KCKPS CTE CURRICULUM PACING GUIDE

HUMAN BODY SYSTEMS

KSDE Course Code	14102G1.001114GGF	KSDE Course Name	Human Body Systems
CIP Code	14.0501	KSDE Pathway	BioMedical Pathway
Infinite Campus Course Numbers	03112031S & 03112031Y		
Prerequisites	Principles of Biomedical Science		
Courses That Follow	Medical Interventions, Biomedical Innovation		
Buildings Offered	F.L. Schlagle, J.C. Harmon, Sumner Academy, Wyandotte		

KCKPS Course Description

In Human Body System, students will gain extensive knowledge of the various systems of the human body, how they interact, and common medical terminology associated. Usually taken after a comprehensive initial study of biology, this class will present the human body and biological systems in more detail. In order to understand the structure of the human body and its functions, students learn anatomical terminology, study cells and tissues, explore functional systems (skeletal, muscular, circulatory, respiratory, digestive, reproductive, nervous, and so on).

Kansas Department of Education Course Competencies

Link to Career Cluster on KSDE

This course utilizes the approved competencies provided on the KSDE website. The competencies identified by KSDE provide the foundation for what students should know and/or be able to do by the end of the course.

Common District Summative Assessment

PLTW Summative Assessment

PACING GUIDE AT A GLANCE

Unit	Unit Name	Length
1	Identity	6 weeks
2	Communication	8 weeks
3	Power	8 weeks
4	Movement	10 weeks
5	Protection	2 weeks
6	Homeostasis	2 weeks

KSDE COURSE COMPETENCIES

Competency	Unit Taught
1. Explain the functions of different human body systems, and lists the major organs within each system	1
2. Describe how multiple body systems are interconnected and how those interconnections and interactions are necessary for life	1
3. Describe the differences in the appearance of epithelial and connective tissue	1
4. Explain the basic structure and function of the skeletal system	4
5. Describe how bone markings, bone landmarks and bone measurements can provide information about gender, race, ethnicity and height of a missing person	1
6. Describe how the structure of DNA is linked to function in the body	1
7. Explain how restriction enzymes cut DNA	1
8. Define Biometrics	1

9. Identify how gel electrophoresis results can help solve a missing persons' case	1
10. Outline the structure and function of the central nervous system	2
11. Summarize the techniques scientists use to map brain function	2
12. Correctly predict how electrical signals are created and transmitted in the human body	2
13. Summarize the roles of ions in creating electrical impulses in the human body	2
14. Explain how neurotransmitters help propagate electrical impulses	2
15. Describe the way in which hormones interact with target cells	2
16. Differentiate between endocrine and exocrine glands as well as protein/peptide and steroid hormones	2
17. Illustrate how the structure of the eye focuses light on the retina	2
18. Describe how the eye and the brain work together to allow a person to see	2
19. Explain visual perception, including visual acuity, depth perception, peripheral vision, color vision, and the interpretation of optical illusions	2
20. Explain visual perception, including visual acuity, depth perception, peripheral vision, color vision, and the interpretation of optical illusions	2
21. List and describe the human body systems that create, process and distribute food, water and oxygen	3
22. Deduce the factors, both environmental and personal that can impact the body's ability to survive with limited fuel	3
23. Describe the structure and function of the organs in the digestive system	1
24. Explain how energy is stored in ATP and how energy is released from ATP	3
25. Infer how the calories consumed in daily diet versus the calories expended in daily activities affects overall health	3
26. Describe the structure of the respiratory system, especially the lungs, and the basic mechanics of breathing	1, 3
27. Illustrates how the structure of the lungs facilitates the exchange of oxygen and carbon dioxide between air and the body	3
28. Analyzes the process through which the respiratory and cardiovascular systems facilities the transport of oxygen to all cells in the body	3

29. Describe the structure and function of the human urinary system	3
30. Describe how the structure of the kidney relates to its function in the body	3
31. Illustrate the composition of normal blood and normal urine	3
32. Explain how the body uses hormones to maintain a water balance	3
33. Describe how the types of joints found in the human body differ in both structure and function	4
34. Demonstrate the meaning of terms that describe the motion at joints, such as flexion and extension	4
35. Describe how the three types of muscle tissue differ in structure and function	4
36. Describe the requirements for muscle contraction	4
37. Illustrate the connection between nerves and muscles	4
38. Explain the relationship between the heart and the lungs and trace the path of major circulatory routes	4
39. Define pulse and blood pressure and name and locate several pulse points on the body	4
40. Identify the body's major arteries and veins and name the body region supplied by each	4
41. Describe the ways in which the human body can generate ATP as well as how long the energy will last in each case	4
42. Describe the structure and function of human skin	5
43. Explain how different degrees of burns damage layers of the skin	5
44. Describe how the human body senses and processes signals of pain	5
45. Compare the structure and function of compact and spongy bone	5
46. Describe the types of bone fractures	5
47. Outline what happens to bone structure as we age	5
48. Describe the structure and function of the lymphatic and immune system	6
49. Describe the interaction between antigens and antibodies	6

50. Explain how the systems work together to maintain homeostasis in the body and to complete basic functions such as movement and communication	6

UNIT 1

Identity 6 weeks

Unit Overview

To engage students in a discussion of what it means to be human. Students investigate the body systems and functions that all humans have in common and then look at differences in tissues, such as bone and muscle, and in molecules, such as DNA, to pinpoint unique identity.

Unit Competencies

- 1. Explain the functions of different human body systems, and lists the major organs within each system
- 2. Describe how multiple body systems are interconnected and how those interconnections and interactions are necessary for life
- 3. Describe the differences in the appearance of epithelial and connective tissue
- 5. Describe how bone markings, bone landmarks and bone measurements can provide information about gender, race, ethnicity and height of a missing person
- 6. Describe how the structure of DNA is linked to function in the body
- 7. Explain how restriction enzymes cut DNA
- 8. Define Biometrics
- 9. Identify how gel electrophoresis results can help solve a missing persons' case
- 23. Describe the structure and function of the organs in the digestive system
- 26. Describe the structure of the respiratory system, especially the lungs, and the basic mechanics of breathing

Unit Resources

Primary Resources	Supplemental Resources
• Anatomy in Clay Mannequin	• Simulated DNA Samples

Vocabulary

UNIT 2

Communication 8 weeks

Unit Overview

Students will investigate how the brain coordinates communication around the body and integrates the function of many systems to assure the body's continued homeostasis.

Unit Competencies

- 10. Outline the structure and function of the central nervous system
- 11. Summarize the techniques scientists use to map brain function
- 12. Correctly predict how electrical signals are created and transmitted in the human body
- 13. Summarize the roles of ions in creating electrical impulses in the human body
- 14. Explain how neurotransmitters help propagate electrical impulses
- 15. Describe the way in which hormones interact with target cells
- 16. Differentiate between endocrine and exocrine glands as well as protein/peptide and steroid hormones
- 17. Illustrate how the structure of the eye focuses light on the retina
- 18. Describe how the eye and the brain work together to allow a person to see
- 19. Explain visual perception, including visual acuity, depth perception, peripheral vision, color vision, and the interpretation of optical illusions
- 20. Explain visual perception, including visual acuity, depth perception, peripheral vision, color vision, and the interpretation of optical illusions

Unit Resources

Primary Resources	Supplemental Resources
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Vocabulary

UNIT 3

Power 8 weeks

Unit Overview

Students will investigate how the human body systems work to obtain, distribute, or process the body's primary resources for energy and power--food, oxygen, and water.

Unit Competencies

- 21. List and describe the human body systems that create, process and distribute food, water and oxygen
- 22. Deduce the factors, both environmental and personal that can impact the body's ability to survive with limited fuel
- 24. Explain how energy is stored in ATP and how energy is released from ATP
- 25. Infer how the calories consumed in daily diet versus the calories expended in daily activities affects overall health
- 26. Describe the structure of the respiratory system, especially the lungs, and the basic mechanics of breathing
- 27. Illustrates how the structure of the lungs facilitates the exchange of oxygen and carbon dioxide between air and the body
- 28. Analyzes the process through which the respiratory and cardiovascular systems facilities the transport of oxygen to all cells in the body
- 29. Describe the structure and function of the human urinary system
- 30. Describe how the structure of the kidney relates to its function in the body
- 31. Illustrate the composition of normal blood and normal urine
- 32. Explain how the body uses hormones to maintain a water balance

Unit Resources

Primary Resources	Supplemental Resources
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Vocabulary

UNIT 4

Movement 10 weeks

Unit Overview

Students investigate movement of the human body as well as the movement of substances within the body.

Unit Competencies

- 4. Explain the basic structure and function of the skeletal system
- 33. Describe how the types of joints found in the human body differ in both structure and function
- 34. Demonstrate the meaning of terms that describe the motion at joints, such as flexion and extension
- 35. Describe how the three types of muscle tissue differ in structure and function
- 36. Describe the requirements for muscle contraction
- 37. Illustrate the connection between nerves and muscles
- 38. Explain the relationship between the heart and the lungs and trace the path of major circulatory routes
- 39. Define pulse and blood pressure and name and locate several pulse points on the body
- 40. Identify the body's major arteries and veins and name the body region supplied by each
- 41. Describe the ways in which the human body can generate ATP as well as how long the energy will last in each case

Unit Resources

Primary Resources	Supplemental Resources
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Vocabulary

UNIT 5

Protection 2 weeks

Unit Overview

Students explore ways in which the human body protects itself from injury and disease.

Unit Competencies

- 42. Describe the structure and function of human skin
- 43. Explain how different degrees of burns damage layers of the skin
- 44. Describe how the human body senses and processes signals of pain
- 45. Compare the structure and function of compact and spongy bone
- 46. Describe the types of bone fractures
- 47. Outline what happens to bone structure as we age

Unit Resources

Primary Resources	Supplemental Resources
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Vocabulary

UNIT 6

Homeostasis 2 weeks

Unit Overview

Students focus on the connection between all of the human body systems and examine how these systems work together to maintain health and homeostasis.

Unit Competencies

- 48. Describe the structure and function of the lymphatic and immune system
- 49. Describe the interaction between antigens and antibodies
- 50. Explain how the systems work together to maintain homeostasis in the body and to complete basic functions such as movement and communication

Unit Resources

Primary Resources	Supplemental Resources
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Vocabulary