GOVERNOR'S Health Sciences Academy

Below are descriptions of the courses offered to students enrolled in the Governor's Health Sciences Academy at Warwick High School. Students are expected to complete a sequence of four courses while in the academy, with one course taken each year. Courses are subject to availability and based on students' selected career pathway of Therapeutic Services, Diagnostic Services, Health Informatics and Support Services, or Biotechnology Research and Development.

Pathway	Description	9TH	10TH	11TH	12TH	Assessments & Certifications
Therapeutic Services	Care for and treat patients to improve their health over time. Counsel patients and provide them with the tools needed to live a healthier and problem-free lifestyle.	Introduction to Health Sciences	Medical Terminology	Health Assisting Careers	H Medical Clinical Practice (Nurse Aide)	• Workplace Readiness (10th grade) • NOCTI Health Assisting Exam (11th grade) • National Nurse Aide Assessment Program (12th grade)
Diagnostic Services	Use tests and evaluations to aid in the detection, diagnosis and treatment of diseases, injuries or other physical conditions.	Introduction to Health Sciences	Medical Terminology	Medical Laboratory Technology I	H Medical Laboratory Technology II	• Workplace Readiness (10th grade) • NRC Phlebotomy Technician Exam (12th grade)
Health Informatics & Support Services	Manage and assist health care agencies by overseeing all patient data, financial information and technological applications to health care processes and procedures.	Introduction to Health Sciences	Medical Terminology	Health Informatics	Healthcare Information Security	• Workplace Readiness (10th grade) • NOCTI Health Informatics Exam (11th grade) • Electronic Health Record Certification Exam (12th grade)
Biotechnology Research & Development	Discover new treatments and medical technologies to improve human health and advance the overall health science field.	Principles of Biomedical Science	Human Body Systems	Medical Interventions	H Biomedical Innovation	• Workplace Readiness (10th grade) • PLTW End-of-Course Tests (each year)

All students in the Therapeutic Services, Diagnostics Services, and Health Informatics and Support Services career pathways will take Introduction to Health and Medical Sciences in 9th grade and Medical Terminology in 10th grade. In 11th and 12th grade, students' courses will vary depending on their selected career pathway.

Introduction to Health and Medical Sciences
Students are introduced to a variety of healthcare careers and develop basic skills required in all health and medical sciences. The course helps students understand the key elements of the U.S. healthcare system and to learn basic healthcare terminology, anatomy and physiology for each body system, pathologies, diagnostic and clinical procedures, therapeutic interventions, and the fundamentals of traumatic and medical emergency care. Throughout the course, instruction emphasizes safety, cleanliness, asepsis, professionalism, accountability, and efficiency within the healthcare environment. Students also begin gaining job-seeking skills for entry into the health and medical sciences field. In addition, instruction may include the basics of medical laboratory procedures, pharmacology fundamentals, biotechnology concepts, and communication skills essential for providing quality patient care.

Medical Terminology
Students learn common medical terms essential for safe patient care. Topics are presented in logical order, beginning with each body system's anatomy and physiology and progressing through pathology, laboratory tests and clinical procedures, therapeutic interventions, and pharmacology. Students learn concepts, terms, and abbreviations for each topic.

Therapeutic Services

Health Assisting Careers
Students explore opportunities in the health care field by developing basic skills common to several assisting careers. They study body structure and function, principles of health, microbes, and disease, and an overview of the health and patient care system. Supervised work-based learning may begin as part of the course in health care settings and is managed by the health and medical sciences education teacher.

Medical Clinical Practice (Nurse Aide Certification Course)
Students will prepare for employment as a Nurse Aide/Home Health Aide and/or for entry into a postsecondary nursing or other health occupations program. Students will receive clinical training in a local long-term care facility and instruction on the following topics as outlined in the Virginia Board of Nursing curriculum: nurse aide in long-term care; communication and interpersonal skills; infection control; safety measures; emergency measures; client rights; basic skills; personal care skills; individual client needs, including mental health and social service needs; special needs clients; basic restorative services; respiratory system, cardiovascular system, HIV/AIDS, cancer and care of the resident when death is imminent; admission, transfer and discharge; legal and regulatory aspects of practice for the Certified Nurse Aide. Upon successful completion of the course, students meeting the standards established by the Virginia Board of Nursing will be eligible to take the National Nurse Aide Assessment Program (NNAAP) examination to become a Certified Nurse Aide in Virginia.

Diagnostic Services

Medical Laboratory Technology I
Students gain foundational knowledge and skills appropriate for a variety of medical-related career paths in the field of medical technology. They are introduced to diagnostic and therapeutic laboratory procedures that support medical research and practice, and investigate safety, quality assurance, and ethical concerns associated with the field of medical technology.

Medical Laboratory Technology II
Students will build on the foundational knowledge and skills obtained in Medical Laboratory Technology I. The students will use the basic principles necessary to perform competently in the areas of Hematology, Clinical Chemistry, Clinical

Microbiology, Immunohematology, and Immunology/Serology. Competency includes performing the technique correctly, understanding the theory of the procedures, and interpreting the results. Weekly laboratory activities will stress actual student performance of the routine tests normally seen in the clinical setting.

Health Informatics and Support Services

Health Informatics

Students will have the opportunity to explore the importance of safeguarding electronic healthcare information. Students will be introduced to the various technologies and trends that affect the healthcare industry. Students will explore aspects of health informatics to include the history of health information technology (IT) in the United States, the Electronic Health Record (EHR), ethical and privacy issues, and cybersecurity and data breaches.

Healthcare Information Security

Students will gain knowledge of the basic Health Insurance Portability and Accountability Act (HIPPA) related to ensuring patients' rights for privacy and security of their personal health information. Students will focus on healthcare professionals' accountability for documentation and disclosure of the electronic health record (EHR) and the electronic medical record (EMR).

Biotechnology Research and Development

All courses in the Biotechnology Research and Development career pathway are part of Project Lead the Way. Project Lead the Way is a curriculum focused on activity-, project-, and problem-based instructional design, which centers on hands-on, real-world activities, projects, and problems that help students understand how the knowledge and skills they develop in the classroom may be applied in everyday life.

Principles of Biomedical Science

Students gain an introduction to biomedical science through exciting hands-on projects and problems. Students investigate concepts of biology and medicine as they explore health conditions including heart disease, diabetes, sickle-cell disease, hypercholesterolemia, and infectious diseases. They will determine the factors that led to the death of a fictional woman as they sequentially piece together evidence found in her medical history and her autopsy report. Students will investigate lifestyle choices and medical treatments that might have prolonged the woman's life and demonstrate how the development of disease is related to changes in human body systems. Students are introduced to human physiology, basic biology, medicine, and research processes and design experiments to solve problems. Key biological concepts, including maintenance of homeostasis in the body, metabolism, inheritance of traits, and defense against disease are embedded in the curriculum. This course is designed to provide an overview of all the courses in the biomedical science program and lay the scientific foundation for subsequent courses.

Human Body Systems

Students examine the interactions of body systems as they explore identity, communication, power, movement, protection, and homeostasis. Students design experiments, investigate the structures and functions of the human body, and use data acquisition software to monitor body functions such as muscle movement, reflex and voluntary action, and respiration. Exploring science in action, students build organs and tissues on a skeletal manikin, work through interesting real world cases, and often play the role of biomedical professionals to solve medical mysteries.

Medical Interventions

Students investigate the variety of interventions involved in the prevention, diagnosis, and treatment of disease as they follow the lives of a fictitious family. A "how-to" manual for maintaining overall health and homeostasis in the body, the course will explore how to prevent and fight infection, how to screen and evaluate the code in our DNA, how to prevent, diagnose, and treat cancer, and how to prevail when the organs of the body begin to fail. Through these scenarios students will be exposed to the wide range of interventions related to immunology, surgery, genetics, pharmacology, medical devices, and diagnostics. Each family case scenario will introduce multiple types of interventions, reinforce concepts learned in the previous two courses, and present new content. Interventions may range from simple diagnostic tests to treatment of complex diseases and disorders. These interventions will be showcased across the generations of the family and will provide a look at the past, present, and future of biomedical science. Lifestyle choices and preventive

measures are emphasized throughout the course as well as the important role that scientific thinking and engineering design play in the development of interventions of the future.

Biomedical Innovation
Students design innovative solutions for the health challenges of the 21st century as they work through progressively challenging open-ended problems, addressing topics such as clinical medicine, physiology, biomedical engineering, and public health. Students are presented with Mission Files – a document that includes a case brief, a list of completion tasks, links to available resources, as well as a reflection section. Working through the missions not only exposes students to current issues in biomedical science, but it also provides skills-based instruction in research and experimentation – tools students will use to design innovative solutions to real-world problems. Students have the opportunity to work on an independent project and may work with a mentor or advisor from a university, hospital, physician's office, or industry. Throughout the course, students are expected to present their work to an adult audience that may include representatives from the local business and healthcare community.

New Horizons Career and Technical Education Center Courses

The following optional health science courses are also available for students in the Governor's Health Sciences Academy through New Horizons Career and Technical Education Center. New Horizons Career and Technical Education Center is a regional training center which has two campuses. The school division provides transportation to the two campuses. Students interested in attending New Horizons must be 16 years of age, must apply for acceptance to the course, and must have available space in their schedule for the course. Each course is one year in length, unless otherwise specified, and typically takes up 2-3 class periods in one's schedule. Morning classes take up three class periods and afternoon classes take up two class periods. For more information on the courses at New Horizons visit https://nhrec.org/ctec/.

- **Dental Careers I & II – two-year program**
- **Emergency Medical Technician**
- **Medical Assistant**
- **Nursing Aide**
- **Pharmacy Technician**
- **Physical/Occupational Therapy**
- **Veterinary Science**