

# Circulatory System

**CONTENT STANDARD:** Life Science

**CONTENT TOPIC:** Anatomy

**CONCEPT:** Humans have specialized systems responsible for body functioning.

**CONTENT OBJECTIVE:** To understand the parts and functions of the body.

**INSTRUCTIONAL OBJECTIVES:** The learner will:

- Define the circulatory system.
- Label the major parts of the circulatory system.
- Trace the flow of blood through the body.

**OUTLINE OF CONTENT:**

- I. Circulatory System
  1. Components
  2. Functions

**GOAL:** To enable students to demonstrate ways of thinking and acting inherent on the practice of science; and to exhibit an awareness of the historical and cultural contributions to the enterprise of science.

**STANDARD(S):** The learner will understand that: Science is based upon suppositions derived from observations of natural phenomena.

**BENCHMARK:** Careful observation can yield scientific knowledge.

The validity of an investigation cannot be accepted unless the complete investigation can be independently duplicated.

**BENCHMARK:** If variables remain constant an investigation can be repeated with expectations of predictable results.

## CLASSROOM CONNECTORS

**TIME REQUIRED:** 35 minutes

**MATERIALS:** Stethoscopes, plastic container, water, red food coloring, 3/8" plastic hose, nasal aspirator

**SET:** Put your hand on your wrist, like this. (Demonstrate by putting the 1<sup>st</sup> two fingers of your right hand on the edge of your left wrist near your thumb.) What is the beat you feel? (“Pulse”) It is your own blood being pumped through your body. Why do you feel these pulse beats? (response) The beat you feel in your wrist is due to the contractions of your heart. Look at your wrist and arms. Do you see those blue veins? Why are they blue? Isn’t blood red? Today we will study how blood is pumped to every part of our body.

### **INSTRUCTION:**

The circulatory system moves things like water and oxygen to the body cells and removes waste. The reason we eat food is to supply matter and energy to each cell in our body.

Probably the most famous organ of the circulatory system is your heart. Your blood is an important part of this system as are the blood vessels.

Arteries are the blood vessels that take blood away from the heart. Each time your heart beats, blood rushes through these **arteries carrying oxygen** and dissolved foods into the cells.

Arteries divide and branch out in our bodies like branches of a tree they eventually become as thin as a single cell. At this point they are called capillaries.

As the capillaries continue on, they become thick again and now they are called veins. Veins are the blood vessels that carry blood back to the heart (veins have no oxygen that’s why they are blue). When the blood arrives back at the heart, it empties into the part of the heart that is meant to receive it. Then the blood is pushed out into a great artery to the lungs. With increased physical activity the blood flow and pulse rate is increased.

**SUPERVISED PRACTICE:** Have the students form Six (6) teams of 3-4 students per team.

### **Our heart:**

1. Give each team one stethoscope.
2. Have each student listen to their own heart. **It is important for the students to be as quite as possible to hear their heartbeats.**
3. Give each student a chance to hear their heart.

### **Our heart as a pump:**

4. Give each team one bucket of red water (our body full of blood), one piece of tubing (our arteries and veins) and one nasal aspirator (our heart acts as a pump).
5. Have the students connect the “pump” to the tubing and put the tubing in the water.
6. Have the students **GENTLY(!)** squeeze the “pump” to draw blood into the pump and then gently squirt it back into the container.

- *In your notebook, draw pictures of what you see happening.*
- Which way does the blood move?
- What happens if the tubing gets clogged?

**CLOSURE:**

Today we have learned about the circulatory system. In your notebook write the answers to these questions:

1. What are the three major parts of the circulatory system? (Heart, blood, vessels)
2. What are the three types of blood vessels in the body? (Arteries, veins, capillaries)

Now, with a partner, count the number of pulse beats per minute and record them. Before you begin exercising, estimate the number of pulse beats there will be after one minute of exercise. Run in place for 1 minute then count the number of pulse beats per minute. Finally compare actual beats per minute to estimated beats per minute.