Chapter 11. Skeletal System

The Skeleton. [Figure 11.6]

Distinguish between the axial and the appendicular skeleton.

Functions of the skeleton:

1. 

2. 

3. 
Anatomy of a long bone.
An example of bone structure – macro and micro structure.

Macro structure.
Epiphyses – proximal and distal.

Diaphysis.

Spongy bone (red marrow) and compact bone (yellow marrow).

Articular cartilage.
Micro structure.
Bone. Cells suspended in a matrix

Mineral matter:

Organic matter:

Bone cells secrete the inorganic and organic matrix.

Bone cells are in close proximity to blood vessels.

Articular cartilage.

Cells not in close proximity to blood vessels.
Bone formation and growth [Figure 11.2].

a. A cartilaginous model develops and becomes calcified during fetal development.

b. Newly derived osteoblasts cover the diaphysis with a compact-bone collar.

c. Blood vessels bring osteoblasts into the cartilage. At a primary ossification center, osteoblasts form spongy bone.

d. The medullary cavity forms, the compact-bone collar thickens, and secondary ossification centers appear in the epiphyses.

e. During childhood, growth is still possible as long as cartilage remains at the growth plates.

Bone repair [Figure 11.5].

1. Hematoma

2. Fibrocartilaginous callus

3. Bony callus

4. Remodeling
Articulations – Joints [Figure 11.13].

Synovial joints.

Other joint types.
Slightly moveable joints.
Example: vertebrae.

Immovable joints –
Skeletal sex differences (generalizations):
- Male skeleton larger and heavier than female skeleton.
- In males, the ends of bones at joints are thicker in relation to the shafts.
- Points of muscle attachment are larger in males.
- Pelvic differences:

<table>
<thead>
<tr>
<th>Female</th>
<th>Male</th>
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<tbody>
<tr>
<td>Joint Inflammations</td>
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<tr>
<td>Sacroiliac joint</td>
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<tr>
<td>Coccyx</td>
<td>Acetabulum</td>
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<td>Symphysis pubis</td>
<td>Pubis</td>
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  | Greater than 90° | Less than 90° |

Arthritis.
- Osteoarthritis.

Rheumatoid arthritis. Examples: