Anatomy and Physiology 121: The Skeletal System

- System of body with many tissues
- Alive and dynamic
- Matrix of mineral (calcium and phosphate)
- Living cells (osteocytes)
- 206 bones in body

Function:

1. Support (bone and cartilage)
2. Movement

Divided into two major divisions:

1) Axial Skeleton
   - Cranium
   - Vertebrae
   - Rib Cage (Thorax)
2) Appendicular Skeleton
   - Pectoral Girdle
   - Upper Limbs
   - Pelvic Girdle
   - Lower Limbs

Types of Bone Cells:

1) Osteoblasts
2) Osteoclasts
3) Osteocytes

Bone Classification:

- Long Bones
- Short Bones
- Flat Bones
- Irregular Bones
- Wormian and Sesamoid Bones

Bone Markings:

- Ligament and muscle attachment
- Form Joints
- Holes and depressions for vessels and nerves

Two Kinds of Osseous Tissue:

1) Compact Bone
2) Spongy Bone
   Trabeculae

Parts of a Long Bone:

- Epiphyses
- Diaphysis
- Articular Cartilage
- Periosteum
- Endosteum
- Medullary Cavity (marrow)

Microscopic Structure:

- Osteons
- Haversian Canals (osteonic canals)
- Lacunae
- Canaliculi

A. Compact Bone

- Osteons and canals
- Lacunae and osteocytes
- Canaliculi and cell processes
- Lamellae
  a) osteonic
  b) circumferential
- Volkmann's Canals (transverse canals)

B. Spongy Bone

- No canals
- Cells within Trabeculae

Bone Development and Growth

- Ossification
- Two types of bone development
  1) Intramembranous
  2) Endochondral
     Primary Ossification Point

Secondary Ossification Point
Epiphyseal Plate (epiphyseal disk)

Homeostasis: Reabsorption and Deposition

Factors Affecting Growth

Body Movement
The Lever Action
Lever, pivot, origin and insertion points

Hematopoiesis: Blood Cell Formation

Bone Fracture Repair:
1) Hematoma Formation
2) Fibrocartilagenous Callus Formation
3) Bony Callus Formation
4) Bone Remodeling