BMD 330 and 335: Human Physiology
Chapter 21 Objectives

The Gastrointestinal System

1. Define digestion, absorption, motility, and secretion, and briefly state how each is necessary for gastrointestinal function.
2. Identify the major organs of the gastrointestinal system, and describe the functions of each.
3. Identify the various tissue layers that make up the wall of the gastrointestinal tract. Compare the wall across the different organs.
4. Describe the fundamental mechanisms involved in the absorption of carbohydrate, protein, and lipid digestion products, and explain how the mechanisms of lipid absorption is related to the hydrophobic nature of fats.
    a. Name the enzymes of digestion, where they are secreted, and where they act.
    b. Name the absorbable units of the macromolecules, and where they are absorbed.
    c. Describe the role of bile in fat digestion.
    d. Describe the secretion of bile
    e. Describe the absorption of vitamins and minerals.
5. In general terms, describe the general principles of gastrointestinal regulation.
    a. Compare/contrast the enteric nervous system to the regular nervous system.
    b. Define the myenteric and submucosal plexi
    c. Compare/contrast short and long reflexes.
    d. Define cephalic, gastric, and intestinal phases of control.
    e. Describe the different GI hormones
        i. Site of release
        ii. Stimuli for release
        iii. Function
6. Describe the functions of saliva, stomach acid, pancreatic juice, and bile, and explain how the secretion of each of these substances is regulated.
7. Follow the path of food from the mouth to the anus. Explain how the food gets from one end to the other.
    a. Describe slow wave potentials and how they can cause smooth muscle contraction.
    b. Define peristalsis, segmentation, migrating motility complex, haustration, mass movement, and basic electrical rhythm, and describe the role of each in digestion.
    c. List the sphincters of the GI tract and state their functions.
    d. Identify locations of smooth muscle and skeletal muscle from mouth to anus and compare voluntary to involuntary control of these muscles.