

# El Paso Community College

## Syllabus

### Part II

## Official Course Description

<b>SUBJECT AREA</b>	<u>Physical Therapist Assistant</u>
<b>COURSE RUBRIC AND NUMBER</b>	<u>PTHA 1413</u>
<b>COURSE TITLE</b>	<u>Functional Anatomy</u>
<b>COURSE CREDIT HOURS</b>	<u>4            2            :<!--            6</u--> Credits    Lec                            Lab</u>

### I. Catalog Description

Studies the relationship of the musculoskeletal and neuromuscular systems to normal and abnormal movement. A grade of "C" or better is required in this course to take the next course. **Prerequisites: BIOL 2401 and BIOL2402 and MATH 1314. (2:6). Lab fee. Professional Practice Insurance required.**

### II. Course Objectives

- A. Unit I. Basic Principles Kinesiology and the skeletal system
  - 1. Define terminology associated with anatomy and kinesiology.
  - 2. Differentiate between the osteokinematics and arthrokinematics in the joint and limb movements relative to the planes of motion and axes of rotation. (CAPTE 7D24g)
  - 3. Define the terms associated with force, torque and levers, and describe how these affect biomechanical movement. (CAPTE 7D24g, h)
  - 4. Describe the advantages and disadvantages of the three biomechanical levers. (CAPTE 7D24g, h)
  - 5. Describe force vectors and apply the line of pull to specific biomechanical motions. (CAPTE 7D24g, h)
  
- B. Unit II. The Structure and Function of Joints and Basic Biomechanics (CAPTE 7D24g)
  - 1. Differential between axial and appendicular skeleton.
  - 2. Define and describe the components of and classifications of bone and joint.
  - 3. Identify the three primary structural classifications of joints (fibrous, Cartilaginous, synovial)
  - 4. List the three primary classifications of cartilage (Hyaline, fibrocartilage and elastic) and describe the major functional properties of each.
  - 5. Identify the components and seven classifications of a synovial joint.
  - 6. Describe and provide examples of joints planes, axes and their degrees of freedom.
  - 7. Explain how tendons and ligaments provide additional support to joints.
  - 8. Review the effects of joint immobilization and pathology on joint motion.
  - 9. Review the osteokinematics and arthrokinematics of joint and limb movements.
  - 10. Apply the Laws of Motion and lever systems to the biomechanics to the musculoskeletal systems.
  
- C. Unit III. The structure and function of the Muscular System (CAPTE 7D24h)
  - 1. Review the basic types and function of muscle tissue.
  - 2. Review the structural and functional components of skeletal muscle, including its connective tissue layers, fasciculus, muscle fibers, myofibrils, sarcomeres, and sarcoplasmic reticulum and T tubules; and associated neurologic, circulatory and nutritional components.
  - 3. Review the microscopic structure of a sarcomere.

4. Review the sliding filament theory as it relates to muscle contraction and subsequent muscle injury.
  5. Review motor unit and explain how muscle fibers are stimulated to contract.
  6. Review the events that result in muscle contraction and relaxation in response to an action potential in a motor neuron.
  7. Review the various Length-Tension Relationships of muscle.
  8. Review the Force-Velocity relations of muscle and its relationship to various types of muscle contraction.
  9. Define muscle twitch.
  10. Explain how smooth, graded contractions of skeletal muscles are produced.
  11. Differentiate between normal muscle tone, hypotonia and hypertonia.
  12. Compare and contrast the effects of both aerobic and anaerobic exercise on the function of the skeletal muscle and on other body systems.
  13. Define oxygen debt and muscle fatigue. Describe possible causes of fatigue.
  14. Review the definition of origin vs insertion
  15. Define a prime movers, antagonists, synergists , co-contractor , neutralizer
  16. List the criteria used in naming muscle, muscle fiber arrangement, type of muscle contractions and kinetic chains.
  17. Begin to organize the location and classification of the major muscles of the axial & appendicular skeleton, and for each muscle give the origin, insertion, action, and innervation. Include synergistic and antagonistic muscles.
- D. Unit IV. The Kinematics of the Upper Quarter(UQ) (shoulder girdle, gleno-humeral, elbow and wrist joints, forearm complex, hand) (**CAPTE 7D24g, 7D24h, 7D23e,**)
1. Identify and label essential bone landmarks of bones for the shoulder complex, arm, and hand.
  2. Describe the location and primary function of specific ligaments, joints, and muscles of the shoulder and upper quarter.
  3. Demonstrate the anatomical ranges of motion, in the correct planes and axis' of motion for the UQ.
  4. List the groups of muscles associated with each dynamic joint motion of the upper quarter including the origin, insertion, action and innervation to include the synergistic and antagonistic muscles.
  5. Describe the scapulohumeral rhythm, and its significance for normal reaching.
  6. Identify the primary muscles associated with dynamic stability of each joint (shoulder, elbow, wrist fingers).
  7. List the muscles which stabilize and which contract for the following UQ movements e.g: a. Reaching with one and both arms, b. pushups, c. pull ups, d. accessory breathing, e. carrying heavy objects, f. throwing.
  8. List the structures of the carpal tunnel.
  9. Describe the mechanics of tenodesis for passive grasp.
  10. Identify the loss of motor function when given examples of peripheral nerve injury.
  11. Review the components of the brachial plexus, and their innervation to muscles of the UQ.
- E. Unit V. The Kinematics of the Spine and pelvic girdle(**CAPTE 7D24g, 7D24h**)
1. Identify and label essential bony landmarks and features of the vertebrae and cranium.
  2. List the ligaments of the vertebral column, and vertebra, including the intervertebral disc.
  3. Identify the five regions of the vertebral column and cranium and describe the normal curves of each region.
  4. Identify and discuss the significance of the normal range of motion for flexion, extension, lateral flexion and axial rotation for the craniocervical and thoracolumbar regions of the spine.
  5. Draw and label the orientation of the facets joints and intervertebral spaces of each type of vertebra; discuss the clinical significance of these differences.
  6. Discuss the clinical significance of the potential migration of the intervertebral disc.
  7. Describe the abnormal curves of the spine and their impact on movement and the cardiorespiratory systems.
  8. List the primary muscles (origin, insertions, action, innervations) of the trunk, craniocervical and pelvic girdles.
  9. List and explain the differences between the male and the female pelvis.
  10. Explain the difference between, true, false and floating ribs.
  11. Discuss the clinical significance of the kinematics of the dynamic stabilizing muscles of the Craniocervical and pelvic girdle.
  12. Discuss the potential problems of a motor vehicle accident on the structure and function of the

- craniocervical and pelvic girdles.
13. Analysis the joint and muscle interactions of the cranio-cervical, thoraco-lumbar and pelvic regions of the spine as it relates to the following motions: a. sitting up from supine and prone, rolling over, supine to side sit, static and dynamic sitting, sit to stand, rolling head between your legs, crab walking, plantargrade walking; lifting objects from the floor, lifting objects from a chair, pushing and pulling large objects.
  14. Define the purpose of “core” stabilization.
- F. Unit VI. The Kinematics of the Lower Quarter(CAPTE 7D24g, 7D24h)
1. List the bones and identify the bony landmarks of the pelvic girdle, and lower quarter.
  2. Draw and label the acetabular joint, knee joint, ankle joint, foot joint.
  3. List, label and describe the function of the supporting structures of the joints of the lower quarter.
  4. Identify the normal ranges of motion for the hip, knee, ankle and foot joints.
  5. List the groups of muscles associated with each dynamic joint motion of the lower quarter including the origin, insertion, action, and innervations. Also, include the synergistic and antagonistic muscles.
  6. Describe the plane of motion in the axis of rotation for all the motions of the lower quarter.
  7. Describe the kinematics strategies for all the two joint muscle synergies.
  8. Identify the biomechanical consequences of variations of the “Q angle”; coxa valga and varum; genu varum and valgum; pes cavus and planus; flexion and extension contractures or weakness of the lower quarter.
  9. Compare common injuries to the lower quarter with regards to their respective anatomical structures and functions.
  10. List the muscles which stabilize and which contract for the following LQ movements e.g.: a) sit to stand, b) single leg stance, c) ascending/descending a step, d) jumping vertically, e) jumping horizontally, f) assuming tippy-toe position. (CAPTE 7D23f)
- G. Unit VII The application of functional anatomy to normal and abnormal gait. (CAPTE 7D24e, 7D24h, 7D23f)
1. Define the components of the phases of gait.
  2. Describe the muscular action and the joint angles that occur during normal gait. (CAPTE 7D24g)
  3. Summarize the trunk, pelvic girdle and LQ motions during the phases of gait.
  4. Identify factors that produce abnormal components of gait. DACUM5.9
- H. Unit VIII The kinesiology of mastication and ventilation(CAPTE 7D24g, 7D24h, 7D24n)
1. Label the bones, muscles, innervations, joints and supportive structures for mastication.
  2. List the muscles of inspiration and expiration; include origin, insertion, innervations and action.
  3. Compare normal and accessory muscle breathing.
  4. Provide a rationale for Boyles Law as it applies to ventilation.
  5. Explain the biomechanics of accessory muscle breathing.

### III. THECB Learning Outcomes (WECM)

1. Locate the musculoskeletal and neurological structures of the human body.
2. Differentiate between normal and abnormal movement.

### IV. Evaluation

#### A. Grading Policy

1. The students’ final grade is determined based on a percentage assigned to specific sub-categories of work. The commonly used categories of work include: 1) Examinations (Written and/or practical), 2) quizzes, 3) written home work (lab activities, online work sheets), and 4) projects/community service/ instructor required observations.
2. The specific percentages assigned to the sub-categories of work are typically 80-90% for examinations, 10% for quizzes and 10% for home work and/projects. However, students are directed to *Part 1 of the Syllabus: Instructor’s Course Requirements* for the specific grading criteria for each sub-category and the final grade.

3. Graded work within in each sub-category is averaged and multiplied by the percentage applied to that subcategory. Thus a student who received a 90, 85 and 45 for a subcategory would have an average of 73.3. If that category was worth 20 percent of the final grade, then the student would receive a total of 14.6 points toward the final grade.
  4. The final grade, is calculated based on 100% (100 points) and will be rounded to the nearest whole number.  
Example: 86.5= 87
  5. Grading Scale:  
The grading scale used the PTA program for all of its courses is as follows:
    - 94-100 = A
    - 87-93 = B
    - 80-86 = C
    - 73-79 = D
    - 72 and below = F
  6. Final grades:  
Students who fail to complete assigned work within each of the sub-categories will receive a final grade based on the summative calculations of each sub-category.
  7. Grading of late work: All course work is due on the date identified by the instructor. Late work may be accepted and or graded based on the discretion of the instructor. A student who submits assigned work late, may receive a zero for that work. This will affect the sub-category grade percentage, and may affect the final grade as well. Students are encouraged to submit assigned work on time. See Part I of the Syllabus: Instructors requirements for more details about the grading of late work.
  8. The "I" grade is assigned when the student has arranged with the instructor to postpone completion of the requirements of the course. To be eligible for an "I" the student must be passing the course. Under the institutional grading policy, the awarding of any "I" grade requires a contractual agreement between the student and faculty member to establish the requirements for the student to satisfactorily complete the course. The student must submit the request in writing to the instructor stating extenuating circumstances with supporting documents. ( College procedure 7.04.02.18)
  9. Students who receive a grade of Incomplete in a course which is a prerequisite course for another PTHA course may not be able to register for the next PTHA course until the "I" grade is replaced by a letter grade.
- B. Progression within the program
- Students must receive a grade of "C" in all program courses and must remain in good academic standing with the college or its department to progress in the program. Students not meeting this criteria may be ineligible for readmission. Students are referred to program procedure titled *Guidelines for Progression and Readmission in the Physical Therapist Assistant*,
- C. Pre-assessment/Post-assessment/Remediation
1. Students who at midterm are identified as failing a course will be formally counseled with a remediation plan.
  2. Some courses may require pre-assessment prior to enrollment in the course. Courses typically requiring pre-assessment include all Clinical/Practicum courses except for the first clinical course. See *Part I of the Syllabus: Instructor's Course Requirements* for specific information.
  3. Some courses may require post-assessment at the conclusion of each course, and may be in the form of a comprehensive practical exam. See *Part I of the Syllabus: Instructor's Course Requirements* for specific information.
- D. Attendance

1. Students are expected to be prepared and present for each class/lab session.
2. Homework is due at the beginning of the class.
3. Students who are absent from class are responsible for all material.
4. Attendance will be taken for each lecture and lab class.
5. You are considered "late" after class is officially scheduled to begin.
6. Students are expected to contact the instructor prior to being absent by calling on our office phones and leaving a message or informing us in person prior to the expected absence.

E. Tardiness

1. The door will close at the beginning of class.
2. Students who are late will not be admitted to class until the first break.
3. Students who have informed the faculty, that they will be tardy, may be admitted into the classroom, at the instructors' earliest convenience.

F. Writing Assignments/Homework/Projects

Students will be required to complete all assignments in order to successfully complete this course.

1. Homework is expected to be completed prior to class and presented to the instructor at the beginning of class.
2. All work is to be handed in on time and in a folder labeled with your name.
3. Late work may be accepted at the discretion of the instructor.
4. Late work may not necessarily receive full credit.

G. Exams

1. If a student must miss an exam, he/she must notify the instructor prior to the exam.
2. Failure to notify the instructor in advance that a student will be absent for the exam, **for any reason**, will result in a grade of "0" for that exam.
3. Make-up exams may be given at the discretion of the instructor. The make-up exam must be taken within the time frame stipulated by the instructor. Failure to take any make-up exam will result in a grade of "0."
4. Students who fail a unit exam will be redirected back to the particular unit or units for additional reading and homework assignments.
5. Students may not bring anything into the testing area other than a #2 pencil. Books, coats, book-bags, back-packs are to be placed neatly away from the testing area.
6. Students should take care of any personal needs prior to the beginning of the examination.
7. No cell phones or other forms of communication devices are allowed in the testing area during an examination.
8. Course Instructors are required to turn in all written exams to the PTAP ProgramCoordinator.

H. Practical Exams

1. Students will demonstrate competency on technical and communication skills in the lab practical.
2. Program policies applying to exams, applies to the lab practical exam.
3. Some practical exams may be scheduled out of ordinary class time and at a hospital or clinical setting. Students will be required make necessary arrangements to be at all scheduled exams. The student will be required to attend the practical exam at the set location, date and time established by the instructor.
4. Students are expected to abide by all program policies when in situations in which they represent EPCC and the PTA program.
5. The student is judged to be competent when able to perform components of data collection and components of interventions safely, correctly, effectively, and with knowledge of indications, contraindications, precautions and expected results of the interventions.
6. Each practical exam must be passed with a minimum score of 80% in order to have successfully completed that practical.

7. Practical exams may be offered at the discretion of the instructor. Student who fail a critical safety element will not be allowed a retake.
  8. There will be no make-up exams for missed practical.
  9. Any missed practical will receive a zero.
  10. Course Instructors are required to turn in all completed practical exams to the PTAP Program Coordinator.
- I. Student readiness/Skill Check off Sheets
1. Prior to the practical exam, students may be given student readiness/skill check off sheets. These sheets are designed to assist the student in demonstrating readiness for the practical exam. These sheets can be used in a peer-to-peer situation or by the instructor.
  2. All check-off sheets must be signed by the lab instructor by the set date established.
  3. Program policies applying to exams, applies to the process of skills check off as well.
  4. The student is judged to be competent when able to perform components of data collection and components of interventions safely, correctly, effectively, and with knowledge of indications, contraindications, precautions, and expected results of the interventions
  5. Lab Instructors are required to turn in all student readiness/check off sheets to the PTAP Program Coordinator.
- J. Quizzes
1. No make-up quizzes will be given.
  2. Students missing a quiz will receive a "zero", unless prior arrangements have been made with the instructor.
- K. Presentations
1. Presentations will be done at the front of the class to an audience.
  2. Students are expected to utilize appropriate media
  3. All presentations will require a hard copy to the instructor and the remainder of the class.
  4. Students must be professionally dressed for all formal presentations.
  5. All visible tattoos must be covered.
- L. Preparation for Class/lab
1. Students are expected to be prepared for class.
  2. Being prepared means having completed the reading assignment covering the day's materials so that you are prepared to discuss the material or answer questions.
  3. Assigned homework activities are expected to be completed.
  4. Students qualify for an "unexcused absence" when they are not prepared for discussion, are considered delinquent, or incomplete in their homework.
- M. Professionalism and Community Participation
1. As students enrolled in EPCC, you are expected to abide by the policies and procedures outlined in the "Student Code of Conduct", which can be found online on the college website and in the current college catalog.
  2. As students enrolled in the PTA Program you are expected to abide to the policies and procedures of the PTA program and the behaviors outlined in the *APTA Standards of Ethical conduct for the PTA*.
  3. Infraction of college, division or program policies may result in your dismissal from the PTA Program and/or college.
  4. Students will demonstrate the behaviors, values, and attitudes of the profession of physical therapy and the standards of ethical and legal practice in accordance with state law, the American Physical Therapy Association Standards of Ethical Conduct for the Physical Therapist Assistant and Generic abilities. Generic abilities are behaviors that we expect you to develop while in the PTA Program. These abilities provide a foundation for successful interpersonal interaction, learning and clinical performance. These behaviors will be assessed at various times during your PTAP course work, and can be found in such places as "Skill Check-off Sheets," "Practical exams," and the "PTA MACS" – and the "Professional Therapist Assistant Program Evaluation Tool."
  5. Students will participate in community service, leadership and career planning in preparations for employment and

continuing competency. Documentation of attendance is required. All visible tattoos must be covered when the student is representing the program both on and off campus. Community service requirements are specified in the *Instructor's Course Requirements*. SPTA Club activities do not apply

N. Dress Code for Lab

1. Students should arrive to lab dressed in the designated shirts and shorts. In addition, women are required to wear either a halter top or sports bra. Long hair should be tied back. Nails should be trimmed very short. Avoid jewelry, only a wedding band and non-dangling earrings may be worn.
2. Students not appropriately dressed for lab will be provided with a hospital gown.

O. Journals

1. Reflective journals may be required each semester and are specified in the Instructors Part 1 specific syllabus.
2. Reflective writing should a) include your observations and reflections about how you are learning what you are learning and b) a discussion of your successes and difficulties with your learning strategies.
3. Students will be expected to keep a journal on a weekly basis throughout the course.
4. The size of paper to be used is 8"x11" and should be kept in an 80-page spiral binder.
5. Journal entries should be a minimum of once a week and should be dated.
6. One line is allowed between entries. You should use the entire line, leaving **either** the left or right margin free but not both margins.
7. Please do not use "gel" paper for your journals.
8. These journals may be in the form of weekly email, or discussion boards on Blackboard.

The content of the journal itself will not be evaluated; however, it should focus on the criteria outline above.

All entries are confidential. Journals are yours to keep at the end of the semester. The grade on the journal will be specified in the *Instructor's Course Requirements*.

P. Electronic devices

1. All electronic devices shall be in silent mode prior to entering the classroom.
2. All electronic devices shall be stored in your backpacks, purses, etc., so that they are not visible to the instructor, nor a distraction to the student and classmates.
3. Students expecting a call which is of an emergency nature (medical or school related call about a child or other family member), should inform the instructor prior to the beginning of class. The device then can be placed in vibration mode and place with the instructor.
4. The instructor will then return the phone to the student, should the phone vibrate, and the student will exit the classroom to handle the emergency.
5. All electronic devices must be turned off and stowed away, in purse or backpacks, which are then placed in an area designated by the instructor, during testing situations.
6. Faculty are encouraged to abide by these guidelines as well.

Q. Children in the Classroom

The college has a policy on children in the classroom. Children are not generally permitted in the classroom.

R. Informed Consent

Students who are enrolled in this class may be asked to play the part of the patient, care-giver of the patient, or other role as defined by the situation during laboratory classes, practical exams, or other classroom experiences.

S. Privacy and Confidentiality

Students are expected to ensure that the privacy of their classmates, faculty, and classroom guests is maintained at all times. Students who have access to medical or personal information that by law is to remain confidential shall be required to maintain that confidentiality unless the person who owns the information releases that confidentiality.

T. Honors Credit

If you are participating in the Honors Program and wish to do a project for Honors credit, please see the instructor. Honor's projects are negotiated between the instructor and the student; they are completed in addition to regular

course work assignments; you must complete the project according to the Honors Contract; and you must receive an "A" or "B" in the course.

**V. Disability Statement (Americans with/Disabilities Act [ADA])**

EPCC offers a variety of services to persons with documented sensory, mental, physical, or temporary disabling conditions to promote success in classes. If you have a disability and believe you may need services, you are encouraged to contact the Center for Students with Disabilities to discuss your needs with a counselor. All discussions and documentation are kept confidential. Offices located: VV Rm C-112 (831-2426); TM Rm 1400 (831-5808); RG Rm B-201 (831-4198); NWC Rm M-54 (831-8815); and MDP Rm A-125 (831-7024).

**VI. 6 Drop Rule**

Students who began attending Texas public institutions of higher education for the first time during the Fall 2007 semester or later are subject to a 6-Drop limit for all undergraduate classes. Developmental, ESL, Dual Credit and Early College High School classes are exempt from this rule. All students should consult with their instructor before dropping a class. Academic assistance is available. Students are encouraged to see Counseling Services if dropping because exemptions may apply. Refer to the EPCC catalog and website for additional information.

### **PTAP PROGRAM: HONESTY POLICY**

All students shall obey the law, show respect for properly constituted authority and observe correct standards of conduct. (Student Code of Conduct) Specifically, students are referred to the EPCC handbook entitled Student Code of Conduct, Section II: Student Responsibility, Subsection 5 on Academic Dishonesty **or newer versions of this document**. This handbook is available through Student Government and the Counseling Department. Additionally, students are referred to the section on “**Policies and Procedures**” in the **College Catalogue**. The College Catalogue is available from the Cashiers office.

To ensure instructor(s) quality education and equality to all students in the Health Occupations Programs, the following special conditions will apply during testing situations in addition to those outlined in the EPCC Student Code of Conduct:

1. The instructor(s) controls the option of seating arrangement, movement, leaving the room, and stopping an exam for violation of the honesty policy.
2. All books, papers, notebooks, and personal belongings will be placed at the front of the classroom or other designated area before entering a testing situation.
3. Any information found on, or in the immediate vicinity of the individual during a testing situation will be grounds for termination of the testing. A grade of zero will be recorded and averaged into the final grade.
4. Any verbal or nonverbal communication between students during a testing situation will be grounds for termination of the testing. A grade of zero will be recorded and averaged into the final grade.
5. Should a student need to communicate with the instructor, he or she should remain seated and raise his/her hand.
6. **Infractions of the EPCC Student Code of Conduct may be grounds for dismissal from the program.**

Adopted by the PTAP Faculty

3/16/90

Revisions

April 17, 1996, May 11, 1998

Approved by provost: February 16, 1999

**EL PASO COMMUNITY COLLEGE  
HEALTH OCCUPATIONS DIVISION**

**CRITERIA FOR COURSE PURSUIT**

In accordance with El Paso Community College procedures on “Course Pursuit” (See current El Paso Community College Catalogue and Student Handbook), The Health Occupations Division has set the following standards to establish guidelines for determining when a student has ceased to pursue the course objectives:

1. In order to pursue the course, the faculty expect the students to attend classes and clinical as scheduled. There are 128 hours of instruction required to complete the course.
2. The Student will be able to make-up 0 hours of theory or clinical.
3. Tardiness is defined as being late to class.
4. The student must follow the standards established in the Health Occupations Student Handbook and the PTAP Program Addendum. The student is bound by the standards in this Handbook as evidenced by the return of a signed/dated acknowledgment sheet.
5. Where the student continues to pursue the course objectives but is receiving failing grades, he/she will remain eligible to complete the course, EXCEPT in instances where unsafe practice occurs (See Unsafe Practice Procedure in Health Occupations Student Handbook and PTAP Program Addendum).
6. The student must appear for examinations, presentations, or other required class activities and submit required papers, projects, and/or reports as identified in the course syllabus and calendar.
7. Failure of the student to follow the above will indicate that the student is no longer pursuing the objectives of the course and will result in faculty-initiated withdrawal.
8. Appeals: The student has the right to appeal the withdrawal in accordance with El Paso Community College grievance and reinstatement procedures (See current El Paso Community College Catalog and Student Handbook).

Revised: January, 1998

**Receipt of Syllabus Signature page**

**I \_\_\_\_\_ acknowledge receipt of the syllabus for PTHA \_\_\_\_\_.  
Acknowledging receipt of this syllabus, implies, that I am responsible for the information  
contained within its pages. I also acknowledge, that changes may be made in this syllabus and  
that I will be notified in a timely fashion.**

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Student Signature and Date

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Instructor Signature and Date