



### **Course Description**

#### **PHT2120L | Applied Kinesiology Laboratory | 1.00 credit**

This is the laboratory course for PHT2120 Applied Kinesiology. This course provides laboratory practice of technical skills relating to practical applications of foundational concepts and principles pertaining to Applied Kinesiology. Students learn goniometric measurement, manual muscle testing skills, plumb-line analysis, palpation skills, data collection, and develop an understanding of special tests. Prerequisites: BSC 2086, BSC 2086L, PHT1102C, PHT1201, PHT1201L, PHT1211, PHT1211L; Corequisites: PHT2120, PHT2224, PHT2224L, PHT2801C

### **Course Competencies:**

**Competency 1:** The student will understand the hip region by:

1. Listing the joints that make up the hip joint and naming their articulating surfaces
2. Describing the motions available at the hip joint
3. Identifying the significant ligaments associated with the hip joint
4. Naming origin, insertion, action, and nerve supply of the major muscles of the hip joint
5. Describing the planes and accompanying motions at the lumbar spine and hip joints for the following pelvic motions: pelvic rotation, anterior/posterior pelvic tilting, and lateral tilting of the pelvis
6. Describing the procedure and alignment for measuring ROM of the hip joint
7. Describing the procedure and grading for manual muscle testing of the major muscle groups of the hip joint
8. Demonstrating manual muscle tests for the hip region
9. Demonstrating the range of motions of specific muscles/joints for the hip region
10. Demonstrating special tests utilized for the hip region

**Competency 2:** The student will understand the knee region by:

1. Listing the joints and articulations within the knee complex
2. Defining the function and structure of the menisci and ligaments in the knee complex
3. Identifying the significant bursae found at the knee complex
4. Describing the motions available at the knee joint, including the locking and unlocking of the knee when the femur is fixed and when the femur is free
5. Naming origin, insertion, action, and nerve supply of the major muscles of the knee joint
6. Describing the procedure and alignment for measuring ROM of the Knee complex
7. Describing the procedure and grading for manual muscle testing of the major muscle groups of the knee joint
8. Demonstrating manual muscle tests for the knee region
9. Demonstrating the range of motions of specific muscles/joints for the knee region
10. Demonstrating special tests utilized for the knee region

**Competency 3:** The student will demonstrate an understanding of the ankle and foot region by:

1. Listing the joints and articulations in the ankle-foot complex
2. Describing the motions available at the joints of the ankle-foot complex
3. Identifying the ligaments that support the joints of the ankle and foot
4. Naming the origin, insertion, action, and nerve supply for the major muscle groups
5. Describing the procedure and alignment for measuring ROM of the ankle-foot complex
6. Describing the procedure and grading for manual muscle testing of the major muscle groups of the ankle-foot complex
7. Describing the purpose and procedures of tests that pertain to the anatomy and pathological conditions of the ankle-foot region
8. Demonstrating manual muscle tests for the ankle and foot region
9. Demonstrating the range of motions of specific muscles/joints for the ankle and foot region

10. Demonstrating special tests utilized for the ankle and foot region

**Competency 4:** The student will demonstrate an understanding of the trunk and neck by:

1. Listing the joints that make up the vertebral column and naming their articulation surfaces
2. Describing the motions available at the vertebral column for each area
3. Describing the standard curves of the erect spine
4. Identifying the significant ligaments associated with the spine
5. Defining intervertebral disc
6. Naming origin, insertion, action, and nerve supply of the major muscles of the trunk
7. Demonstrating manual muscle tests for the trunk region
8. Demonstrating the range of motions of specific muscles/joints for the trunk region
9. Demonstrating special tests utilized for the trunk region

**Competency 5:** The student will demonstrate an understanding of the shoulder region by:

1. Listing the three structural (skeletal) components of the shoulder complex
2. Listing the four independent joints of the shoulder complex and identifying their articulating surfaces
3. Listing and defining the role of the significant ligaments at each joint
4. Describing the motions available at each joint of the shoulder complex and in which plane it takes place
5. Demonstrating manual muscle tests for the shoulder region
6. Demonstrating the range of motions of specific muscles/joints for the shoulder region
7. Demonstrating special tests utilized for the shoulder region

**Competency 6:** The student will understand the elbow complex by:

1. Identifying the structural components of the elbow complex
2. Identifying the articulating surfaces of the joints of the elbow complex
3. Describing the motions available at the joints of the elbow complex
4. Identifying the significant ligaments associated with joints of the elbow complex
5. Naming the origin, insertion, action, and nerve supply of the major muscles of the elbow complex
6. Describing the procedure and alignment for measuring ROM of the elbow complex movements
7. Describing the procedure and grading for manual muscle testing of the major muscle groups of the elbow complex
8. Describing the purpose and procedures of tests that pertain to the anatomy and pathological conditions of the elbow region
9. Demonstrating manual muscle tests for the elbow region
10. Demonstrating the range of motions of specific muscles/joints for the elbow region
11. Demonstrating special tests utilized for the elbow region

**Competency 7:** The student will understand the wrist and hand by:

1. Listing the two compound joints that make up the wrist complex and describe their articulation surfaces
2. Describing the motions available at the wrist complex
3. Identifying the structural components of the joints that make up the fingers and thumb
4. Describing the motions available at those joints
5. Naming the origin, insertion, action, and nerve supply of the major muscles of the wrist and fingers
6. Identifying the significant ligaments associated with joints of the wrist, fingers, and thumbs
7. Differentiating between the extrinsic and intrinsic muscles of the hand
8. Defining prehension
9. Describing the procedure and alignment for measuring ROM of the wrist and fingers
10. Describing the procedure and grading for manual muscle testing of the major muscle groups of the wrist and fingers
11. Describing the purpose and procedures of tests that pertain to the anatomy and pathological conditions of the wrist and fingers
12. Demonstrating manual muscle tests for the wrist and hand region
13. Demonstrating the range of motions of specific muscles/joints for the wrist and hand region

14. Demonstrating special tests utilized for the wrist and hand region

**Competency 8:** The student will understand posture by:

1. Defining posture
2. Defining the center of gravity and base of support in normal posture
3. Describing the normal curvatures of the erect spine
4. Recognizing postural deviations with the use of plumb – line analysis
5. Recognizing high/low shoulder and hips
6. Defining apparent and true leg length discrepancies
7. Describing commonly found deviations associated with posture
8. Defining and giving examples of scoliosis
9. Assessing the appropriate posture of an individual
10. Identifying deviations in posture
11. Demonstrating procedures of strengthening exercises associated with correctable posture deviations

**Competency 9:** The student will understand gait by:

1. Describing a normal gait pattern
2. Defining the phases of gait and types of muscle contractions occurring at each joint
3. Stating minimal joint motions needed in lower extremities for normal gait
4. Identifying major gait deviations and describing the most probable cause
5. Discussing possible therapeutic measures in the correction of gait deviation
6. Assessing the appropriate gait of an individual
7. Identifying deviations in the gait
8. Demonstrating procedures of strengthening exercises associated with correctable posture deviations

**Learning Outcomes:**

- Communicate effectively using listening, speaking, reading, and writing skills
- Use quantitative analytical skills to evaluate and process numerical data
- Solve problems using critical and creative thinking and scientific reasoning
- Use computer and emerging technologies effectively