I. Bones and Bony Landmarks of the Shoulder Complex

1. Bones of the Shoulder Complex (paired, two of each)
   1. Bones of the shoulder girdle
2. Clavicle (figure 7.1, page 251)
3. Scapula (figure 7.2, page 251)
4. Humerus (figure 7.3, page 252)
5. Bony Landmarks of the Shoulder Complex
   1. Scapula: Spine, acromion process, coracoid process, glenoid cavity (also called glenoid fossa)
   2. Humerus: Head, neck, greater tubercle, lesser tubercle, intertubercular groove, deltoid tuberosity

II. Joint Structure and Movements of the Shoulder Girdle

1. Joints of the Shoulder Girdle (figure 7.4, page 253)
2. Sternoclavicular joint
3. Articulating bones:
4. Type of joint:
5. Importance:
6. Acromioclavicular joint
7. Articulating bones:
8. Type of joint:
9. Scapulothoracic joint
10. Articulating bones:
11. Type of joint: Not a true joint
12. Movements of the Shoulder Girdle
    1. Simplified to traditional movement pairs of scapula (figure 7.5, page 253)
13. Scapular elevation-depression
14. Scapular abduction-adduction
15. Scapular upward rotation–downward rotation

III . Joint Structure and Movements of the Shoulder

1. Shoulder Joint Structure (figure 7.7, page 255)
   1. Technical name:
   2. Articulating bones:
   3. Articulating landmarks:
   4. Type of joint:
2. Movements of the Shoulder Joint (figure 7.6, page 255)
   1. Basic movement pairs of the shoulder joint
3. Shoulder flexion–extension
4. Shoulder abduction-adduction
5. Shoulder external rotation–internal rotation
   1. Specialized movements of the shoulder joint
6. Shoulder horizontal abduction–horizontal adduction
7. Scaption  
   Definition:
8. Shoulder Joint Capsule and Key Ligaments (figure 7.7A, page 255)
   1. Shoulder joint capsule: Loose but still vital for stability
   2. Ligaments: Various ligaments add stability.
9. Coracoacromial ligament function:
10. Specialized Structures of the Shoulder Joint (figure 7.7B, page 255)
    1. Glenoid labrum
11. Description:
12. Function:
    1. Coracoacromial arch
13. Components: Coracoid process + coracoacromial ligament + acromion process
14. Function:
    1. Bursa—subacromial bursa
15. Description:
16. Function:

IV. Description and Functions of Individual Muscles of the Shoulder Complex

1. Scapular Muscles and Their Actions  
   General Description:
   1. Posterior scapular muscles(Common action is scapular adduction.)
2. Trapezius—Upper, middle, lower (figure 7.8, page 257)  
   Upper trapezius actions:  
   Middle trapezius action:  
   Lower trapezius actions:
3. Levator scapulae (figure 7.9, page 258)  
   Actions:
4. Rhomboids (figure 7.9, page 258)  
   Actions:
5. Anterior scapular muscles(Common action is scapular abduction.)
6. Serratus anterior (figure 7.10, page 260)  
   Actions:
7. Pectoralis minor  
   Actions (not required learning for this course)
8. Rotator Cuff Muscles and Their Actions  
   General Description:
   1. Supraspinatus (figure 7.12, page 261)  
      Action:
   2. Infraspinatus (figure 7.12, page 261)  
      Action:
   3. Teres minor (figure 7.12, page 261)  
      Action:
   4. Subscapularis (figure 7.12, page 263)  
      Action:
9. Other Major Glenohumeral Muscles and Their Actions  
   General Description:
   1. Pectoralis major—Clavicular portion and sternal portion (figure 7.14, page 264)  
      Clavicular portion actions:  
      Sternal portion actions:
   2. Deltoid—Anterior, middle, posterior (figures 7.15 and 7.16, pages 265 and 267)  
      Anterior deltoid actions:  
      Middle deltoid action:  
      Posterior deltoid actions:
   3. Coracobrachialis (not included in this course)
   4. Latissimus dorsi (figure 7.16, page 267)  
      Actions:
   5. Teres major (figure 7.16, page 267)  
      Actions:
10. Summary of Locations and Actions of the Muscles of the Shoulder Complex
    1. Muscle names and actions—Know the names, general categories (scapular, rotator cuff, or other glenohumeral muscles), general locations (anterior, posterior, lateral), and actions of the muscles in table 7.2, page 269.
    2. Muscle names and specific location—Know the names and locations of the muscles shown in figure 7.17 (A only), page 270, and figure 7.18 (A only), page 271. Similar figures will be on the test, and you will be asked to identify muscles that have arrows pointing to them.

V. Alignment and Common Deviations of the Shoulder Complex

* + 1. Rolled Shoulders (figure 7.19, page 272)
  1. Description:
  2. Correction

1. Strengthening
2. Scapular adductors
3. Shoulder external rotators
4. Thoracic spinal extensors (in some cases)

Sample strength exercises:

1. Stretching
2. Shoulder internal rotators (such as pectoralis major, anterior deltoid, and latissimus dorsi)

Sample stretch:

1. Cues  
   Sample cue:  
   (Figure 7.20, page 273—Be able to select these exercises by name or picture from a larger group of exercises as appropriate for improving rolled shoulders.)
2. Winged Scapula (figure 7.21, page 274)
   1. Description:
   2. Correction
3. Strengthening:
4. Serratus anterior
5. Lower trapezius

Sample strength exercises:  
(Figure 7.21, page 274—Be able to select these exercises by name or picture from a larger group of exercises as appropriate for improving winged scapula.)

VI. Shoulder Mechanics

1. Scapulohumeral Rhythm  
   Learn table 7.3, page 276.
   1. Definition: The coordinated, linked, predictable movement between the scapula and humerus that facilitates optimal shoulder mechanics (via optimal positioning of the head of the humerus relative to the glenoid cavity).
   2. Example: Upward rotation of the scapula with shoulder abduction (figures 7.22 and 7.23, page 275)
   3. Table 7.3: Summary of linked movements between scapula and humerus (page 276)
2. SIT Force Couple (figure 7.24, page 276)
   1. Components:
   2. Definition: The SIT force couple counters the upward pull of the deltoid muscle and facilitates optimal shoulder abduction mechanics.
3. Synergies
   1. Definition:
   2. Example: Figure 7.25, page 277  
      The desired action is upward rotation of the scapula and can be produced by both the trapezius and serratus anterior.  
       If the trapezius is considered the prime mover, the serratus anterior acts as a synergist to neutralize undesired scapular adduction potentially produced by the trapezius and elevation produced by the upper trapezius. Within the trapezius, the lower trapezius can also act as a synergist to neutralize undesired elevation potentially produced by the upper trapezius.

VII. Muscular Analysis of Shoulder Movements  
Learn table 7.5, page 279.

1. Shoulder Flexion
2. Plane and axis:
3. Primary muscles:
4. Examples of movements involving the concentric use of the shoulder flexors
5. Strength exercises:
6. Dance:
7. Shoulder Extension
8. Plane and axis:
9. Primary muscles:
10. Examples of movements involving the concentric use of the shoulder extensors
11. Strength exercises:
12. Dance:
13. Shoulder Abduction
14. Plane and axis:
15. Primary muscles:
16. Examples of movements involving the concentric use of the shoulder abductors
17. Strength exercises:
18. Dance:
19. Shoulder Adduction
20. Plane and axis:
21. Primary muscles:
22. Examples of movements involving the concentric use of the shoulder adductors
23. Strength exercise:
24. Dance:
25. Shoulder External Rotation
26. Plane and axis:
27. Primary muscles:
28. Examples of movements involving the concentric use of the shoulder external rotators
29. Strength exercise:
30. Dance:
31. Shoulder Internal Rotation
32. Plane and axis:
33. Primary muscles:
34. Examples of movements involving the concentric use of the shoulder internal rotators
35. Strength exercise:
36. Dance:
37. Analysis of Stretches for the Shoulder (table 7.8, page 285)  
    Be able to match the muscle group stretched with a picture or the name of the exercises in this table.
38. Examples of shoulder stretches
39. Shoulder flexors:
40. Shoulder extensors:
41. Shoulder horizontal abductors:
42. Shoulder horizontal adductors:

VIII. Special Considerations for the Shoulder Complex in Dance

1. Lifting the Shoulders (figure 7.32, page 286)
   1. Correction:
   2. Strength exercises:
   3. Cue:
2. Wide Scapulae
   1. Correction:
3. Connection of the Arms to the Torso
   1. Recommendation: Use the arms in a coordinated manner that does not create an undesired disruption of core stability and emphasizes the use of the larger shoulder muscles that connect the arms to the trunk.
4. Partnering and Arm Support
   1. Recommendation: Supplemental strength training

IX. Bones, Joint Structure, and Movements of the Elbow Complex

* + 1. Elbow Joint Bony Landmarks, Structure, and Movements

1. Components (figure 7.36, page 290): The elbow joint is actually composed of the following two joints that together function like a hinge joint.
2. Humeroulnar  
   Articulating bones:
3. Humeroradial  
   Articulating bones:
4. Type of joint:
5. Movements (figure 7.37, page 290):
6. Elbow joint capsule and ligaments:
7. Bony Landmarks, Structure, and Movements of the Radioulnar Joints
8. Components (figure 7.39, page 292): The proximal (upper) and distal (lower) radioulnar joints work closely together in functional movement.
9. Proximal radioulnar joint  
   Articulating bones:  
   Type of joint:
10. Distal radioulnar joint  
    Articulating bones:  
    Type of joint:
11. Distal radioulnar joint  
    Articulating bones:  
    Type of joint:
12. Movements: Coordinated motion between the radioulnar joints results in pronation-supination (figure 7.39, page 292)

X. Description and Functions of Selected Individual Muscles of the Elbow Complex

1. Selected Elbow Muscles
2. Anterior elbow muscles (Common action is elbow flexion.)
   1. Biceps brachii (figure 7.40, page 293)  
      Actions:
   2. Brachialis (figure 7.41, page 294)  
      Action:
   3. Brachioradialis (figure 7.42, page 295)  
      Actions:
3. Posterior elbow muscles
   1. Triceps brachii (figure 7.43, page 296)  
      Action:
4. Selected Muscles of the Radioulnar Joints
   1. Pronator teres (figure 7.42, page 295)  
      Location:  
      Action:
   2. Pronator quadratus (figure 7.42, page 295)  
      Location:  
      Action:
   3. Supinator (figure 7.43A, page 296)  
      Location:  
      Action:
   4. Biceps brachii (figure 7.40, page 293; described previously with anterior elbow muscles)  
      Location:  
      Actions:
5. Summary of Actions of the Muscles of the Elbow Complex
   1. Muscle names and actions—Know the names and actions of the muscles in table 7.9, page 298.
   2. Muscle names and specific locations—Be able to name and identify the location of the biceps brachii as shown in figure 7.17A, page 270, and the triceps brachii as shown in figure 7.18A, page 271.

XI. Alignment and Common Deviations of the Elbow Complex

* + 1. Carrying Angle (figure 7.44, page 299)

1. Description:
2. Elbow Hyperextension (figure 7.45, page 299)
   1. Description:
   2. Correction
   3. Strengthening and appropriate activation of:

XII. Muscular Analysis of Elbow Complex Movements  
Learn the primary muscles responsible for the joint movements in table 7.10, page 300.

1. Elbow Flexion
   1. Plane and axis:
   2. Primary muscles:
   3. Examples of movements involving the concentric use of the elbow flexors
   4. Exercises:
2. Elbow Extension
   1. Plane and axis:
   2. Primary muscles:
   3. Examples of movements involving the concentric use of the elbow extensors
   4. Exercises:
3. Radioulnar Pronation
   1. Primary muscles:
   2. Examples of movements involving the concentric use of the radioulnar pronators
   3. Functional movement:
   4. Dance:
4. Radioulnar Supination
   1. Primary muscles:
   2. Examples of movements involving the concentric use of the radioulanar supinators
5. Functional movement:
6. Dance:

XIII. The Wrist–Hand Complex

1. Bones of the Hand (figure 7.46, page 301)
   1. General categories of bones (total 27): 8 carpals, 5 metacarpals, 14 phalanges
2. Joints of the Wrist–Hand Complex (figures 7.47 and 7.57, pages 301 and 310; proceeding from proximal to distal)
   1. Wrist joint
3. Technical name:
4. Articulating bones:
5. Type of joint:
   1. Midcarpal joint
6. Articulating bones:
7. Function:
   1. Carpometacarpal joint 1 (thumb)
8. Type of joint:
   1. Carpometacarpal joints 2-5
9. Type of joint:
   1. Metacarpophalangeal joint 1
10. Type of joint:
    1. Metacarpophalangeal joints 2-5
11. Type of joint:
    1. Interphalangeal joints
12. Type of joint:
13. Muscles of the Wrist–Hand Complex
    1. Summary of attachments and actions of extrinsic muscles of the wrist and hand (table 7.11, page 304; not required learning for this course)

XIII. Key Considerations for the Upper Extremity in Whole-Body Movement

1. Intricate coordination among the joints of the upper extremity is used to foster movement goals such as positioning of the hand for manipulation of objects or aesthetic criteria in various forms of dance.

XIV. Upper Extremity Injuries in Dancers

* + 1. Prevention of Upper Extremity Injuries

1. Balanced strength and flexibility of upper extremity muscles
2. Supplemental strength training for demanding upper extremity choreography
3. Correct arm placement with an appropriate scapulohumeral rhythm
   * 1. Common Types of Upper Extremity Injuries  
        You are responsible only for learning the structure and symptoms for shoulder impingement syndrome in the category of upper extremity injuries. The other injuries are listed for your reference only.
4. Acromioclavicular (AC) sprain (figure 7.52, page 306)  
   Structure:  
   Symptom:
5. Shoulder dislocation (figure 7.53, page 307)—Anterior is the most frequent (followed by inferior).  
   Structures for anterior dislocation:  
   Symptoms:
6. Subacromial impingement syndrome (figure 7.54, page 308)  
   Structure:  
   Symptom:  
   Prevention and treatment:
7. Carpal tunnel syndrome (figure 7.56, page 309)  
   Structure:  
   Symptoms:
   * 1. Rehabilitation of Shoulder Injuries
8. Maintain range of motion to prevent severe loss of motion (adhesive capsulitis).
9. Strengthening exercises
10. Rotator cuff:
11. Scapular muscles:
12. Other glenohumeral muscles: