciences?

The Health Science Academy (HSA) at Big Sky High is built around four courses developed by Project Lead the Way (PLTW). Each course in the sequence builds on the skills and knowledge students gain in the preceding courses. Big Sky offers the three PLTW Biomedical Science foundation courses and will offer the final course in the series beginning next year. All of the PLTW courses are focused on project based learning, the development of problem solving skills, and gaining basic knowledge of human body structure and function. In addition, there is a strong career exploration component built in to the curriculum.

Each year students are exposed to many fictional situations that ask them to practice skill sets that can be applied in any career. Though our content focus is biomedical, the skills gained: problem solving, critical thinking, writing, presenting, and collaborating, can be used in all academic and career settings. The Biomedical strand, using the Project Lead the Way curriculum, is engaging for both students and teachers in the Health Science Academy. We hope as you talk to Big Sky Health Science Academy students that you hear an excitement about learning as well as a deeper understanding of skills and content.

Talk to any HSA student about the project on which they are currently working and you might be surprised to find that the freshman in PBS are working to determine the cause of death of a woman they found the first week of school. This includes acquiring skills such as blood spatter analysis and crime scene mapping (including geometry). The sophomores in HBS have taken on the role of forensic anthropologists and are using skeletal measurements to determine the identity of several sets of bones found at a nearby park. In Medical Intervention (MI), the juniors are applying high-level biochemical analyses including ELISA assays to uncover what caused the illness and death of several college students.

Foundation Courses Summary

Principles of Biomedical Science

In the introductory course of the PLTW Biomedical Science program, students explore concepts of biology and medicine to determine factors that led to the death of a fictional person. While investigating the case, students examine autopsy reports, investigate medical history, and explore medical treatments that might have prolonged the person's life. The activities and projects introduce students to human physiology, basic biology, medicine, and research processes while allowing them to design their own experiments to solve problems.

Human Body Systems

Students examine the interactions of human body systems as they explore identity, power, movement, protection, and homeostasis. Exploring science in action, students build organs and tissues on a skeletal Maniken®; use data acquisition software to monitor body functions such as muscle movement, reflex and voluntary action, and respiration; and take on the roles of biomedical professionals to solve real-world medical cases.

Medical Interventions

Students follow the life of a fictitious family as they investigate how to prevent, diagnose, and treat disease. Students explore how to detect and fight infection; screen and evaluate the code in human DNA; evaluate cancer treatment options; and prevail when the organs of the body begin to fail. Through real-world cases, students are exposed to a range of interventions related to immunology, surgery, genetics, pharmacology, medical devices, and diagnostics.

Biomedical Innovation

In the final course of the PLTW Biomedical Science sequence, students build on the knowledge and skills gained from previous courses to design innovative solutions for the most pressing health challenges of the 21st century. Students address topics ranging from public health and biomedical engineering to clinical medicine and physiology. They have the opportunity to work on an independent design project with a mentor or advisor from a university, medical facility, or research institution.

What courses will students take specific to Applied Veterinary Science?

The Health Science Academy at Big Sky High students can also include a Veterinary learning track. This track can be taken separately or concurrently with the PLTW track. In the advanced Agriculture Science course, students explore the fields of veterinary and medical science by utilizing the livestock on our school's farm. Students study the role of a veterinarian and veterinary technician in the diagnosis and treatment of animal diseases. This class provides a realistic preview of both medical work and the academic rigor needed to achieve success in the profession. Students engage in research, perform a variety of dissections, carry out real laboratory tests, and conduct surgical and medical treatments on livestock. Students will also become proficient in knot tying, animal handling and restraint. This is an applied medical science course and is therefore useful for any student pursuing a career in medicine.

Course Units/Topics

- Introduction to the FFA
- Animal Handling and Restraint
- Reproduction
- Medical Terminology
- Anatomy and Physiology
- Artificial Breeding Technology
- Animal Breeds and Genetics
- Laboratory Analysis and Procedures
- Examination and Treatment of Animals
- Surgical and Sterilization Procedures
- Disease Classification
- Resume Writing and Career Development

Health Science Academy student job shadow experiences

The Health Science Academy vision is to provide students with a challenging education and merge the skills and knowledge learned with real-world experiences that will prepared them for post-secondary education and career(s). Built within the academy foundation classes (PLTW classes and Applied Vet) are opportunities for students to explore a variety of health science careers. An integral part of the academy however, is building partnerships with the community through job shadows and internships in order to merge student skills and knowledge with various career path experiences. Job shadows are intended to bring relevancy to the student's education and motivate them to continue to work toward their educational and career goals.

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