

ANATOMY IN CLAY® Learning Systems

Example Scope & Sequence for MANIKEN® models

Derived from Starla on MANIKEN® Teacher's Guide and ANATOMY IN CLAY® On Demand Courses

Week	Concept(s)	Student Objective(s)	Lesson Overview	Assessment
1	Introduction to the MANIKEN® Models	1. Care and general use of models	1. Kit prep and check out 2. Intro to models 3. Checking out models 4. "Birth certificates" 5. Using the extruder	Inventory of models
2	A. Directional Terminology	1. Compare the relationship between anatomical structures 2. Apply directional terminology to the model and their own body	1. Ventral vs Dorsal 2. Lateral vs Medial 3. Proximal vs Distal 4. Practical	Practical quiz on directional terms
3	B. Them Bones!	1. Locate and identify individual bones of the skeletal framework of the body 2. Apply complementary structure and function to bones to determine function in the skeletal system	1. Bone Identification 2. Bone "tricks" 3. Student participation practical	Student participation practical
4	C. Muscle Concepts: Intro to Muscle Building	1. Explain and demonstrate how bones and muscles work together for movement 2. Build clay muscles to illustrate the complementary nature of structure/function 3. Compare the interrelationship of the muscular and skeletal systems to each other and the body as a whole	1. Clay discipline 2. Mastering Muscle Concepts	Oral and visual feedback and/or Mystery muscle quiz from week 5
5	D. Mystery Muscle	1. Investigate and analyze the shapes of clay muscles to determine the movement of the muscle 2. Demonstrate the movement of the mystery muscle by applying the muscle concepts reviewed earlier 3. Relate muscle shape, attachments, bone names, and muscle action to how muscles are named	1. Muscle identification and review	Instructor feedback
6	E. Muscle Building:	1. Apply concepts of muscle building to the torso of the model	1. Building Muscle Groups	Choose: -Quiz

	Reinforcing Concepts	<ol style="list-style-type: none"> 2. Analyze the organization of muscle layering in the body 3. Observe the relationship muscles form with bones 4. Create a model of the torso's muscle structure 5. Research and analyze the effects of nutrition, exercise, and injury 	<ol style="list-style-type: none"> a. the face b. layer of muscles c. deep muscles of the torso d. superficial power muscles of the torso 	<ul style="list-style-type: none"> -Reverse Practical -Model building grade
7	F. Independent Muscle Building (self-paced)	<ol style="list-style-type: none"> 1. Apply concepts of functional muscle anatomy while forming clay muscles on the arm and leg 2. Create a representation of the bones and muscles working together as a structural framework for movement 3. Observe patterns in the building of the model and within their own body 4. Apply information and gain confidence in their ability to model practical applications of learned knowledge 	<ol style="list-style-type: none"> 1. Lab setup for independent building <ol style="list-style-type: none"> a. Arm b. Leg 	<ul style="list-style-type: none"> -Oral check off grades -Exam grade with included rubric
8	G. Nervous System* *Recommended to extend into 2 weeks of lessons	<ol style="list-style-type: none"> 1. Create a model of the human brain and identify the major functions of each part 2. Demonstrate the possible pathways nerve impulses can travel 3. Interpret specific functions of the nervous system 4. Compare and contrast the nervous system to other body systems 5. Investigate and present findings of how injury and disease affect the nervous system 6. Illustrate the complementary structure and function by building a spinal cord 	<ol style="list-style-type: none"> 1. Brain Structures and Major Functions <ol style="list-style-type: none"> a. Cortical Brain b. Subcortical Brain c. "On-ramps" and "Off-ramps" d. Nerve Plexus 	<ul style="list-style-type: none"> Choose: -Quiz with included rubric -Research activity/presentation -Model build with rubric
9	G. Nervous System	Continuation of Week 8 objectives and outcomes		
10	H. Cardiovascular System	<ol style="list-style-type: none"> 1. Identify and describe the individual parts of the cardiovascular system 2. Compare the interrelationship of each part of the cardiovascular system 	<ol style="list-style-type: none"> 1. Heart 2. Arteries Away! 3. Veins 	<ol style="list-style-type: none"> 1. Heart-oral quiz 2. Arteries and veins-assignment

		<p>3. Compare the interrelationship of the cardiovascular system to the other body systems and the body as a whole</p> <p>4. Analyze the cardiovascular systems' transportation of materials to a from all cells in the body</p>		
11.	Digestive System	<p>1. Understand general function of the digestive system and the related organs</p> <p>2. Understand and build the histological plan of the alimentary canal</p> <p>3. Understand and build the organs of the digestive system</p>	<p>1. Intro to the digestive system</p> <p>2. General histological plan of the alimentary canal</p> <p>3. Organs of the alimentary canal</p>	Word bank and flow chart quiz
12	Lymph System	<p>1. Compare the interrelationship of the lymph system and the cardiovascular system</p> <p>2. Analyze the transport properties of the lymphatic vessels</p> <p>3. Identify the normal functions of the lymph system</p> <p>4. Create a model representing the network of lymph vessels and direction of transport</p> <p>5. Describe interactions the lymph system has with other systems and tissues</p> <p>6. Evaluate the effects of disease, injury, and the aging process on the lymph system</p>	<p>1. Lymph Structure</p> <p>2. Building the lymph vessel network with lymph nodes</p> <p>3. Disease and injury</p>	Quiz with rubric
13	Urinary System	<p>1. Create a model in clay representing the major structure of the urinary system</p> <p>2. Analyze and interpret the primary functions of the urinary system</p> <p>3. Describe the interrelationship the urinary system has with other systems</p>	<p>1. "Hook up the Plumbing"</p>	Quiz with rubric
14	Closure and clean up	Saying goodbye to the models and clean up	<p>1. Hair and hat day</p> <p>2. Picture Day</p> <p>3. Hall of Fame</p> <p>4. Funeral Day</p>	

If possible, provide additional lab time for students outside of regular class hours during the entire unit