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## VISIBLE BODY®

# Curriculum Asset Guide 2025



Interactive assignments and quizzes correlated to state standards

Courses and outlines correlated to textbooks



Online and in-person, labs and study tools



Lesson plans
Instructor community content







## A message from our team...

Dear educators,

This guide provides an overview of the library of curriculum assets created over the years to support students and instructors using Visible Body.

The assets shared in this document were developed by our in-house team, as well as by our community of educators. This list is extensive and is always growing and evolving. If you do not see what you are looking for, reach out to your VB representative or email support@visiblebody.com.

We look forward to working with you as you consider how our offerings meet your needs!

VISIBLE BODY®

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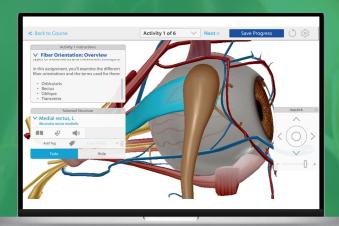
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# Assignments with correlations and assessments





## **VB** assignments

If you are looking for a student experience as straightforward as a textbook, but more visual and interactive, try our assignments.

- Assignments are correlated to NGSS and a collection of state standards.
- Each includes learning objectives for students to use as guidelines.
- Each is formed by a series of activities and low stakes assessments that keep students aware of their progress.
- The time students spend on activities and their performance on are tracked in the built-in gradebook.

## **Details:**

- Languages available: English
- Access: Available on VB Courses page to instructors with a Courseware account.
- Development process: Each is developed to be bite-sized, easily digestible, and to follow visual pedagogy. They are peer reviewed, proofread, correlated, and then released to instructors.

## VISIBLE BODY® A&P Assignments Correlations

## **Anatomical Terminology**

## **General Learning Objectives**

### Identify:

• The four different types of planes

#### Describe:

- Anatomical position
- How each type of plane divides the body
- The location of a structure using anatomical directions
- The meanings of anatomical directional terms
- The meanings of anatomical prefixes

#### Explain:

Why anatomical terminology is used in anatomy and physiology

- 01.03 Examine medical implications of body planes, directional terms, cavities, abdominal regions, and quadrants.
- 02.01 Evaluate and apply anatomical terminology to describe location of parts or areas of the body and to describe the relation of one part to another.
- 02.02 Interpret correct medical terminology including roots, prefixes and suffixes to indicate anatomical structures and function.
- 02.03 Extend medical terminology to real-world applications.

## VISIBLE PODY® A&P Assignments Correlations

## Cells and Tissues 🤽



## **General Learning Objectives**

#### Identify:

- Different types of cells and describe their functions
- Parts of a cell
- The organelles of a typical cell and describe their functions
- The major tissue types and examples of each in the body

#### Describe:

- The structure and functions of the plasma membrane
- The process of osmosis
- The process of cellular respiration
- The cell life cycle
- The processes of meiosis and mitosis
- The production and role of gametes
- The structure and locations of epithelial tissue
- The structure and locations of connective tissue
- The structure and locations of muscle tissue
- The structure and locations of nervous tissue
- The process of tissue repair

### Explain:

- How substances cross the plasma membrane
- How the structure of the plasma membrane impacts its function
- Passive and active transport
- The direction water will move into or out of a cell
- How DNA is used to synthesize proteins
- How the process of replication allows cells to multiply
- How tissue repair can result in scarring

- 03.01 Discuss and describe cell structure and function in healthy tissue.
- 03.03 Compare and contrast the four main types of tissue including the interrelationships of tissues
- 15.01 Discuss DNA and its role in human heredity.

# VISIBLE BODY A&P Assignments Correlations Integumentary System

## **General Learning Objectives**

#### Identify:

- The major components of the integumentary system and describe their functions
- The major structures of the skin and describe their functions
- The layers of the skin
- The different types of skin receptors
- The structures of hair
- The different glands found in the integumentary system

#### Describe:

- The structure and function of each skin layer
- The functions of the different types of skin cells
- The role of dermal circulation
- How vitamin D is synthesized
- The factors that influence skin pigmentation
- · The process of tissue repair
- The sensory innervation of the skin
- The function of each hair structure
- The structure, functions, and growth process of hair
- The structure and growth process of nails

### Explain:

- The difference between melanocytes and melanin
- How the skin protects the body's tissues and organs
- The factors that influence hair shape and color
- · The function of dermatomes
- The difference in functions of the glands found in the integumentary system
- Why the mammary glands are considered specialized integumentary glands
- Why scarring occurs

- 04.01 Apply medical terminology as related to the integumentary system.
- 04.02 Discuss and describe the structure and function of the integumentary system across the lifespan.
- 04.03 Demonstrate knowledge of cells and tissues in the integumentary system.

# VISIBLE BODY® A&P Assignments Correlations Skeletal System

## **General Learning Objectives**

#### Identify:

- The major components of the skeletal system and describe their functions
- Types of bones based on their shape
- Types of bony landmarks
- The parts of a long bone
- The major types of bone cells and describe their functions
- The different types of fractures
- The structures that make up the axial skeleton
- The bones and major landmarks of the skull
- The auditory ossicles
- Bones, major landmarks, and ligaments of the vertebral column
- Bones of the thoracic cage
- The structures that make up the appendicular skeleton
- The bones and major landmarks of the shoulder girdle
- The bones and major landmarks of the upper limb
- The bones and major landmarks of the pelvic girdle
- The bones and major landmarks of the lower limb
- The bones of the temporomandibular joint and their articulating areas

#### Describe:

- The different types of bones and provide an example of each
- The structure and function of compact and spongy bone tissue
- The role of calcium in the skeletal system
- The processes of long and flat bone formation
- The internal structure of a long bone
- The components and functions of yellow and red bone marrow
- The process of bone repair
- How bone tissue changes with advancing age
- The structure and function of skull sutures and fontanelles
- The cross-sectional structure of a vertebra
- How some bones are stabilized by muscles
- The structure of the carpal tunnel and its role in carpal tunnel syndrome
- The differences between the male pelvis and female pelvis, and explain why these differences exist
- The structure and function of the arches of the foot
- The different types of joints, explain their functions, and provide an example of each type
- The six major types of synovial joints, and provide an example of each type
- The kinds of movement each of these joint surfaces facilitates
- How joints can degenerate with advancing age

#### Describe (cont):

- Common conditions of the shoulder joint, including their causes, pathology, and effects
- Common conditions of the elbow joint, including their causes, pathology, and effects
- Common conditions of the wrist, including their causes, pathology, and effects
- Common conditions of the hip joint, including their causes, pathology, and effects
- Common conditions of the knee joint, including their causes, pathology, and effects
- Common conditions of the ankle and foot, including their causes, pathology, and effects
- Common conditions of the spinal column, including their causes, pathology, and effects
- How ligaments reinforce joints and contribute to movement

#### **Explain:**

- The different types of joint surfaces: heads, condyles, and facets
- The differences between spongy bone and compact bone based on their microscopic structure

- 05.01 Apply medical terminology as related to the skeletal system.
- 05.02 Discuss and describe the structure and function of the skeletal system across the lifespan.
- 05.03 Identify and explain major bone markings and their implications.
- 05.04 Identify and explain joints and their implications.
- 05.05 Discuss the interrelationship between calcium, hormones, and the skeletal system.
- 05.06 Apply knowledge of cells and tissues in the skeletal system.
- 05.07 Identify and analyze common diseases and disorders of the skeletal system including etiology, prevention, pathology, diagnosis and treatment/rehabilitation.
- 05.09 Demonstrate knowledge of skills related to the skeletal system which may include range of motion.

# VISIBLE BODY A&P Assignments Correlations Muscular System

## **General Learning Objectives**

#### Identify:

- The three types of muscle and describe the muscular system's function
- Smooth muscle in the body
- Smooth muscle layers of the stomach
- The blood vessels and conduction system that supply and innervate cardiac muscle
- The major skeletal muscle regions of the body
- At least one example of paired muscles that oppose each other's actions
- Examples of first, second, and third-class levers in the body
- Muscles and muscle groups of the head and neck and describe their functions
- Muscles and muscle groups of the vertebral column and describe their functions
- Muscles or muscle groups of the abdomen and describe their functions
- Muscles or muscle groups of the pelvis and describe their functions
- Muscles or muscle groups of the upper limbs and describe their functions
- Muscles or muscle groups of the lower limbs and describe their functions
- The agonists and synergists involved in muscle actions of the wrist and hand joints
- The agonists and synergists involved in muscle actions of the elbow and forearm
- The agonists and synergists involved in muscle actions of the shoulder girdle and shoulder joint
- The agonists and synergists involved in muscle actions of the hip joint
- The agonists and synergists involved in muscle actions of the knee joint
- The agonists and synergists involved in muscle actions of the ankle and foot joints
- The agonists and synergists involved in muscle actions of the trunk and spinal column

#### Describe:

- The location and function of skeletal muscles
- The distinguishing features of each of the three types of muscle
- The blood supply and innervation of skeletal muscles
- The microscopic structure of skeletal muscle tissue
- The location and function of smooth muscle
- The location and function of cardiac muscle
- The role of agonists and antagonists in muscle movement
- How skeletal muscles attach to the bony skeleton
- How origins and insertions impact movement, speed, and strength
- How fiber orientation relates to muscle movement
- Common conditions of the muscular system, including their causes, pathology, and effects

#### Describe (cont):

- The biomechanics and muscle actions of the shoulder girdle and shoulder joint
- The muscle actions of the elbow and forearm
- The biomechanics and muscle actions of the wrist and hand
- The biomechanics and muscle actions of the hip joint
- The biomechanics and muscle actions of the knee joint
- The biomechanics and muscle actions of the ankle and foot joints
- The biomechanics and muscle actions of the trunk and spinal column
- Muscle actions involved in moving the head and neck
- Muscle actions involved in moving the jaw at the temporomandibular joint

#### **Explain:**

- How an impulse generated by the central nervous system results in the contraction of a skeletal muscle
- How a muscle's name can give insight about its attachments, shape, location, action, fiber orientation, and other characteristics
- The meaning of the terms insertion and origin
- How the skeletal and muscular systems work together to produce leverage
- Complex muscle movements, based on the muscle's anatomy

- 06.01 Apply medical terminology as related to the muscular system.
- 06.02 Discuss and describe the structure and function of the muscular system across the lifespan.
- 06.03 Identify and explain the 3 main types of muscles and their implications.
- 06.04 Interpret muscle function by examining attachment to bone.
- 06.05 Discuss the interrelationship between calcium, ions, and the muscular system.
- 06.06 Apply knowledge of cells and tissues in the muscular system.
- 06.07 List the steps involved in the sliding filament of muscle contraction.
- 06.08 Describe signal transmission across a myoneural/neuromuscular junction.
- 06.09 Identify and analyze common diseases and disorders of the muscular system including etiology, prevention, pathology, diagnosis and treatment/rehabilitation.

## VISIBLE ↑BODY® A&P Assignments Correlations

## Nervous System and Special Senses <

## **General Learning Objectives**

#### Identify:

- The major components of nervous system
- The parts of a neuron
- · The spinal cord and its meninges
- The cross-sectional structures of the spinal column
- The spinal nerves and nerve plexuses
- Major spinal nerves and structures they innervate
- Anatomical regions of the brain
- Anatomical structures that surround and protect the brain
- Blood vessels that supply the brain
- The anatomical features of the cerebrum
- Functional regions of the cerebral cortex
- The 12 paired cranial nerves by name and number
- The cranial nerves that transmit special sensory signals
- · The cranial nerves that transmit motor signals
- The cranial nerves that transmit both sensory and motor signals
- Anatomical structures of the special senses
- Major neurotransmitters and describe their functions
- The ventricles of the brain and describe their function
- Structures of the brainstem and describe their functions
- The parts of the cerebellum and describe their functions
- Structures of the diencephalon and describe their functions
- Structures of the limbic system and describe their functions
- Structures of the cerebrum and describe their functions.
- Structures of somatic sensation and describe their functions
- The cranial nerves and describe the pathway of sensory impulses for each special sense

#### Describe:

- The functions of the major nervous system components
- The composition and location of nervous tissue
- The structural types of neurons
- The types of neuroglia and their functions
- The process of neurotransmission
- The distribution and function of gray and white matter in the spinal cord
- The somatic reflex arc
- The pathway and function of each cranial nerve
- The functions of the somatic and autonomic nervous systems
- The motor functions of the somatic nervous system
- The sensory and motor pathways of the somatic nervous system

#### Describe (cont):

- The roles of the basal ganglia and cerebellum in somatic nervous system function
- The structure of the autonomic nervous system
- The roles of the sympathetic and parasympathetic nervous systems
- The process of olfaction
- The process of taste
- The process of vision
- The role of the optic chiasm in binocular vision
- The process of hearing
- The process of equilibrium
- Common conditions of the nervous system, including their causes, pathology, and effects

#### Explain:

- How resting and action potentials contribute to nerve function
- How sensory signals and motor commands are relayed through the spinal cord and spinal nerves
- How multiple sclerosis disrupts normal neural signaling
- What a dermatome is and which skin region is innervated by each spinal nerve
- How eye shape affects vision

- 06.08 Describe signal transmission across a myoneural/neuromuscular junction.
- 07.01 Apply medical terminology as related to the nervous system.
- 07.02 Discuss and describe the structure and function of the nervous system across the lifespan.
- 07.03 Identify and explain the interrelatedness of the Central Nervous System (CNS) and Peripheral Nervous System (PNS).
- 07.04 Compare and contrast the divisions of the Autonomic Nervous System (ANS).
- 07.05 Apply knowledge of cells and tissues in the nervous system.
- 07.06 Explain how neurotransmitters help propagate electrical impulses.
- 07.07 Describe reflex pathways and their importance.
- 07.08 Identify and analyze common diseases and disorders of the nervous system including etiology, prevention, pathology, diagnosis and treatment/rehabilitation

## VISIBLE BODY® A&P Assignments Correlations

## **Endocrine System**



### **General Learning Objectives**

#### Identify:

- The primary and secondary endocrine organs
- The hypothalamus and pituitary gland and describe their role in hormone production
- Hormones produced by the hypothalamus and describe their function
- Hormones produced by the anterior lobe of the pituitary gland and describe their functions
- Hormones stored and secreted by the posterior lobe of the pituitary gland and describe their functions
- Target organs of pituitary hormones
- The thyroid gland
- Hormones produced by the thyroid gland and describe their functions
- The parathyroid glands
- Hormones produced by the parathyroid glands and describe their functions
- The adrenal glands
- Hormones produced by the adrenal glands and describe their functions
- The pineal gland and describe its functions
- The pancreas
- Hormones produced by secondary endocrine organs and describe their functions
- Hormones produced by the anterior lobe of the pituitary gland and describe their functions

#### Describe:

- The primary and secondary endocrine organs
- The functions of the primary and secondary endocrine organs
- The location and function of pancreatic islets and identify hormones they produce
- How pancreas hormones regulate blood glucose level
- How hormones regulate the stress response

- 08.01 Apply medical terminology as related to the endocrine system.
- 08.02 Discuss and describe the structure and function of the endocrine system across the lifespan.
- 08.05 Evaluate the relationship between the endocrine system and homeostasis in health and disease.
- 08.06 Apply knowledge of cells and tissues in the endocrine system.

## VISIBLE BODY A&P Assignments Correlations Circulatory System

## **General Learning Objectives**

### Identify:

- The major components of the circulatory system and describe their functions
- The components of blood
- The different types of white blood cells and describe their functions
- The layers of the heart wall and describe each layer's function
- The external structures of the heart
- The internal structures of the heart
- The four chambers of the heart
- The four valves of the heart
- The systemic and pulmonary vessels that enter and exit the heart.
- The arteries and veins of coronary circulation and describe their function
- The major structures of the conduction system
- The autonomic nervous system structures that control and innervate the heart
- The five major types of blood vessels and describe their functions
- The major routes of circulation and describe their functions
- The vessels of pulmonary circulation
- Structures of the lower respiratory system that contribute to gas exchange
- The great vessels of the circulatory system
- The arteries and veins of the head and neck
- The arteries of the circle of Willis
- The venous sinuses
- The arteries and veins of the upper limb
- The arteries and veins of the thorax
- Branches of the abdominal aorta
- Veins of the azygos system
- Arteries and veins of the abdomen
- Arteries and veins of the intestines
- Veins of the hepatic portal system
- Arteries and veins of the pelvis
- Arteries and veins of the leg and foot

#### Describe:

- The exchange of gases between the lungs and bloodstream
- The components and functions of plasma
- The production of red blood cells and their role in oxygen transport
- The production of platelets
- The functions of the heart and the functions of the pericardium
- The heart's location relative to the lungs, diaphragm, thoracic cage, and ribs
- The flow of blood through the heart and the role of each atrium, ventricle, and valve in this process
- The function of the conduction system

#### Describe (cont):

- The steps of electrical conduction that lead to ventricular contraction
- The purpose of an electrocardiogram
- The steps of the cardiac cycle
- Different types of arrhythmias
- The structural difference between arteries and veins
- The relationship between blood pressure and resistance
- Systolic and diastolic pressure
- The flow of blood through systemic circulation
- The pathway of blood flow entering and exiting the brain
- The functions of pulmonary arteries and pulmonary veins
- Common conditions involving the heart, including their causes, pathology, and effects
- Common conditions involving the blood vessels, including their causes, pathology, and effects

#### Explain:

- How platelets contribute to the formation of blood clots
- How the ECG relates to heart conduction
- How cardiac output is determined
- How arterial blood pressure is measured

- 09.01 Apply medical terminology as related to the cardiovascular system.
- 09.02 Discuss and describe the structure and function of the cardiovascular system across the lifespan.
- 09.03 Demonstrate knowledge of major blood vessels.
- 09.05 Analyze the interdependence between systemic and pulmonary circulation.
- 09.06 Design a map or flow chart depicting the normal pathway of blood flow through the heart.
- 09.07 Design a map or flow chart depicting the normal electrical pathway through the heart.
- 09.08 Apply knowledge of cells and tissues in the cardiovascular system
- 09.09 Demonstrate knowledge of the composition of blood to include formed elements and plasma.
- 09.12 Identify and analyze common diseases and disorders of the cardiovascular system including etiology, prevention, pathology, diagnosis and treatment/rehabilitation.
- 11.03 Evaluate the interrelatedness of the cardiovascular and respiratory systems.

## VISIBLE BODY® A&P Assignments Correlations

## **Lymphatic System and Immunity**



## **General Learning Objectives**

#### Identify:

- The major components of the lymphatic system and describe their functions
- The major vessels of the lymphatic system
- Lymphatic tissues and describe their functions
- The different types of white blood cells, including lymphocytes
- The different types of granulocytes

#### Describe:

- The circulation of lymph throughout the body
- The internal structure of a lymph node
- The body's innate immune defenses
- The process of phagocytosis
- The role of different granulocytes in immunity
- The body's adaptive immune defenses
- The functions of B cells and T cells

#### **Explain:**

- The role of monocytes in the immune response
- The function of different lymphocytes during adaptive immune responses

- 10.01 Apply medical terminology as related to the lymphatic and immune systems.
- 10.02 Discuss and describe the structure and function of the lymphatic and immune systems across the lifespan.
- 10.03 Explain the importance of the accessory organs (thymus, tonsils, spleen, appendix, Peyer's patch) promoting the effectiveness of the lymphatic and immune system.
- 10.04 Compare and contrast passive and active immunity.
- 10.05 Discuss the impact of B cells and T cells on diseases of the immune system.
- 10.07 Apply knowledge of cells and tissues in the lymphatic and immune systems.

# VISIBLE BODY A&P Assignments Correlations Respiratory System

## **General Learning Objectives**

#### Identify:

- The structures of the upper respiratory tract
- The structures that make up the upper respiratory system
- The structures of the nose and nasal cavity
- The structures of the pharynx
- The structures of the larynx
- The structures that make up the lower respiratory system
- The airways of the lower respiratory system
- Each lobe and external feature of the lungs
- The vessels of pulmonary circulation

#### Describe:

- The basic functions of respiratory system structures
- Pulmonary ventilation and identify the structures involved
- External respiration and identify the structures involved
- Internal respiration and identify the structures involved
- How the structures of the upper respiratory tract clean, warm, and moisten air
- The functions of the nasal mucosa
- The process and function of sneezing
- The process of olfaction
- The process of phonation
- The relationship between vocal fold tension and sound pitch
- The function of the epiglottis
- The structure and function of the trachea
- Bronchodilation and bronchoconstriction
- The location and shape of the lungs in relation to surrounding organs
- The location and structure of alveoli
- The internal structures of the lungs
- Pulmonary ventilation and identify the structures involved
- Common conditions of the respiratory system, including their causes, pathology, and effects

#### Explain:

- How Boyle's Law relates to breathing
- How debris is cleared from the respiratory tract
- How air moves into and out of the lungs
- How the respiratory and circulatory systems work together during external respiration
- Using Dalton's Law, explain why oxygen and carbon dioxide are exchanged between the lungs and the bloodstream
- How imbalances of oxygen and carbon dioxide in the bloodstream affect respiratory rate

- 11.01 Apply medical terminology as related to the respiratory system.
- 11.02 Discuss and describe the structure and function of the respiratory system across the lifespan.
- 11.03 Evaluate the interrelatedness of the cardiovascular and respiratory systems.
- 11.04 Apply knowledge of cells and tissues in the respiratory system.
- 11.05 Identify and analyze common diseases and disorders of the respiratory system including etiology, prevention, pathology, diagnosis and treatment/rehabilitation.

# VISIBLE BODY A&P Assignments Correlations Digestive System

## **General Learning Objectives**

#### Identify:

- The major components of the digestive system and their functions
- Major structures of the oral cavity
- The five types of teeth and describe each type's function
- The parts of a tooth
- The tongue and its extrinsic muscles
- The salivary glands and ducts
- The muscles of mastication
- The epiglottis and describe its function during swallowing
- The regions of the stomach
- The muscular layers of the stomach wall and explain how they differ from those of the rest of the alimentary canal
- The sphincters through which food enters and exits the stomach
- The major blood vessels supplying and draining the stomach wall
- The accessory digestive organs of the abdominal cavity
- · The segments and ligaments of the liver
- Major veins of the hepatic portal system and describe the hepatic portal system's function
- · Bile ducts and describe their function
- The major arteries supplying the liver, gallbladder, and pancreas
- The regions of the small intestine
- The major structures of the large intestine
- The regions of the colon
- The major blood vessels that supply and drain the intestines

#### Describe:

- The overall structure, sections, and layers of the alimentary canal
- Describe the components and functions of major digestive juices, and explain where they are produced
- The process of chewing and swallowing
- The process of peristalsis
- The location and pathway of the esophagus
- The role of the liver, gallbladder, and pancreas in producing, transporting, and storing digestive juices
- The process of absorption that occurs in the small intestine
- How the intestines are adapted for absorbing nutrients and water

#### Describe (cont):

- The different types of cells within the intestines and their functions
- The function of circular folds and villi in the small intestine
- The digestive processes that occur in the large intestine, including the role of bacteria
- The function of the taenia coli
- Common conditions involving the digestive system, including their causes, pathology, and effects

#### **Explain:**

- How the tongue contributes to the sense of taste
- The functions of the small intestine compared to the large intestine
- How the structure of the small and large intestines relates to their functions
- How the defecation reflex occurs

- 12.01 Apply medical terminology as related to the digestive system.
- 12.02 Discuss and describe the structure and function of the digestive system across the lifespan.
- 12.03 Apply knowledge of cells and tissues in the digestive system.

# VISIBLE BODY A&P Assignments Correlations Urinary System

## **General Learning Objectives**

#### Identify:

- The major components of the urinary system and describe their functions
- Structures of the kidneys and describe their functions
- Blood vessels that supply the kidneys
- The structures involved in glomerular filtration
- The structures involved in urine storage and elimination and trace the pathway of urine from the kidneys out of the body
- Urinary system structures involved in maintaining urinary continence

#### Describe:

- The anatomical differences between the male and female urinary systems
- The position of the kidneys relative to other anatomical structures
- The path of blood flow through the nephron
- The location, structure, and function of a nephron
- The structure of the glomerulus
- How the glomerular filtration rate can increase or decrease
- The process of glomerular filtration
- The processes of reabsorption and secretion and explain why they are important
- How salt concentration levels affect water movement in the nephron loop
- The composition of normal urine
- The position of the bladder relative to other structures in the male and female
- The internal anatomy of the bladder
- The process of micturition
- The anatomical differences between the male and female urethra
- Common conditions of the urinary system, including their causes, pathology, and effects

### Explain:

- How materials move through the renal tubule
- How urine is produced
- How the filtration membrane filters blood plasma to create filtrate
- The role podocytes play in glomerular filtration
- How urine concentration is hormonally regulated
- How micturition is controlled by the nervous system

- 13.01 Apply medical terminology as related to the urinary system.
- 13.02 Discuss and describe the structure and function of the urinary system across the lifespan.
- 13.03 Justify the interrelatedness of the urinary and cardiovascular system in promoting homeostasis.
- 13.04 Apply knowledge of cells and tissues in the urinary system.

## VISIBLE BODY® A&P Assignments Correlations

## Reproductive System 6969

## **General Learning Objectives**

#### Identify:

- The structures that make up the female reproductive system
- The structures that make up the male reproductive system
- Blood vessels that supply the ovary and uterus
- · The regions of the male urethra
- The structures sperm travels through before exiting the body
- Where immature and mature sperm cells are created and stored
- The hormones involved in female reproductive functions
- Structures involved in lactation
- The hormones involved in male reproductive functions

#### Describe:

- The process of spermatogenesis
- The process of oogenesis
- The composition and functions of semen
- How male reproductive structures are involved in sperm creation, activation, transport, and support
- The role of each male reproductive structure in producing, storing, and transporting semen
- Blood supply and innervation of the testes
- Each type of oocyte that develops from ovarian stem cells
- The role of each female reproductive structure in sexual reproduction
- The physiological changes that occur during erection and ejaculation
- The phases of the female reproductive cycle
- The process of lactation
- The events that occur during fertilization and the role of each gamete in the process
- The earliest stages of zygote development after fertilization and where these stages occur
- The primary hormones that come into play during pregnancy
- The development of reproductive anatomy in utero
- The stages of fetal development during pregnancy
- The process of birth

### Explain:

- The functions of the female reproductive structures
- The process of oogenesis
- How sperm is created from male reproductive stem cells
- How fraternal and identical twins develop
- How the reproductive system changes over the course of life

- 14.01 Apply medical terminology as related to the each of the male and female reproductive systems.
- 14.02 Discuss and describe the structure and function of both reproductive systems across the lifespan.
- 14.03 Apply knowledge of cells and tissues of both reproductive systems.

# VISIBLE BODY® Bio Assignment Overview The Energy Cycle

## **Learning Objectives**

- Identify the phases of cellular respiration
- Identify the reactants and products of cellular respiration
- Identify the reactions of photosynthesis
- Identify the reactants and products of photosynthesis
- Compare the processes of cellular respiration and photosynthesis

### **Correlations:**

 Correlations for NGSS, Florida, NC, Texas, NY, PA, IL and CA available in intro bio lesson plans through the instructor resources link in Courseware

- Cellular Respiration: Overview
- Cellular Respiration Equation
- Quiz: Cellular Respiration: Introduction
- Photosynthesis: Overview
- Photosynthesis Reactions
- Photosynthesis Equation
- Quiz: Photosynthesis: Introduction
- Cellular Respiration vs. Photosynthesis: Reactants and Products
- Specialized Organelles: Mitochondria
- Specialized Organelles: Chloroplasts
- Electron Transport Chain
- Quiz: Comparing Cellular Respiration and Photosynthesis

## **Cellular Respiration**

## **Learning Objectives**

- Identify the phases of cellular respiration
- Identify the reactants and products of cellular respiration
- Identify the structures that make up a mitochondrion
- Explain the function of each mitochondria structure
- Describe how glucose and oxygen are needed to initiate phases of cellular respiration
- Describe how carbon dioxide, water, and ATP are produced by cellular respiration
- Describe what happens during glycolysis, pyruvate oxidation, the citric acid cycle, and oxidative phosphorylation

## **Correlations:**

 Correlations for NGSS, Florida, NC, Texas, NY, PA, IL and CA available in intro bio lesson plans through the instructor resources link in Courseware

- Cellular Respiration: Overview
- Cellular Respiration Equation
- Quiz: Cellular Respiration: Introduction
- Mitochondria Structures
- Functions of Mitochondria Structures
- Where Cellular Respiration Occurs
- Quiz: Mitochondria Structures and Their Functions
- Reactants and Products: Overview
- Cellular Respiration Reactants: Glucose
- Cellular Respiration Reactants: Oxygen
- Cellular Respiration Products: Carbon Dioxide
- Cellular Respiration Products: Water
- Cellular Respiration Products: ATP
- Quiz: Cellular Respiration Reactants and Products
  - Phase 1: Glycolysis
  - Phase 2: Pyruvate Oxidation
  - Phase 3: Citric Acid Cycle
  - Phase 4: Oxidative Phosphorylation
- Quiz: Cellular Respiration Phases

## **Chromosomes and DNA Structure**

## **Learning Objectives**

- Identify the key structures of eukaryotic chromosomes
- Explore the functions of eukaryotic chromosome structures
- Identify the key structures of prokaryotic chromosomes
- Explore the functions of prokaryotic chromosome structures
- Compare the structure of eukaryotic and prokaryotic chromosomes
- Identify the components that make up DNA
- Explore the components of DNA and how they're bound together to form the double helix

## **Correlations:**

 Correlations for NGSS, Florida, NC, Texas, NY, PA, IL and CA available in intro bio lesson plans through the instructor resources link in Courseware

- Chromosomes and DNA: Overview
- Eukaryotic Chromosome Structure
- Quiz: Eukaryotic Chromosomes
- Eukaryotic Chromosomes: Nucleosomes
- Eukaryotic Chromosomes: Chromatin
- Eukaryotic Chromosomes and Gene Expression
- Quiz: Eukaryotic DNA Coiling and Supercoiling
- Prokaryotic Chromosome Structure
- Nucleoid-Associated Proteins
- Plasmids
- Quiz: Prokaryotic Chromosomes
- Comparing Eukaryotic and Prokaryotic Chromosomes:
   Part 1
- Comparing Eukaryotic and Prokaryotic Chromosomes:
   Part 2
- Quiz: Comparing Eukaryotic and Prokaryotic Chromosomes
- DNA Structure: Overview
- DNA Structure: Sugar-Phosphate Backbone
- DNA Structure: Base Pairs
- Molecular Structure of DNA
- Quiz: DNA Structure

## **Prokaryotic and Eukaryotic Cells**

## **Learning Objectives**

- Identify the key structures of bacterial (prokaryotic) cells.
- Explain the functions of bacterial cell structures.
- Identify the key structures of animal and plant (eukaryotic) cells.
- Compare the structure and functions of animal and plant cells.
- Compare the structure and functions of prokaryotic and eukaryotic cells.

### **Correlations:**

 Correlations for NGSS, Florida, NC, Texas, NY, PA, IL and CA available in intro bio lesson plans through the instructor resources link in Courseware

- Cells: Overview
- Prokaryotic Cells: Overview
- Prokaryotic Organelles: Fimbriae and Pili
- Prokaryotic Organelles: Flagella
- Prokaryotic Cell Structures: DNA
- Quiz: Prokaryotic Cells
- Eukaryotic Cells: Overview
- Eukaryotic Cytoskeleton
- Eukaryotic Organelles: Endoplasmic Reticulum
- Eukaryotic Organelles: Golgi Complex
- Eukaryotic Organelles: Mitochondria
- Eukaryotic Organelles: Peroxisomes and Lysosomes
- Eukaryotic Organelles: Nucleus
- Unique Plant Structures
- Quiz: Eukaryotic Cells
- Prokaryotic Cells vs. Eukaryotic Cells: External Structures
- Prokaryotic Cells vs. Eukaryotic Cells: DNA
- Prokaryotic Cells vs. Eukaryotic Cells: Shared Structures
- Quiz: Comparing Prokaryotic and Eukaryotic Cells

## **Photosynthesis**

## **Learning Objectives**

- Identify the reactions of photosynthesis
- Identify the reactants and products of photosynthesis
- Identify the leaf structures that are involved in photosynthesis
- Explain the role each leaf structure plays in photosynthesis
- Identify the chloroplasts in a plant cell
- Identify the structures that make up a chloroplast
- Explain the function of each chloroplast structure
- Describe how carbon dioxide and water are needed to initiate photosynthesis
- Describe how oxygen and glucose are produced by photosynthesis
- Describe what happens during the light-dependent and light-independent reactions of photosynthesis

### **Correlations:**

 Correlations for NGSS, Florida, NC, Texas, NY, PA, IL and CA available in intro bio lesson plans through the instructor resources link in Courseware

- Photosynthesis: Overview
- Photosynthesis Equation
- Quiz: Photosynthesis Introduction
- Leaf Structures and Their Roles in Photosynthesis:
   Part 1 and 2
- Chloroplast Overview
- Quiz: Leaf Structures and Their Roles in Photosynthesis
- Chloroplast Structures and Their Roles in Photosynthesis: Part 1 & 2
- Quiz: Chloroplast Structures and Their Roles in Photosynthesis
- Reactants and Products: Overview
- Photosynthesis Reactants: Carbon Dioxide
- Photosynthesis Reactants: Water
- Photosynthesis Reactants: Photons
- Photosynthesis Products: Glucose
- Photosynthesis Products: Oxygen
- Quiz: Reactants and Products of Photosynthesis
- Light-Dependent Reactions: Part 1 & 2
- Light-Independent Reactions: Part 1 & 2
- Quiz: Photosynthesis Reactions

## **Earthworm Dissection**

## **Learning Objectives**

- Identify the external and internal structures of the earthworm
- Describe how the earthworm moves, distributes oxygen through its body, digests food and expels waste, and reproduces
- Explain how the earthworm adapted to survive in its environment
- Observe the earthworm's body systems via dissection

### **Correlations:**

 Correlations for NGSS, Florida, NC, Texas, NY, PA, IL and CA available in intro bio lesson plans through the instructor resources link in Courseware

- Earthworm: Overview
- External Features of the Earthworm
- Earthworm: Integumentary System
- Earthworm: Muscular System
- Quiz: Earthworm Integumentary and Muscular Systems
- Earthworm: Nervous System
- Earthworm: Circulatory System
- Earthworm: Respiratory System
- Quiz: Earthworm Nervous, Circulatory, and Respiratory Systems
- Earthworm: Digestive System (Part 1 & 2)
- Earthworm: Excretory System
- Earthworm: Reproductive System Overview
- Earthworm: Male Reproductive Structures
- Earthworm: Female Reproductive Structures
- Quiz: Earthworm Digestive, Excretory, and Reproductive Systems

## Sea Star Dissection

## **Learning Objectives**

- Identify the external and internal structures of the sea star
- Describe how the sea star moves, distributes oxygen through its body, digests food and expels waste, and reproduces
- Explain how the sea star adapted to survive in its environment
- Observe the sea star's body systems via dissection

## **Correlations:**

 Correlations for NGSS, Florida, NC, Texas, NY, PA, IL and CA available in intro bio lesson plans through the instructor resources link in Courseware

- Sea Star: Overview
- External Features of the Sea Star
- Sea Star: Integumentary System
- Sea Star: Support System
- Quiz: Sea Star Integumentary and Support Systems
- Sea Star: Nervous System
- Sea Star: Circulatory System (Canals)
- Sea Star: Circulatory System (Tube Feet)
- Sea Star: Respiratory System
- Quiz: Sea Star Nervous, Circulatory, and Respiratory Systems
- Sea Star: Digestive System (Part 1 & 2)
- Sea Star: Reproductive System
- Quiz: Sea Star Digestive and Reproductive Systems

## **Frog Dissection**

## **Learning Objectives**

- Identify the external and internal structures of the frog
- Describe how the frog moves, distributes oxygen through its body, digests food and expels waste, and reproduces
- Explain how the frog adapted to survive in its environment
- Observe the frog's body systems via dissection

## **Correlations:**

 Correlations for NGSS, Florida, NC, Texas, NY, PA, IL and CA available in intro bio lesson plans through the instructor resources link in Courseware

- Frog: Overview
- External Features of the Frog
- Frog: Integumentary System
- Frog: Muscular System
- Frog: Skeletal System (Axial Skeleton)
- Frog: Skeletal System (Appendicular Skeleton Part 1 & 2)
- Quiz: Frog Integumentary, Muscular, and Skeletal Systems
- Frog: Nervous System Overview
- Frog: Central Nervous System (CNS)
- Frog: Peripheral Nervous System (PNS)
- Frog: Circulatory System (Heart)
- Frog: Great Vessels (Part 1 & 2)
- Frog: Pulmonary Respiration
- Frog: Cutaneous Respiration
- Quiz: Frog Nervous, Circulatory, and Respiratory Systems
- Frog: Digestive System (Part 1 & 2)
- Frog: Reproductive System
- Frog: Excretory System
- Quiz: Frog Digestive, Reproductive, and Excretory Systems

# VISIBLE BODY Bio Assignment Overview Pig Dissection

## **Learning Objectives**

- Identify the external and internal structures of the pig
- Describe how the pig moves, distributes oxygen through its body, digests food and expels waste, and reproduces
- Explain how the pig adapted to survive in its environment
- Observe the pig's body systems via dissection

### **Correlations:**

 Correlations for NGSS, Florida, NC, Texas, NY, PA, IL and CA available in intro bio lesson plans through the instructor resources link in Courseware

- Pig: Overview
- External Features of the Pig
- Pig: Integumentary System
- Pig: Muscular System
- Pig: Skeletal System (Axial Skeleton)
- Pig: Skeletal System (Appendicular Skeleton)
- Quiz: Pig Integumentary, Muscular, and Skeletal Systems
- Pig: Nervous System Overview
- Pig: Central Nervous System (CNS)
- Pig: Peripheral Nervous System (PNS)
- Pig: Circulatory System (Heart)
- Pig: Great Vessels (Part 1 & 2)
- Pig: Respiratory System
- Pig: Lungs
- Quiz: Pig Nervous, Circulatory, and Respiratory Systems
- Pig: Digestive System Overview
- Pig: Intestines
- Pig: Reproductive System (Part 1 & 2)
- Pig: Excretory System
- Quiz: Pig Digestive, Reproductive, and Excretory Systems

## **Animal Diversity: Comparing Digestive Systems**

## **Learning Objectives**

- Identify the digestive structures of the sea star, earthworm, frog, and pig
- Describe how the sea star, earthworm, frog, and pig digest food and expel waste
- Compare the digestive structures and functions of the sea star, earthworm, frog, and pig
- Describe key digestive adaptations that help the sea star, earthworm, frog, and pig get the nutrients they need to survive in their environments
- Identify which of these animals has the simplest and most complex digestive system

## **Correlations:**

 Correlations for NGSS, Florida, NC, Texas, NY, PA, IL and CA available in intro bio lesson plans through the instructor resources link in Courseware

- Comparing Digestive Systems: Overview (Part 1 & 2)
- Quiz: Introduction to Animal Digestive Systems
- Digestive System: Sea Star (Part 1 & 2)
- Quiz: Digestive System: Sea Star
- Digestive System: Earthworm (Part 1 & 2)
- Quiz: Digestive System: Earthworm
- Digestive System: Frog (Part 1, 2, & 3)
- Quiz: Digestive System: Frog
- Digestive System: Pig (Part 1, 2, & 3)
- Quiz: Digestive System: Pig
- Unique Digestive Structures (Part 1, 2, & 3)
- Comparing Absorptive Structures (Part 1 & 2)
- Quiz: Comparing Animal Digestive Systems

## **Animal Diversity: Comparing Circulatory Systems**

## **Learning Objectives**

- Identify the circulatory structures of the sea star, earthworm, frog, and pig
- Describe how the earthworm, frog, and pig circulate blood throughout their bodies and how the sea star circulates water throughout its body
- Compare the circulatory structures and functions of the sea star, earthworm, frog, and pig
- Describe key circulatory adaptations that help the sea star, earthworm, frog, and pig survive in their environments
- Identify which of these animals has the simplest and most complex circulatory system

### **Correlations:**

 Correlations for NGSS, Florida, NC, Texas, NY, PA, IL and CA available in intro bio lesson plans through the instructor resources link in Courseware

- Comparing Circulatory Systems: Overview (Part 1 & 2)
- Quiz: Introduction to Animal Circulatory Systems
- Circulatory System: Sea Star (Part 1 & 2)
- Quiz: Sea Star Circulatory System
- Circulatory System: Earthworm
- Quiz: Earthworm Circulatory System
- Circulatory System: Frog (Part 1 & 2)
- Quiz: Frog Circulatory System
- Circulatory System: Pig (Part 1 & 2)
- Quiz: Pig Circulatory System
- Unique Circulatory Structures (Part 1 & 2)
- Comparing Circulatory Structures
- Quiz: Comparing Animal Circulatory Systems

## VisiBLE Body® Bio Assignment Overview

## **Animal Diversity: Comparing Respiratory Systems**

## **Learning Objectives**

- Identify the respiratory structures of the sea star, earthworm, frog, and pig
- Describe how the sea star, earthworm, frog, and pig exchange gases with their environments
- Compare the respiratory structures and functions of the sea star, earthworm, frog, and pig
- Describe key respiratory adaptations that help the sea star, earthworm, frog, and pig get the oxygen they need to survive in their environments
- Identify which of these animals has the simplest and most complex digestive system

## **Correlations:**

 Correlations for NGSS, Florida, NC, Texas, NY, PA, IL and CA available in intro bio lesson plans through the instructor resources link in Courseware

- Comparing Respiratory Systems: Overview (Part 1)
- Comparing Respiratory Systems: Overview (Part 2)
- Quiz: Introduction to Animal Respiratory Systems
- Respiratory System: Sea Star
- Quiz: Sea Star Respiratory System
- Respiratory System: Earthworm
- Quiz: Earthworm Respiratory System
- Respiratory System: Frog (Part 1 & 2)
- Quiz: Frog Respiratory System
- Respiratory System: Pig (Part 1 & 2)
- Quiz: Pig Respiratory System
- Unique Respiratory Structures (Parts 1–4)
- Comparing Respiratory Structures
- Quiz: Comparing Animal Respiratory System

## **Animal Diversity: Comparing Nervous Systems**

## **Learning Objectives**

- Identify the nervous structures of the sea star, earthworm, frog, and pig
- Describe how the sea star, earthworm, frog, and pig receive sensory information from their environments and how the nervous system contributes to body movements
- Compare the nervous structures and functions of the sea star, earthworm, frog, and pig
- Describe key nervous system adaptations that help the sea star, earthworm, frog, and pig survive in their environments
- Identify which of these animals has the simplest and most complex nervous system

## **Correlations:**

 Correlations for NGSS, Florida, NC, Texas, NY, PA, IL and CA available in intro bio lesson plans through the instructor resources link in Courseware

- Comparing Nervous Systems: Overview (Part 1 & 2)
- Quiz: Introduction to Animal Nervous Systems
- Nervous System: Sea Star
- Quiz: Sea Star Nervous System
- Nervous System: Earthworm (Part 1 & 2)
- Quiz: Earthworm Nervous System
- Nervous System: Frog (Part 1, 2, & 3)
- Quiz: Frog Nervous System
- Nervous System: Pig (Part 1 & 2)
- Quiz: Pig Nervous System
- Unique Nervous Structures (Part 1, 2, & 3)
- Comparing Nervous Structures (Part 1, 2, & 3)
- Quiz: Comparing Animal Nervous Systems

## **Evolution: Major Concepts**

## **Learning Objectives**

- Define evolution
- Describe the four basic mechanisms of evolution
- Explain how speciation forms new species from an ancestor species
- Describe adaptive radiation
- Explain how a phylogenetic tree can show the evolution and relation of different species

## **Activities**

- Evolution Overview
- Mechanisms of Evolution
- Natural Selection
- Stabilizing Selection
- Directional Selection
- Diversifying Selection
- Types of Speciation
- Adaptive Radiation
- Phylogenetic Tree

# Courses and outlines correlated to textbooks





## **Course Outlines and Textbook Correlations**

Our database includes tens of thousands of visual assets and educational content. If you are an instructor or course developer looking to easily map our assets to your course, try a course outline or textbook-correlated course!

- Each course contains a series of folders with topics aligned to either a standard course or a popular textbook.
- In each folder are visual assets and quizzes for that topic. These include 3D models, animations, assessments, flashcard decks, lab activities, etc.
- The assets are organized into assignments and the instructions for assignments can be edited to fit course objectives and goals.

## **Details:**

- Languages available: English
- Access: Available on VB Courses page to instructors with a Courseware account.
- Development process: Each correlation is developed by a VB Education Team member and reviewed for quality assurance.



## Course outlines and correlations

## Get anatomy labs correlations

- 7 anatomy lab correlations
- Correlated to popular lab manuals and to the VB lab activities
- Autograding available

## Get intro to anatomy premade courses

- More than a dozen courses
  - Includes short and extended A&P courses
  - Dental anatomy course

## A&P Textbook Correlations A&P | Physiology

- More than a dozen correlations
  - Includes most popular A&P textbooks and textbooks for Kinesiology, physical therapy, and health sciences

## **Biology Course Correlations**

- Includes biology correlations and labs
- Textbook correlations for Openstax,
   Campbell, and Miller

# Online, in-person, and AR labs



VISIBLE \*\*BODY\*\*

The Brain
A nervous system lab activity using Visible Body Suite
Biythe Nilson, Associate Professor of Biology,
University of British Calumbia Okanagan,



VISIBLE TBODY

The Human Heart

A circulatory system lab activity using Visible Body Suite

Molli Crenshaw, Instructor of Biology, TCU



VISIBLE BODY

The Respiratory System
A respiratory system lab activity using Visible Body Suite
Andrew Criss, Doctoral Lecturer at York College







## Lab manuals and lab activities

## VB curricula includes extended labs and activities that can be completed in one session

- Use the 3D content in VB Suite with the extended lab manuals to enhance a wet lab or complete a fully virtual lab.
- Get students out of their seats with our augmented reality labs. These shorter series of activities have students use iPads, iPhones, or Android devices as a tool to see and interact with 3D models in students' own environment.

## **Details:**

- Languages available: Multiple languages
- Access: Available on the VB website. No account needed. Use with VB Suite or Courseware.
- Development process: Each lab is developed to follow our visual and interactive pedagogy, is peer reviewed, proofread, correlated, and then released



## Labs with lesson plans and correlations

## Extended anatomy labs

- Dozens of extended labs with varying levels of difficulty
- Lesson plans
- Objectives that correlate to HAPS,
   NGSS, and state standards

## Biology labs

- More than a dozen labs
- Includes comparison of vertebrates and invertebrates
- Lessons plans with NGSS and state standard correlations

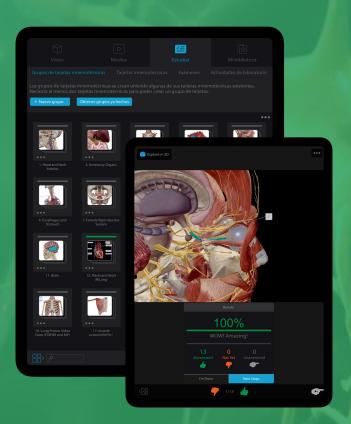
## Augmented reality labs

- Augmented Reality labs for key organs
- Lesson plans with objectives
- Translations: French, German, Chinese,
   Japanese, Italian, Spanish

## Lesson plan blog posts

- Ideas for interactive activities using the features of VB Suite and VB Courseware
- Step-by-step details
- Links to VB resources

# Study tools and lesson plans





## Flashcards, Tours, Videos, Lesson and Lecture Ideas

The VB Education Team uses our visual and interactive product to produce content that keeps students engaged in the learning process. Content includes:

- Flashcard decks students can use to study
- 3D Tours with which instructors can lecture or make assignments
- A Youtube channel with lessons on key concepts covered in life sciences courses
- The VB Learn Site, with its brief and visual presentations instructors can assign to students
- A blog with lesson ideas, lesson plans, and instructor interviews

### **Details:**

- Languages available: English, plus multiple languages for the Learn Site
- Access: Available via our website. No account needed. Exceptions: Flashcards and 3D Tours.
   These require a VB Suite or Courseware account.
- Development process: Content is developed to follow our visual and interactive pedagogy, is peer reviewed, proofread, correlated, and then released.



## Study tools and lesson plans

## Flashcard decks

- Dozens of Flashcard decks for anatomy & biology key concepts
- Available in multiple languages
- Easy to download and use, or modify as needed

## Youtube lessons in <u>biology</u> and <u>human body</u> topics

- 15-minute lessons on key biology topics
- 2-5 minute visual mini-lessons on the human body

## **Presentation Tours**

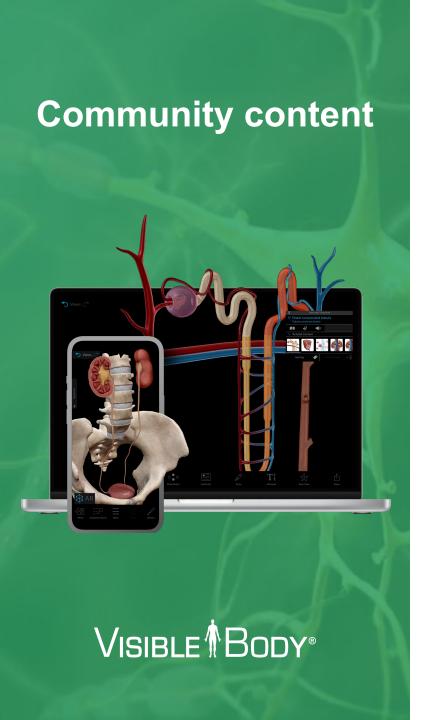
- Interactive presentations on key concepts
- Available in multiple languages
- Easy to download and use, or modify as needed

## Lesson plan blog posts

- Ideas for interactive activities using the features of VB Suite and VB Courseware
- Step-by-step details
- Links to VB resources

## Visual reviews of key <u>biology</u> and <u>human body</u> course topics

- Ideal for quick review or intro presentations
- Available in multiple languages



## Content posted by the Education Team and instructors from our education community

The VB Education Community is a place where curriculum designers, instructors, and our customer engagement team post content they created that VB users can readily use!

## The site includes

- Complete course outlines
- Lessons and assessments
- Presentations
- Flashcards
- Handouts
- Tutorials on key VB software features

Browse the VB Education Community

## **Training & Support**

Need more assistance?

Contact the VB Education Team!

The Education Team is staffed with technology experts and educators

Contact team

VISIBLE BODY®

## **Contact the VB Education Team!**

- LMS integration set up
- Student and educator training
- Syllabus integration 1:1 with faculty for their courses

See example training

