IAA Curriculum

Content Area	Science	**Grade**	11
Course Name	Anatomy		

Concepts	Unit 1: Foundational Knowledge Organization of Human Systems, Terminology
Big Ideas	Themes and connections between the Standards that help students to see the purpose and relevance of content. ● Relationships between human body systems ● Organization to human body systems ● Identification, name, and function of each body system ● Survival needs ● Anatomy terminology
Key Learning Objectives & Skills	● Analyze data from labs ● Model systems ● Analyze models ● Identify functions ● Identify key vocabulary ● Formulate answers to analysis questions ● Formulate predictions
Essential Questions	● How do human body systems work together? ● What organ structures are in the human body? ● What importance does each human body system hold? ● How do systems within an organism help it to survive? ● What patterns exist between living things? ● How do structures influence system functions? ● What are the differences between anatomical

Dates (estimates only)	Smart Objectives	Instructional Strategies and Activities	PA CC Standards	Keystone Anchors	Keystone Eligible Content	Vocabulary
(4 weeks)	What do students have to do related to the content? **Human Body Systems** ● Identify each human body system ● Identify each organ system ● Define the function of each human body system ● Compare and contrast the body systems	Used to develop the skills and knowledge **Human Body Systems** ● Presentation based lecture ● Lab based learning ● Modeling systems ● Reading scientific procedures ● Keeping a science notebook ● Constructing a concept map ● Developing communication	3.1.11.A5 3.1.11.A1 3.1.P.A9 3.1.P.B6 3.3.P.A8 3.3.12.D3 3.1.P.C4 3.1.B.A3	BIO.A.1.2 BIO.A.4.2	BIO.A.1.2.2 BIO.A.4.2.1	What is the essential vocabulary of the unit or concept? Anterior Posterior Superior Inferior Lateral

	• Describe how the human body systems work together • Organize the human body contents into systems • Describe how the human body system functions maintain life **Terminology** • Identify body sections • Identify body regions • Identify relative positions • Identify directional terms	skills • Answering analysis questions based on lab activities • Label each body system • Differentiate systems **Terminology** • Presentation based lecture • Lab based learning • Graphic organizers • Online interactives • Reading scientific procedures • Keeping a science notebook • Constructing a concept map • Developing communication skills • Answering analysis questions based on lab activities				Medial Proximal DIstal Superficial Distal Deep Sagittal Plane Frontal Plane Transverse Region Cavity Quadrants

Resources	Materials, texts, videos, internet sites, software, human to support instruction
	• Textbook
	  ○ Lab activities
	  ○ Videos
	• Materials to model content
	• Online simulations
	• Anatomical models

Formative Assessments	What evidence (product and/or performance) will be collected to establish that content and skills are being learned? • Mind maps • Graphic organizers • Exit tickets • Lab reports • Models • Quiz
Summative Assessments	What evidence (produce and/or performance) will be collected to determine that content and skills have been learned? • Unit Test • Project
Strategies for ELL and IEP Support	What tools, strategies, and resources will be used to provide accommodations and modifications to support students? • Productive pacing • Incorporate native languages • Use visuals • Small group teaching • Provide different levels of materials

	• Simplify language • Repetition • Provide content in multiple forms
Acceleration Strategies	What tools, strategies, and resources will be used to help advance students closer to grade-level expectations • Scaffolding of material • Collaboration with others • Grouping of students • Concrete examples • Visuals • Integrate technology • Goal setting

IAA Curriculum

Content Area	Science	Grade	11
Course Name	Anatomy		

Concepts	Unit 2: Biochemistry & Metabolism
Big Ideas	• Matter, atoms, molecules • Enzyme function • pH levels of the human body • Human body structures • Macromolecule groups
Key Learning Objectives & Skills	• Analyze data from labs • Model systems • Analyze models • Identify functions • Identify key vocabulary • Formulate answers to analysis questions • Formulate predictions
Essential Questions	• What is the relationship of matter, atoms, and molecules? • How does our lifestyle impact our pH levels? • How does our lifestyle impact our digestive system? • What are the components of the digestive system and how does it relate to daily living? • How does nutrition affect the components of the digestive system? • What are the structures and functions of the digestive system?

Dates (estimates only)	Smart Objectives	Instructional Strategies and Activities	PA CC Standards	Keystone Anchors	Keystone Eligible Content	Vocabulary
(3 weeks)	What do students have to do related to the content? **Biochemistry** • Describe the relationship between matter and atoms • Identify chemical reactions within the body • Identify the relationship between water and salts to homeostasis • Describe pH levels in the body • Identify the effect of pH	Used to develop the skills and knowledge **Biochemistry** • Presentation based lecture • Comparing structures • Lab based learning • Graphic organizers • Online interactives • Reading scientific procedures • Keeping a science notebook • Constructing a concept map • Developing communication	3.1.12.A5 3.1.12.B5 3.1.12.A2 3.2.12.A1 3.1.12.A7 3.2.12.A4 3.1.P.A9 3.1.P.B6 3.3.P.A8 3.3.12.D3 3.1.P.C4 3.1.B.A3	BIO.A.1.2 BIO.A.2.1 BIO.A.2.2 BIO.A.2.3	BIO.A.1.2.2 BIO.A.2.1.1 BIO.A.2.2.3 BIO.A.2.3.2	What is the essential vocabulary of the unit or concept? Digestive Esophagus Appendix Colon Ileum Intestines Enzymes pH

	changes in the body **Metabolism** ● Compare the structures of the human body (lipids, proteins, nucleic acids) ● Identify enzymes ● Describe enzyme functions ● Describe the function of each macromolecule group and which human body system it is linked to	skills ● Answering analysis questions based on lab activities **Metabolism** ● Presentation based lecture ● Lab based learning ● Graphic organizers ● Online interactives ● Reading scientific procedures ● Keeping a science notebook ● Constructing a concept map ● Developing communication skills ● Analyzing structures ● Answering analysis questions based on lab activities ● Use of models				Pancreas Liver Salivary glands Molecule Phospholipid Matter Atoms

Resources	Materials, texts, videos, internet sites, software, human to support instruction ● Textbook ○ Lab activities ○ Videos ● Materials to model content ● Online simulations ● Anatomical models
Formative Assessments	What evidence (product and/or performance) will be collected to establish that content and skills are being learned? ● Exit tickets ● Lab reports ● Models ● Quiz
Summative Assessments	What evidence (produce and/or performance) will be collected to determine that content and skills have been learned? ● Unit Test ● Project
Strategies for ELL and IEP Support	What tools, strategies, and resources will be used to provide accommodations and modifications to support students? ● Productive pacing ● Incorporate native languages ● Use visuals ● Small group teaching ● Provide different levels of materials ● Simplify language

	• Repetition • Provide content in multiple forms
Acceleration Strategies	What tools, strategies, and resources will be used to help advance students closer to grade-level expectations • Scaffolding of material • Collaboration with others • Grouping of students • Concrete examples • Visuals • Integrate technology • Goal setting

IAA Curriculum

Content Area	Science	Grade	11
Course Name	Anatomy		

Concepts	Unit 3: Cytology & Histology
Big Ideas	• Cell structure • Cell transport • Stem cell research • Tissues • Integumentary system • Endocrine system
Key Learning Objectives & Skills	• Analyze data from labs • Model systems • Analyze models • Identify functions • Identify key vocabulary • Formulate answers to analysis questions • Formulate predictions
Essential Questions	• WHat are the structures and functions of the integumentary system? • What are the structures and functions of the endocrine system? • How do scientists use stem cells as part of their research? • What are the functions of cell structures and how do they work together? • How does the body react to the need for tissue repair?

Dates (estimates only)	Smart Objectives	Instructional Strategies and Activities	PA CC Standards	Keystone Anchors	Keystone Eligible Content	Vocabulary
(4 weeks)	What do students have to do related to the content? • Identify cell structures • Describe the function of each cell structure • Describe cell transport processes • Identify the major classes of tissue • Describe the function of each tissue class • Identify, using a model,	Used to develop the skills and knowledge • Presentation based lecture • Comparing structures • Lab based learning • Graphic organizers • Online interactives • Reading scientific procedures • Keeping a science notebook • Constructing a concept map • Developing communication skills • Answering analysis questions	3.1.12.A4 3.1.12.A6 3.1.12.A7 3.1.P.A9 3.1.P.B6 3.3.P.A8 3.3.12.D3 3.1.P.C4 3.1.B.A3	BIO.A.4.1	BIO.A.4.1.1 BIO.A.4.1.2	What is the essential vocabulary of the unit or concept? Tissue Cell Plasma membrane Histology Cytology Neuron Muscle

	each human body tissue ● Identify each skin structures ● Analyze how stem cells are used in research ● Evaluate how the body repairs tissue ● Compare and contrast tissue structure in different body systems	based on lab activities ● Analyzing models ● Analyzing structures				Ligament Tendon Cartilage

Resources	Materials, texts, videos, internet sites, software, human to support instruction ● Textbook ○ Lab activities ○ Videos ● Materials to model content ● Online simulations ● Anatomical models
Formative Assessments	What evidence (product and/or performance) will be collected to establish that content and skills are being learned? ● Exit tickets ● Lab reports ● Models ● Quiz
Summative Assessments	What evidence (produce and/or performance) will be collected to determine that content and skills have been learned? ● Unit Test ● Project
Strategies for ELL and IEP Support	What tools, strategies, and resources will be used to provide accommodations and modifications to support students? ● Productive pacing ● Incorporate native languages ● Use visuals ● Small group teaching ● Provide different levels of materials ● Simplify language ● Repetition ● Provide content in multiple forms
Acceleration Strategies	What tools, strategies, and resources will be used to help advance students closer to grade-level expectations ● Scaffolding of material ● Collaboration with others ● Grouping of students ● Concrete examples ● Visuals

	• Integrate technology • Goal setting

IAA Curriculum

Content Area	Science	Grade	11
Course Name	Anatomy		

Concepts	Unit 4: Information Processing
Big Ideas	• Divisions of the nervous system • Neurons • Nervous system impulse • Reflexes • Brain disorders • Cranial nerves
Key Learning Objectives & Skills	• Analyze data from labs • Model systems • Analyze models • Identify functions • Identify key vocabulary • Formulate answers to analysis questions • Formulate predictions
Essential Questions	• What are the structures and functions of senses in the body? • What are sensory receptors? • What are the structures and functions of the nervous system in the body? • What are the components of the nervous system? • Where are the sensory receptors throughout the body? • What are special senses and what are they made up of?

Dates (estimates only)	Smart Objectives	Instructional Strategies and Activities	PA CC Standards	Keystone Anchors	Keystone Eligible Content	Vocabulary
(4 weeks)	What do students have to do related to the content? **Nervous System** • Identify the divisions of the nervous system • Describe the functions of the nervous system • Identify the cells involved in the nervous system • Describe the cell structures and functions in relation to the nervous system	Used to develop the skills and knowledge **Nervous System** • Presentation based lecture • Comparing structures • Lab based learning • Graphic organizers • Online interactives • Reading scientific procedures • Keeping a science notebook • Constructing a concept map • Developing communication	3.1.12.A1 3.1.12.A5 3.1.12.A6 3.1.12.A8 3.1.P.A9 3.1.P.B6 3.3.P.A8 3.3.12.D3 3.1.P.C4 3.1.B.A3	BIO.A.1.2 BIO.A.4.2	BIO.A.1.2.2 BIO.A.4.2.1	What is the essential vocabulary of the unit or concept? Nervous Brain Brainstem Cerebrum Neuron Sensory Reflex

	Brain & Sensory Processing ● Identify the three types of neurons ● Describe the relationship between the senses ● Compare and contrast the functions of sensory and brain systems ● Describe nerve impulses ● Identify the cause of nerve impulse ● Identity, using a model, each component of the brain ● Compare and contrast the functions of each human brain component	skills ● Answering analysis questions based on lab activities ● Analyzing models ● Analyzing structures **Brain & Sensory Processing** ● Presentation based lecture ● Comparing structures ● Lab based learning ● Graphic organizers ● Online interactives ● Reading scientific procedures ● Keeping a science notebook ● Constructing a concept map ● Developing communication skills ● Answering analysis questions based on lab activities ● Analyzing models ● Analyzing structures				Spinal cord Axon Spinal cord Motor neuron Receptor Impulse Charge Neurotransmitter

Resources	Materials, texts, videos, internet sites, software, human to support instruction ● Textbook ○ Lab activities ○ Videos ● Materials to model content ● Online simulations ● Anatomical models
Formative Assessments	What evidence (product and/or performance) will be collected to establish that content and skills are being learned? ● Exit tickets ● Lab reports ● Models ● Quiz
Summative Assessments	What evidence (produce and/or performance) will be collected to determine that content and skills have been learned? ● Unit Test ● Project
Strategies for ELL and IEP Support	What tools, strategies, and resources will be used to provide accommodations and modifications to support students? ● Productive pacing ● Incorporate native languages ● Use visuals

	• Small group teaching • Provide different levels of materials • Simplify language • Repetition • Provide content in multiple forms
Acceleration Strategies	What tools, strategies, and resources will be used to help advance students closer to grade-level expectations • Scaffolding of material • Collaboration with others • Grouping of students • Concrete examples • Visuals • Integrate technology • Goal setting

IAA Curriculum

Content Area	Science	Grade	11
Course Name	Anatomy		

Concepts	Unit 5: Support & Movement
Big Ideas	• Divisions of the skeletal system • Bones and their locations • Bone growth, repair, and function • Skeletal structure • Joints • Muscles and their location • Muscular contraction • Muscular disorders • Skeletal disorders
Key Learning Objectives & Skills	• Analyze data from labs • Model systems • Analyze models • Identify functions • Identify key vocabulary • Formulate answers to analysis questions • Formulate predictions
Essential Questions	• What are the structures and functions of the muscular system in the body? • What are the structures and functions of the skeletal system in the body? • What are the structural components of the muscular system? • What is the anatomical structure of a muscle? • What roles does a muscle play in action? • What are the causes of a muscular disorder? • What are the causes of a skeletal disorder? • What roles do bones play in action?

Dates (estimates only)	Smart Objectives	Instructional Strategies and Activities	PA CC Standards	Keystone Anchors	Keystone Eligible Content	Vocabulary
(4 weeks)	What do students have to do related to the content? **Skeletal System** • Identify the components of the skeletal system • Describe the functions of the skeletal system	Used to develop the skills and knowledge **Skeletal System** • Presentation based lecture • Comparing structures • Lab based learning • Graphic organizers	3.1.12.A6 3.1.12.A5 3.1.12.A1 3.4.12.E1 3.4.12.C 3.1.P.A9 3.1.P.B6	BIO.3.1.B	BIO.3.1.B.A2	What is the essential vocabulary of the unit or concept? Abductor Adductor

	• Identify, on a model, each skeletal system component • Identify the basic functions of major bones • Identify each bone • Label the bones of the body • Describe the creation, growth, and repair of bones **Muscular System** • Identify tendons and ligaments • Describe the functions of tendons and ligaments • Analyze the relationship between the skeletal and muscular systems • Describe how muscle fibers are stimulated • Identify major muscles of the body	• Online interactives • Reading scientific procedures • Keeping a science notebook • Constructing a concept map • Developing communication skills • Answering analysis questions based on lab activities • Analyzing models • Analyzing structures **Muscular System** • Presentation based lecture • Comparing structures • Lab based learning • Graphic organizers • Online interactives • Reading scientific procedures • Keeping a science notebook • Constructing a concept map • Developing communication skills • Answering analysis questions based on lab activities • Analyzing models • Analyzing structures	3.3.P.A8 3.3.12.D3 3.1.P.C4 3.1.B.A3			Bi Brevis Extensor Flexor Deltoid Abdominis Quadriceps Longus Facial cranius

Resources	Materials, texts, videos, internet sites, software, human to support instruction
	• Textbook
	  ○ Lab activities
	  ○ Videos
	• Materials to model content
	• Online simulations
	• Anatomical models					

Formative Assessments	What evidence (product and/or performance) will be collected to establish that content and skills are being learned? • Exit tickets • Lab reports • Models • Quiz					
Summative Assessments	What evidence (produce and/or performance) will be collected to determine that content and skills have been learned? • Unit Test • Project					

Strategies for ELL and IEP Support	What tools, strategies, and resources will be used to provide accommodations and modifications to support students? ● Productive pacing ● Incorporate native languages ● Use visuals ● Small group teaching ● Provide different levels of materials ● Simplify language ● Repetition ● Provide content in multiple forms
Acceleration Strategies	What tools, strategies, and resources will be used to help advance students closer to grade-level expectations ● Scaffolding of material ● Collaboration with others ● Grouping of students ● Concrete examples ● Visuals ● Integrate technology ● Goal setting

IAA Curriculum

Content Area	Science	Grade	11
Course Name	Anatomy		

Concepts	Unit 6: Exchange & Transport
Big Ideas	• Blood components • Blood groups • Heart structure and function • Heart mechanisms • Heart monitors • Blood monitors • Cardiovascular system structures • Respiratory system structures
Key Learning Objectives & Skills	• Analyze data from labs • Model systems • Analyze models • Identify functions • Identify key vocabulary • Formulate answers to analysis questions • Formulate predictions
Essential Questions	• What is the anatomy of the heart, veins, and lungs? • What is the composition of blood? • What technologies are available to regulate blood conditions? • What technologies are available to regulate heart conditions? • What is the process of blood transfusion? • What are the structures and functions of the respiratory system? • What are the structures and functions of the cardiovascular systems? • What are the relationships and differences of the respiratory and cardiovascular systems? • How does the action of the body affect the respiratory system? • How does the action of the body affect the cardiovascular systems?

Dates (estimates only)	Smart Objectives	Instructional Strategies and Activities	PA CC Standards	Keystone Anchors	Keystone Eligible Content	Vocabulary
(3 weeks)	What do students have to do related to the content? **Heart & Blood** • Identify the heart's anatomical locations • Identify the functions of the	Used to develop the skills and knowledge **Heart & Blood** • Presentation based lecture • Comparing structures • Lab based learning	3.1.12.A6 3.1.12.A5 3.1.12.A1 3.1.P.A9 3.1.P.B6 3.3.P.A8	BIO.A.1.2 BIO.A.4.2	BIO.A.1.2.2 BIO.A.4.2.1	What is the essential vocabulary of the unit or concept? Respiratory

	heart ● Analyze heart monitoring technologies ● Compare and contrast the structure and function of arteries **Cardiovascular & Respiratory Systems** ● Identify the structure of blood ● Analyze blood diagnostic technologies ● Identify the structure and function of lungs ● Identify the function of respiratory muscles ● Compare and contrast respiratory muscles with other system muscles ● Describe the gasses transported through the blood ● Analyze how action relates to respiratory	● Graphic organizers ● Online interactives ● Reading scientific procedures ● Keeping a science notebook ● Constructing a concept map ● Developing communication skills ● Answering analysis questions based on lab activities ● Analyzing models ● Analyzing structures **Cardiovascular & Respiratory Systems** ● Presentation based lecture ● Comparing structures ● Lab based learning ● Graphic organizers ● Online interactives ● Reading scientific procedures ● Keeping a science notebook ● Constructing a concept map ● Developing communication skills ● Answering analysis questions based on lab activities ● Analyzing models ● Analyzing structures	3.3.12.D3 3.1.P.C4 3.1.B.A3			Esophagus Oral Cavity Diaphragm Breathe Lungs Expiration Septum Nasal Exhale Oxygen Carbon dioxide Inspiration Aortic Anesthesia Fibrillation Artery Veins Capillaries Blood
Resources	Materials, texts, videos, internet sites, software, human to support instruction ● Textbook ○ Lab activities ○ Videos ● Materials to model content ● Online simulations ● Anatomical models					
Formative Assessments	What evidence (product and/or performance) will be collected to establish that content and skills are being learned? ● Exit tickets ● Lab reports ● Models ● Quiz					
Summative Assessments	What evidence (produce and/or performance) will be collected to determine that content and skills have been learned? ● Unit Test					

	• Project
Strategies for ELL and IEP Support	What tools, strategies, and resources will be used to provide accommodations and modifications to support students? • Productive pacing • Incorporate native languages • Use visuals • Small group teaching • Provide different levels of materials • Simplify language • Repetition • Provide content in multiple forms
Acceleration Strategies	What tools, strategies, and resources will be used to help advance students closer to grade-level expectations • Scaffolding of material • Collaboration with others • Grouping of students • Concrete examples • Visuals • Integrate technology • Goal setting

IAA Curriculum

Content Area	Science	**Grade**	11
Course Name	Anatomy		

Concepts	Unit 7: Defense
Big Ideas	• Lymphatic system structure and function • Lymph nodes • Lymph cells • Antigens • Antibodies • Immune diseases
Key Learning Objectives & Skills	• Analyze data from labs • Model systems • Analyze models • Identify functions • Identify key vocabulary • Formulate answers to analysis questions • Formulate predictions
Essential Questions	• How is the body organized? • What are the structures and functions of the lymphatic system? • What are diseases and disorders associated with the lymphatic system? • What are the four types of immunity? • What is the difference between vaccines and antibodies? • How does the lymphatic system relate to a healthy body?

Dates (estimates only)	Smart Objectives	Instructional Strategies and Activities	PA CC Standards	Keystone or PSSA Anchors	Keystone / PSSA Eligible Content	Vocabulary
(4 weeks)	What do students have to do related to the content? **Lymphatic & Immune Systems** • Identify all components of the lymphatic systems • Analyze the relationship between the functions of the lymphatic systems and other bodily system • Identify the location, structure, and function of	Used to develop the skills and knowledge **Lymphatic & Immune Systems** • Presentation based lecture • Comparing structures • Lab based learning • Graphic organizers • Online interactives • Reading scientific procedures • Keeping a science notebook • Constructing a concept map	3.1.12.A6 3.1.12.A5 3.1.12.A1 3.1.P.A9 3.1.P.B6 3.3.P.A8 3.3.12.D3 3.1.P.C4 3.1.B.A3	BIO.A.1.2 BIO.A.4.2	BIO.A.1.2.2 BIO.A.4.2.1	What is the essential vocabulary of the unit or concept? Lymph node Vessels Thoracic duct Plasma cells Antigen Antibody

	lymph nodes ● Describe antigen-antibody relationship ● Analyze the relationship between fevers and pathogens ● Describe the causes of diseases ● Analyze how diseases affect bodily systems ● Describe the role of immunity and its relationship to body systems	● Developing communication skills ● Answering analysis questions based on lab activities ● Analyzing models ● Analyzing structures				Immunity Adaptive Pathogen White blood cell Lymphatic duct B cell T cell Artery Capillary

Resources	Materials, texts, videos, internet sites, software, human to support instruction ● Textbook ○ Lab activities ○ Videos ● Materials to model content ● Online simulations ● Anatomical models
Formative Assessments	What evidence (product and/or performance) will be collected to establish that content and skills are being learned? ● Exit tickets ● Lab reports ● Models ● Quiz
Summative Assessments	What evidence (produce and/or performance) will be collected to determine that content and skills have been learned? ● Unit Test ● Project
Strategies for ELL and IEP Support	What tools, strategies, and resources will be used to provide accommodations and modifications to support students? ● Productive pacing ● Incorporate native languages ● Use visuals ● Small group teaching ● Provide different levels of materials ● Simplify language ● Repetition ● Provide content in multiple forms
Acceleration Strategies	What tools, strategies, and resources will be used to help advance students closer to grade-level expectations

	• Scaffolding of material • Collaboration with others • Grouping of students • Concrete examples • Visuals • Integrate technology • Goal setting