- **ANATOMY**
- □ Study of the structure and shape of the body and its parts
- **PHYSIOLOGY**
- □ Study of how the body and its parts work or function □ How the body functions both on a microscopic and macroscopic level
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- <u>Levels of Organization</u>
- □ cell - smallest living unit
- Tissues- Collection of cells of same type
- Organs- Collection of two or more types of tissues put together into structures that perform a specific function
- Organ systems- Collection of organs that work together to accomplish a particular task

<u>Some Survival Needs</u>

- Nutrients
  - Chemicals for energy and cell building
  - Includes carbohydrates, proteins, lipids, vitamins, and minerals
- Oxygen: required for chemical reactions
- WATER
  - 60–80% of body weight
  - Needed for many for metabolic reactions
- Homeostasis: steady state
  - Stable body temperature
  - Maintain blood plasma pH
  - Maintain blood pressure
  - Maintain water balance
  - Stable blood/sugar levels

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- Primary Cells/Tissue Classes
- Over 200 types of cells divided into 4 general categories
- 1. Muscle - contraction, generation of force
- 2. Connective- connect, anchor, support
- 3. Epithelial - barrier between body and external environment; exchange
- 4. Nerve - initiate, transmit electrical impulses
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- Body Fluid Compartments
- For a 70 kg man, total body water = 42 liters
- 28 liters intracellular fluid (ICF)
- 14 liters extracellular fluid (ECF)
- 3 liters plasma 11 liters interstitial fluid (ISF)

System	Some organs/tissues within system	Function
Endocrine	Hypothalamus, pituitary gland, adrenal gland, thyroid gland, parathyroid glands, thymus, pancreas	Provide communication between cells of the body through the release of hormones into the bloodstream
Nervous	Brain, spinal cord, peripheral nerves	Provide communication between cells of the body through electrical signals and the release of neurotransmitters into small gaps between certain cells
Musculoskeletal	Skeletal muscle, bones, tendons, ligaments	Support the body; allow voluntary movement of the body; allow facial expressions
Cardiovascular	Heart, blood vessels, blood	Transport molecules throughout body in bloodstream
Respiratory	Lungs, pharynx, trachea, bronchi	Bring oxygen into the body and eliminate carbon dioxide from the body
Urinary	Kidneys, ureters, bladder, urethra	Filter the blood to regulate acidity, blood volume, and ion concentrations; eliminate wastes
Gastrointestinal	Mouth, esophagus, stomach, small intestine, large intestine, liver, pancreas, gallbladder	Break down food and absorb it into the body
Reproduction	Gonads, reproductive tracts and glands	Generate offspring
Immune	White blood cells, thymus, lymph nodes, spleen, tonsils, adenoids	Defend the body against pathogens and abnormal cells
Integumentary	Skin	Protect the body from the external environment

Immune and Lymphatic System
*Returns fluids to blood vessels
*Cleanses the blood
*Protects the body from pathogens
*"HOUSE KEEPING"

Cardiovascular System
- Transports materials in body via blood pumped by heart

- Oxygen
- Carbon dioxide
- NUTRIENTS
- Wastes

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- Respiratory System
- Keeps blood supplied with oxygen
- Removes CARBON DIOXIDE
- Maintains blood/plasma pH

Urinary System
- Eliminates WASTES
- Maintains acid-base balance
- Regulates water and electrolytes

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- Reproductive System
- Produces offspring
- Not required for HOMEOSTASIS

Digestive System
- Breaks down food
- Allows for nutrient absorption into BLOOD
- Eliminates indigestible material

Interrelationships Among Body Systems