# Pathophysiology (Proc 24)

PRE-TEST/POST-TEST TEKS BLUEPRINT

# Pre-Test/Post-Test Development Overview

## TEKS Addressed Selection Process

The Texas Essential Knowledge & Skills (TEKS) included in the course pre-test and post-test were selected for their direct relevance to the course content. This selection process was guided by the goal of assessing learners' understanding of specific topics and skills that are integral to the course. As a result, TEKS related to general employability skills or broader topics were often excluded. This focus ensures that the assessments accurately measure students' mastery of the subject matter, allowing educators to gain a clear insight into areas where students excel or may need additional support. By concentrating on content-specific TEKS, the tests provide a more precise evaluation of the students' knowledge and understanding of the core material.

## Test Question Development Process

The questions created for the pre-test and post-test were designed using psychometric principles to ensure they are of high quality and fairness. This approach helps to accurately assess student understanding. These principles guide the development of questions to be reliable, valid, and free from bias, ensuring that they effectively measure the knowledge and skills the students are expected to acquire in the course.

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| Knowledge & Skills Statement | Student Expectation | iCEV Lesson Title |
|---|---|---|
| (2) The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory,and field investigations to answer questions,explain phenomena, or design solutions using appropriate tools and models. The student is | (A) ask questions and define problems based on observations or information from text, phenomena, models,or investigations; | Conducting Lab & Field Investigation: Pathophysiology |
| (2) The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory,and field investigations to answer questions,explain phenomena, or design solutions using appropriate tools and models. The student is | (B) apply scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to design solutions to problems; | Conducting Lab & Field Investigation: Pathophysiology |
| (2) The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory,and field investigations to answer questions,explain phenomena, or design solutions using appropriate tools and models. The student is | (C) use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards; | Lab Safety: Pathophysiology |
| (2) The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is | (D) use appropriate tools such as calculators, spreadsheet software, data-collecting probes, computers, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, electronic balances, gel electrophoresis apparatuses, micro pipettors, hand lenses, Celsius thermometers, hot plates, timing devices, Petri dishes, lab incubators, biochemical media and stains dissection equipment, meter sticks, and models, diagrams, or samples of biological specimens or structures; | Tools & Equipment in Pathophysiology |
| (2) The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory,and field investigations to answer questions,explain phenomena, or design solutions using appropriate tools and models. The student is | (E) collect quantitative data using the International System of Units (SI) and United States customary units and qualitative data as evidence; | Tools & Equipment in Pathophysiology |
| (2) The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory,and field investigations to answer questions,explain phenomena, or design solutions using appropriate tools and models. The student is | (F) organize quantitative and qualitative data using lab notebooks or journals, lab reports, labeled drawings, graphic organizers, peer reviewed medical journals, summaries, oral reports, and technology-based reports; | Conducting Lab & Field Investigation: Pathophysiology |
| (2) The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory,and field investigations to answer questions,explain phenomena, or design solutions using appropriate tools and models. The student is | (G) develop and use models to represent phenomena, systems, processes, or solutions to engineering problems; and | Developing a Mode: Pathophysiology |
| (2) The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory,and field investigations to answer questions,explain phenomena, or design solutions using appropriate tools and models. The student is | (H) distinguish between scientific hypotheses, theories, and laws. | Science Explained: Pathophysiology |
| (3) The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to: | (A) identify advantages and limitations of models such as their size, scale, properties, and materials; | Developing a Mode: Pathophysiology |
| (3) The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to: | (B) analyze data by identifying significant statistical features, patterns, sources of error, and limitations; | Analyzing Data: Pathophysiology |

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| (3) The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to: | (C) use mathematical calculations to assess quantitative relationships in data; and | Analyzing Data: Pathophysiology |
| (3) The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to: | (D) evaluate experimental and engineering designs. | Experimental Design: Pathophysiology |
| (4) The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to: | (A) develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories; | Developing a Mode: Pathophysiology |
| (4) The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to: | (B) communicate explanations and solutions individually and collaboratively in a variety of settings and formats; and | Communicating Findings in Pathophysiology |
| (4) The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to: | (C) engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence. | Science Explained: Pathophysiology |
| (5) The student knows the contributions of scientists and engineers and recognizes the importance of scientific research and innovation on society. The student is expected to: | (A) analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing so as to encourage critical thinking by the student; | Science Explained: Pathophysiology |
| (5) The student knows the contributions of scientists and engineers and recognizes the importance of scientific research and innovation on society. The student is expected to: | (B) relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists and engineers as related to the content; and | Pathophysiology Milestones |
| (5) The student knows the contributions of scientists and engineers and recognizes the importance of scientific research and innovation on society. The student is expected to: | (C) research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) or health science field in order to investigate careers. | STEM Careers: Pathophysiology |
| (6) The student analyzes the mechanisms of pathology. The student is expected to: | (A) describe abnormal biological and chemical processes at the cellular level; | Mechanisms of Pathology |
| (6) The student analyzes the mechanisms of pathology. The student is expected to: | (B) examine and analyze changes resulting from mutations and neoplasms by examining cells, tissues, organs, and systems; | Mechanisms of Pathology |
| (6) The student analyzes the mechanisms of pathology. The student is expected to: | (C) investigate factors that contribute to disease, including age, gender, environment, lifestyle, and heredity; and | Human Disease Factors |
| (6) The student analyzes the mechanisms of pathology. The student is expected to: | (D) analyze and describe how the body's compensating mechanisms attempt to maintain homeostasis when changes occur. | Mechanisms of Pathology |
| (7) The student examines the process of pathogenesis. The student is expected to: | (A) differentiate and identify pathogenic organisms using microbiological techniques such as gram staining, biochemical identification, and microscopic observation; | Pathogenic Organisms |
| (7) The student examines the process of pathogenesis. The student is expected to: | (B) research and summarize the stages of pathogenesis, including incubation period, prodromal period, and exacerbation or remission; | Pathogenic Organisms |
| (7) The student examines the process of pathogenesis. The student is expected to: | (C) analyze the body's natural defense systems against infection, including barriers, the inflammatory response, and the immune response; | Human Disease Defense & Prevention |
| (7) The student examines the process of pathogenesis. The student is expected to: | (D) analyze other mechanisms of disease prevention and treatment such as vaccinations, antibiotics, chemotherapy, and immunotherapy; and | Human Disease Defense & Prevention |
| (7) The student examines the process of pathogenesis. The student is expected to: | (E) evaluate the effects of chemical agents, environmental pollution, and trauma on the disease process. | Human Disease Factors |

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| (8) The student examines diseases throughout the body's systems. The student is expected to: | (A) investigate the etiology, signs and symptoms, diagnosis, prognosis, and treatment of diseases; | The Disease Process |
| (8) The student examines diseases throughout the body's systems. The student is expected to: | (B) explore and describe advanced technologies for the diagnosis and treatment of disease; | Disease Diagnosis & Treatment |
| (8) The student examines diseases throughout the body's systems. The student is expected to: | (C) research and describe reemergence of diseases such as malaria, tuberculosis, polio, and measles; | Human Diseases |
| (8) The student examines diseases throughout the body's systems. The student is expected to: | (D) research the causes, prevention, and impact of nosocomial infections and differentiate between the causes, prevention, and impact of nosocomial infections versus community-acquired infections; | Public Health and Wellness |
| (8) The student examines diseases throughout the body's systems. The student is expected to: | (E) research and describe antibiotic-resistant diseases such as methicillin-resistant Staphylococcus aureus; | Disease Diagnosis & Treatment |
| (8) The student examines diseases throughout the body's systems. The student is expected to: | (F) differentiate between various types of diseases and disorders, including hereditary, infectious, and auto immune; and | Human Diseases |
| (8) The student examines diseases throughout the body's systems. The student is expected to: | (G) investigate ways diseases such as diabetes, Parkinson's, lupus, and congestive heart failure affect multiple body systems. | Human Diseases |
| (9) The student integrates the effects of disease prevention and control. The student is expected to: | (A) evaluate public health issues related to asepsis, isolation, immunization, and quarantine; | Public Health and Wellness |
| (9) The student integrates the effects of disease prevention and control. The student is expected to: | (B) analyze the effects of stress and aging on the body; | Human Disease Factors |
| (9) The student integrates the effects of disease prevention and control. The student is expected to: | (C) analyze patient medical data and interpret medical laboratory test results to inform diagnosis and treatment; | Analyzing Medical & Epidemiological Data |
| (9) The student integrates the effects of disease prevention and control. The student is expected to: | (D) analyze and interpret epidemiological data to determine common trends and predict outcomes in disease progression; | Analyzing Medical & Epidemiological Data |
| (9) The student integrates the effects of disease prevention and control. The student is expected to: | (E) research and summarize diseases that threaten world health and propose intervention strategies; and | Public Health and Wellness |
| (9) The student integrates the effects of disease prevention and control. The student is expected to: | (F) develop a prevention plan that considers how behaviors contribute to lifestyle diseases. | Human Disease Defense & Prevention |