Fairfax Collegiate
2026 Summer Program
Medical Science Course Syllabus
Rising Grades 7-9

Course Description

Explore anatomy and physiology.

Diagnose patient cases, test reflexes, track heart rates, explore optical illusions, dissect a sheep's eye, examine blood cells under a microscope, practice suturing, and run simulated lab tests for pathogens and drug trials.

Investigate the musculoskeletal, nervous, digestive, cardiovascular, respiratory, and lymphatic systems.

Students learn more about medical science in the real world. They participate in hands-on activities, solve medical mysteries, and think like doctors and researchers. With engaging labs and thoughtful discussions, students build confidence as they explore anatomy, physiology, disease, and diagnosis.

Families receive photos and videos capturing students as they work through labs, model body systems, and solve medical challenges. Students leave the course with stronger scientific skills, a richer understanding of human biology, and excitement about future study in medicine or the health sciences.

Learning Objectives

Course Goals	**Scientific Literacy:** Students apply the scientific method to understand diagnoses and treatment plans. **Medical Vocabulary:** Students use medical terminology. **Anatomy and Physiology:** Students understand how systems of the body function to achieve a certain goal and recognize when systems are not functioning properly. **Immunology and Pathology:** Students explain how disease is transmitted, diagnosed, and treated. **Laboratory Skills:** Students use scientific instruments including microscopes, pipettes, sutures, and scalpels.
Course Topics	**Introduction to Medical Science and the Human Body:** Students learn the basic functions of the human body and are able to use basic medical vocabulary. **Musculoskeletal System:** Students use games to identify bones and muscles in the body and

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	discover their functions. **Nervous System:** Students explore brain functions and connect the content to personal experiences and medical diagnoses. **Digestive System:** Students learn the organs of the digestive system and their function in breaking down food. **Sensory System:** Students explain sensory phenomena after learning basic functions of the 5 senses. **Cardiovascular and Respiratory Systems:** Students learn how the heart and lungs work together to support life. **Lymphatic System:** Students learn how the body identifies and fights off pathogens. **Immunology:** Students apply their understanding of diseases to consider how disease spreads and is studied on a large scale. **Pathology:** Students learn how medical tests work and are used to obtain diagnoses and treatment plans. **Scientific Method:** Students connect their knowledge by testing hypotheses and conducting research.

Course Schedule

Class Meeting 1	**Icebreakers:** Students and the instructor introduce themselves to each other. **Introduction to Medical Science:** Students learn the expectations of the classroom and get an introduction to the course material. **Patient Cases:** Students look at published patient case reports before using fact sheets to do their first patient case activity. **Medical Mythbusters:** Students take turns reading a medical statement. In teams, the rest of the students guess whether it is true or false.
Class Meeting 2	**Musculoskeletal System Warm Up:** Students try to list as many bones as possible within a time limit. **Bone Stations:** Students learn about bones and muscles then identify them. **Flyswatter Game:** Students practice the names of bones and muscles by "swatting" the location on a life-size human poster. **Musculoskeletal Simon Says:** Students play a large game of Simon Says. Instead of using common names for body parts, Simon uses bones from the notes sheet. **Musculoskeletal Patient Cases:** Students solve patient cases through roleplaying as the doctor and patient.

	Musculoskeletal Medical Journal: Students use their medical journals to document and solve patient cases.
Class Meeting 3	**Nervous System Warm Up:** Students learn about reflexes and the nervous system. **Brain Parts Notes:** Students learn more about the different parts of the brain. **20 Questions:** Students use a 20 Questions game to identify parts of the brain. **Brain Hat:** Students decorate their own brain hat which shows the parts of the brain. **Synaptic Tag:** Students review the neuron firing process then act it out. **Nervous System Patient Cases:** Students research different neurological disorders and take turns being the patient and doctor to diagnose the disorders. **Mapping the Brain:** Students learn about different types of brain scans and how they inform doctors.
Class Meeting 4	**Digestive System Warm Up:** Students start a life-sized digestive system activity and begin to identify its organs. **Life Size Digestive System:** Students explore the digestive system and build upon their warm-up project. **Bile Lab:** Students model how bile breaks down fat in the small intestine. **Sensory System Functions:** Students discuss the five senses and how they are interpreted in the brain. **Vision Games:** Students read about the brain's role in vision while exploring optical illusions. **Eye Dissection:** Students dissect a sheep's eye and identify each part of it. **Medical Journal:** Students reflect on the digestive and sensory systems. They are invited to consider how dissections can be useful, even when they are of a different species.
Class Meeting 5	**Cardiovascular System Warm Up:** Students demonstrate what they already know about the cardiovascular system. **Cardiovascular Systems Lesson:** Students travel around the room to learn the flow of blood through the heart, lungs, and body. They repeat to learn the flow of air into and out of the lungs. **Heart and Respiration Rate Lab:** Students explore how different activities, both mental and physical, alter their heart rate and respiration rate. **Heart Electricity and Life Support:** Students learn about the electrical system that allows the heart to pump blood. They go through stations with fact sheets about electrocardiograms, cardiopulmonary recitation, and defibrillators. **Cardiovascular Systems Patient Cases:** Students research some diseases before pairing up as doctor and patient to diagnose cardiovascular and respiratory diseases. **Cardiovascular Systems Medical Journal:** Students reflect on the day's lesson and patient cases.

Class Meeting 6	**Lymphatic System Warm Up:** Students learn the goal of the lymphatic system and review the systems from the previous week. **Lymphatic System Lesson:** Students move around the room to note parts of the lymphatic system and their functions. **Pathogen Patient Cases:** Students research common pathogens and create patient cases for each one. Students present different patient cases and attempt to identify the pathogen that has infected the patient. **Blood Smearing Lab:** Students observe simulated red and white blood cells and platelets under a microscope. **Lymphatic System Medical Journal:** Students reflect on the lymphatic system activity and the blood smearing lab.
Class Meeting 7	**Bacteria and Virus Warm Up:** Students compare and contrast bacteria and viruses using existing knowledge. **Identifying Bacteria and Viruses:** Students prepare a poster about an assigned bacteria or virus. **Operation Outbreak:** Students role play as public health officials responding to an influenza outbreak investigation. **Diagnostic Testing:** Students are introduced to other common forms of medical tests. **Medication Introduction:** Students develop a baseline understanding of the purpose of medication to prepare for the lab. **Pathology and Pharmacology Lab:** Students conduct simulated flu tests to determine whether patients have the flu or not. Students use product labels from OTC medicines to select the medicines appropriate for patients with the flu, the common cold, or allergies.
Class Meeting 8	**Warm Up:** Students learn about the FDA approval process and read about a clinical trial. **Pathology and Pharmacology Lab:** Students conduct simulated flu tests to determine whether patients have the flu or not. Students use product labels from OTC medicines to select the medicines appropriate for patients with the flu, the common cold, or allergies. **Types of Wounds:** Students learn about wound assessment to prepare for the suture lab. **Suture Lab:** Students practice suturing technique with suture kits. **The Scientific Method:** Students learn about the scientific research process and develop their scientific literacy by reading various research papers and designing an experiment.
Class Meeting 9	**Warm Up:** Students learn about the FDA approval process and read about a clinical trial. **Research and Pharmacology:** Students discover each step of the drug trial process and understand why each step is necessary. **Drug Trial Lab:** Students conduct simulated laboratory tests and analyze data to determine if a new flu prevention drug is safe and effective. **Drug Trial Lab:** Students conduct simulated laboratory tests and analyze data to determine if a

	new flu prevention drug is safe and effective. **Drug Trial Medical Journal:** Students reflect on the drug trial lab and reconsider what they wrote for the warm up.
Class Meeting 10	**Warm Up:** Students learn about the FDA approval process and read about a clinical trial. **Patient Case Project:** Students use their medical journal notes to create a detailed patient case. **Patient Case Project:** Students use their medical journal notes to create a detailed patient case. **Medical Journal:** Students reflect on the digestive and sensory systems. They are invited to consider how dissections can be useful, even when they are of a different species.