

## LABETTE COMMUNITY COLLEGE BRIEF SYLLABUS

### **SPECIAL NOTE:**

This brief syllabus is not intended to be a legal contract. A full syllabus will be distributed to students at the first class session.

### **TEXT AND SUPPLEMENTARY MATERIALS USED IN THE COURSE (if any):**

Please check with the LCC bookstore, <http://www.labette.edu/bookstore>, for the required texts for this class.

<b><u>COURSE NUMBER:</u></b>	PTA 202
<b><u>COURSE TITLE:</u></b>	PTA MUSCULOSKELETAL
<b><u>SEMESTER CREDIT HOURS:</u></b>	5
<b><u>DEPARTMENT:</u></b>	Health Science
<b><u>DIVISION:</u></b>	Career Technical Education
<b><u>PREREQUISITES:</u></b>	Admission to the PTA Program
<b><u>REVISION DATE:</u></b>	11/5/2018

**Class schedule:** class- Monday and Tuesday 8:00- 10:00 AM      Lab- Thursday 12:30-4:00  
Contact hours: class- 42                      Lab- 45

### **COURSE DESCRIPTION:**

This course is designed to train the student to provide physical therapy, under the direction of a physical therapist, to clients with a variety of musculoskeletal disorders. Emphasis is on critical thinking and the PTA's role in the physical assessment of the orthopedic conditions.

### **COURSE OUTCOMES AND COMPETENCIES:**

**Students who successfully complete this course will be able to:**

1. Discuss patient supervision and observation during treatment and the role of the PTA and physical assessment.
  - Discuss the 'Problem Solving Algorithm utilized by PTAs in Patient/Client Intervention'.
  - Identify and discuss the rationale for clear and concise communication among all members of the rehabilitation team.
  - Discuss the skills necessary to provide patient supervision.
  - Define objective scales of measurement used to communicate changes in a patient's status to the supervising physical therapist.

- Discuss proactive listening skills and objective scales of measurement to provide appropriate, accountable and responsible observation and supervision of the patient during treatment.
- Define open-ended and closed-ended questioning.
- Define the quadrants of the basic dimensional model.
- Discuss the four categories of behavior of the physical therapist assistant: dominance, submission, hostility and warmth.
- Describe the differences between prompting and cueing.
- Discuss the language of the *Guide to Physical Therapist Practice* to physical assessment procedures.
- Identify the common elements of examination, evaluation and assessment.
- Describe the role of the physical therapist assistant in the performance of physical assessment based on the physical therapy plan of care.
- Discuss how to contribute to the discontinuation of episode of care planning and follow-up processes as directed by the supervising physical therapist.
- Discuss how to effectively educate others using teaching methods that are commensurate with the needs of the patient, caregiver or healthcare personnel.
- Discuss the role of the physical therapist assistant in providing patient-related instruction to patients, family members and caregivers to achieve patient outcomes based on the plan of care established by the physical therapist.
- Discuss how, under the direction and supervision of the physical therapist, instructs other members of the health care community.
- Discuss the role of the physical therapist assistant in data collection.
- Explain methods of modifying the physical therapy plan of care or action to be taken in response to physical assessment of the patient and how to report this to the supervising PT.
- Identify critical elements to include with documentation of physical assessment.
- Discuss physical assessment to goals and outcomes of the physical therapy plan of care.
- Describe aspects of organizational planning and operation of the physical therapy service in a variety of settings.
- List performance improvement activities typically used by hospitals and clinics.
- Log a minimum of 20 hours of volunteer time in community service.

<p>2. Discuss various aspects of flexibility, stretching, strength, endurance, balance and coordination.</p>
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- Describe viscoelasticity and the properties associated with collagen.
- Explain the stress-strain curve and factors that influence change.
- Discuss Golgi tendon organs (GTOs) and muscle spindles.
- Discuss how temperature affects connective tissue.
- Define and discuss range of motion, flexibility and stretching.
- Discuss various methods used to measure flexibility.
- Identify and describe various stretching techniques.
- Discuss precautions and essential components of stretching program development.
- Discuss at least two proposed benefits of stretching.
- Explain how stretching might negatively impact activity performance.

- Describe the clinical applications for stretching soft-tissue contractures.
- Describe and contrast the differences and similarities between scar tissue and adhesions.
- Name the non-contractile and contractile elements of muscle tissue.
- Give examples of concentric and eccentric contractions.
- State two definitions of strength.
- List methods used to measure strength.
- Compare muscle contraction types related to tension produced and energy liberated.
- Identify features of delayed onset muscle soreness (DOMS).
- List three clinically relevant exercise programs to enhance strength.
- Explain opened and closed kinetic chain exercises.
- Identify goals and applications of strength training programs for the elderly.
- Recognize the difference between muscular and cardiovascular endurance.
- Define activities/exercises that are aerobic and anaerobic.
- Describe benefits associated with cardiovascular fitness training.
- Compare moderate- and vigorous-intensity exercises.
- Describe methods to measure exercise intensity.
- Describe the role of aerobic exercise for patients with an orthopedic injury.
- Define the training parameters to improve muscular endurance.
- Define and contrast balance and coordination.
- Discuss the mechanoreceptor system and define four mechanoreceptors.
- List static and dynamic balance and coordination tests and activities.
- Define proprioception and kinesthetic awareness.
- Discuss several factors that contribute to balance dysfunction.
- Identify functional closed kinetic chain proprioceptive exercises.
- Discuss the rationale for proprioceptive training for the upper extremity.

### 3. Discuss various aspects of connective tissue.

- Define and discuss the inflammatory response to injury.
- Describe the phases of healing and sequence of events characteristics of each phase.
- Identify the five cardinal signs of inflammation.
- Describe the effects of immobilization on ligaments.
- Identify and discuss practical clinical applications of stress deprivation and protected motion during phases of ligament healing.
- Identify and describe the phases of bone healing.
- Describe the objectives that serve as the foundation of fracture management and bone healing.
- Define osteoblasts, osteoclasts and osteocytes.
- Define and discuss Wolff's law.
- Discuss stress deprivation, immobilization and normal physiological stress as they apply to fracture healing.
- Define three complications of bone healing.
- Outline and describe six areas of descriptive organization of classifying fractures.
- Describe the five types of pediatric fractures defined by Salter-Harris.
- Define pathological fractures and list four types.

- Discuss how osteoporosis affects fractures.
- Define osteomalacia.
- List common methods of fracture fixation, fixation devices and fracture classifications.
- Discuss clinical applications of rehabilitation techniques used during bone healing.
- Discuss the composition and function of articular cartilage.
- Identify common causes of injury to articular cartilage.
- Describe the sequence of healing and the extent of intrinsic repair of articular cartilage.
- Define invasive and noninvasive techniques of stimulating articular cartilage repair.
- Define and describe the composition and function of fibrocartilage.
- Identify and discuss common mechanisms of injury to fibrocartilage.
- Describe the mechanisms of intrinsic healing of the meniscus.
- Recognize the macrostructure and microstructure of muscle and tendon.
- Describe the two main types of muscle fibers.
- Describe the three mechanisms for a muscle injury.
- Describe the injury mechanism's associated tendon pathology.
- Name the functional unit of a tendon and its structural significance.
- Describe the difference between a supraphysiologic and subfailure load and how each type may contribute to an injury.
- Define how a muscle strain differs from a ligament strain.
- Describe the difference between a tendonitis and a tendinopathy.
- Describe the effects of aging on tendons.
- Name and describe the three phases of connective tissue healing.
- Describe the effects of immobilization on connective tissue.
- Discuss clinical applications of therapeutic interventions based on the stages of connective tissue healing.
- Identify neural anatomy.
- Discuss the vascular supply to nerve tissue.
- Understand the mechanical behavior of nerve tissue.
- Identify the causes and classification of nerve injury.
- Discuss intrinsic nerve healing.
- Describe methods of surgical repair of nerve injury.
- Identify the structure and composition of vascular tissue.
- Discuss the vascular response to injury.
- Explain the various signs and symptoms of vascular injury.
- Discuss the pathophysiology of thromboembolic disease.
- Recognize the risk factors of deep vein thrombosis and pulmonary emboli.

#### 4. Discuss orthopedic pharmacology.

- Discuss pharmacokinetic concepts, including absorption, distribution, metabolism, excretion half-life and duration of action and their relationship and significance to rehabilitation therapies.

- Discuss pharmacodynamic concepts including dose-response relationship, therapeutic window, adverse drug reactions, toxicity, tolerance, withdrawal and addiction.
- List the general principles of safe medication use and the physical therapist assistant's role in optimizing patient safety.
- Discuss general principles of treatment and prevention of orthopedic infection including why such infections are difficult to treat and importance of antibiotic compliance.
- Discuss the analgesics best suited for different types of pain.
- Discuss how opioids work differently than anti-inflammatory analgesics in the treatment of pain.
- Discuss common side effects and precautions associated with opioids, acetaminophen, nonsteroidal anti-inflammatory drugs, cyclooxygenase-2 inhibitors and corticosteroids.
- Discuss the risk of acetaminophen overdoses during pain management.

#### 5. Discuss the biomechanical basis for movement.

- Define and describe the basic components of the gait cycle.
- Discuss the two phases of gait.
- Identify and describe each component of the two phases of gait.
- Define and describe common gait deviations.
- Define and instruct appropriate gait patterns.
- Outline and describe terms used to define weight-bearing status during gait.
- Identify and discuss the appropriate use of assistive devices.
- Discuss the general and applied concept of peripheral joint mobilization.
- Define terms and principles of peripheral joint mobilization.
- Define and describe the convex-concave rule.
- Define the five grades of mobilization.
- Identify and describe terms of joint end-feel.
- Define and describe capsular and noncapsular patterns.
- Define and apply biomechanical concepts in the description of rudimentary movement patterns.
- Discuss the difference between kinematics and kinetics of movement.
- Identify and discuss the kinematic principles as related to movement in a rehabilitation setting.
- Discuss the concepts of mechanical loading and describe how loading is associated with different types of injuries.
- Discuss the principles of mechanical energy.
- Describe the concept of equilibrium and identify the factors that contribute to stability.

#### 6. Describe and discuss the orthopedic management of the lower extremity and upper extremity.

- Identify common foot and ankle ligament injuries.
- Describe intervention methods for common foot and ankle ligament injuries.
- Identify and describe common lower leg, ankle and foot tendon injuries.
- Outline and describe common methods of intervention for lower leg, ankle and foot injuries.

- Identify common foot and ankle fractures.
- Discuss common methods of intervention for foot and ankle fractures.
- Identify and describe common methods of intervention for toe injuries.
- Describe common mobilization techniques for the ankle, foot and toe.
- Identify common ligament injuries of the knee.
- Discuss general methods of management and rehabilitation of common ligament injuries of the knee.
- Identify and describe common meniscal injuries of the knee.
- Discuss common methods of management and rehabilitation of meniscal injuries of the knee.
- Discuss surgical and postoperative management of articular cartilage injuries.
- Describe common methods of management and rehabilitation of patellofemoral disease of the knee.
- Identify and describe common patella, supracondylar femur and proximal tibia fractures.
- Describe common methods of management and rehabilitation of fractures around the knee.
- Identify and describe methods of management and rehabilitation after knee arthroplasty and high tibia osteotomy.
- Describe common mobilization techniques for the knee.
- Identify common hip fractures.
- Outline and discuss common methods of management and rehabilitation of ordinary hip fractures.
- Identify and describe common methods of management and rehabilitation after hip arthroplasty.
- Identify and describe common soft-tissue injuries of the hip.
- Outline and describe common methods of management and rehabilitation of soft-tissue injuries of the hip.
- Identify common fractures of the pelvis and hip.
- Discuss methods of management and rehabilitation for fractures of the pelvis and acetabulum.
- Describe common mobilization techniques for the hip.
- Identify and describe methods, management and rehabilitation for subacromial rotator cuff impingement.
- Identify and describe methods of management and rehabilitation for tears of the rotator cuff.
- Describe methods of management and rehabilitation for glenohumeral instability.
- Discuss methods of management and rehabilitation for adhesive capsulitis.
- Identify and describe common injuries of the acromioclavicular joint.
- Describe common methods of management and rehabilitation of injuries of the acromioclavicular joint.
- Identify and describe common fractures of the scapula, clavicle and proximal humerus.
- Outline and describe methods of management and rehabilitation of fractures around the shoulder.
- Describe methods of management and rehabilitation of fractures around the shoulder.

- Describe methods of management and rehabilitation after shoulder arthroplasty.
- Describe common manual exercise techniques for the shoulder.
- Identify and describe the principles for common overuse and soft-tissue injuries of the elbow.
- Discuss common methods of management and rehabilitation of overuse, soft-tissue injuries of the elbow.
- Identify and describe intercondylar fractures, radial head fractures, olecranon fractures and fracture-dislocations of the elbow.
- Describe methods of management and rehabilitation of various fractures and fracture-dislocations of the elbow.
- Describe techniques to improve range of motion of a stiff elbow including common joint mobilization techniques.
- Identify and describe common compression neuropathy of the wrist.
- Discuss methods of management and rehabilitation of compression neuropathy of the wrist.
- Identify and describe common ligament injuries of the wrist.
- Describe and discuss methods of management and rehabilitation of ligament injuries of the wrist.
- Describe methods of management and rehabilitation for distal radial and ulnar fractures.
- Identify methods of management and rehabilitation for scaphoid fractures.
- Identify and describe common metacarpal and phalanx fractures and methods of management and rehabilitation.
- Describe methods of management and rehabilitation following surgery for Dupuytren's disease.
- Identify and describe common extensor and flexor tendon injuries.
- Discuss methods of management and rehabilitation for extensor tendon and flexor tendon injuries.
- Identify methods of management and rehabilitation for complex regional pain syndrome.

7. Describe and discuss the orthopedic management of the lumbar, thoracic and cervical spine.
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- Outline and describe basic mechanics of the lumbar spine.
- Discuss and apply the principles of fundamental mechanics of lifting.
- Identify common sprains and strains of the lumbar spine.
- Discuss common methods of management and rehabilitation of lumbar spine sprains and strains.
- Identify and describe injuries to the lumbar intervertebral disc.
- Define and describe methods of quantifying back strength.
- Define and describe components of the back school model.
- Define ergonomic and functional capacity evaluations.
- Define spinal stenosis and describe methods of management and rehabilitation.
- Define and contrast the terms spondylolysis and spondylolisthesis.
- Describe methods of management and rehabilitation for spondylolysis and spondylolisthesis.

- Identify common lumbar and thoracic spine fractures.
- Define kyphosis, lordosis and scoliosis.
- Identify and describe methods of management and rehabilitation for kyphosis and scoliosis.
- Identify and describe common cervical spine injuries and discuss methods of management and rehabilitation.
- Describe pain as it relates to movement biases of the spine.
- Choose the appropriate movement bias to determine the appropriate treatment approach.

#### 8. Discuss various aspects of arthritis.

- Identify causes of arthritis.
- Discuss different types of arthritis.
- Discuss similarities and differences for osteoarthritis and rheumatoid arthritis.
- Discuss the effects and benefits of exercise with arthritis.
- Discuss common methods of management and rehabilitation for arthritic conditions.
- Discuss principles of joint protection.
- Discuss general pharmacologic interventions for arthritic conditions.
- Discuss the different surgical options for arthritic conditions.
- Discuss pathophysiology and management of rheumatic disorders.

#### 9. Discuss various aspects of pain and pain management.

- Define the different types of pain.
- Discuss clinical implications for physical therapy regarding the different types of pain.
- Describe the components and mechanisms of pain reception and transmission.
- Describe the theories associated with pain modulation and control.
- Outline various clinical methods to measure and document pain perception.
- Explain the role of physical agents in managing a patient's pain.
- Describe the purpose and components of a multidisciplinary treatment program for pain management.

#### 10. Discuss the basics of orthotics and prosthetics.

- Define the terms orthotics and prosthetics.
- Obtain basic understanding of materials.
- Demonstrate understanding of the nomenclature-the naming of orthoses and prostheses in relation to the joint they support or replace.
- Describe the key differences when off-the-shelf orthoses can be chosen instead of custom fabricated.
- Identify orthotic options for supporting major joints in the body.
- List levels of amputation sites as well as the reasons for amputation.
- Identify the basic prosthetic componentry and how the selection of componentry relates to patient function and outcome.
- Instruct a simulated patient and/or caregiver in the care and use of and safety with orthotics and prosthetics including skin checks.

- Discuss and demonstrate application of Devices and Equipment: assistive / adaptive devices and prosthetic and orthotic devices