

ODESSA COLLEGE
Physical Therapist Assistant Program
Spring 2012

COURSE SYLLABUS

Course Number:	PTHA 1431	
Course Title:	Physical Agents	
Credit Hours:	4 hours	
Contact Hours:	32 lecture, 96 lab	
Prerequisites:	PTHA 1201, 1305, 1413	
Corequisite:	PTHA 1321, 1325	
Instructors:	Lynn McKelvey	Tana Pipes
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Email:	lmckelvey@odessa.edu	tpipes@odessa.edu
Office Hours:	Lynn:	Tana:
Monday	8:30-11:30	9:00-11:00
Tuesday	3:30-4:00	9:00-11:00
Wednesday	8:30-11:30 & 1:00-4:00	9:00-11:00 & 1:00-3:00
Thursday	3:30-4:00	9:00-11:00

Course Description:

Biophysical principles, physiological effects, intervention efficacy and application of physical agents. Thermal agents, hydrotherapy, ultrasound, electromagnetic radiations, electrical current, biofeedback, traction, intermittent compression, continuous passive motion, and therapeutic massage are studied. (SCANS 1, 2, 3, 6, 8, 9, 11)

Required Textbooks:

1. Physical Agents in Rehabilitation: From Research to Practice 3rd Edition by M. Cameron, Saunders, 2009
2. Outcome-Based Massage 2nd Edition by C. Andrade & P. Clifford, Lippincott Williams & Wilkins, 2008
3. PTHA 1431 Course Packet for Spring 2012

Objectives:

After completing this course, the student should be able to:

- 1.0 Safely and effectively apply the following physical agents within the plan of care established by the physical therapist: thermal agents, hydrotherapy, massage, ultrasound, ultrasound combined with electrical stimulation, electrical current, biofeedback, traction, intermittent compression, and diathermy, infrared, ultraviolet, laser, and continuous passive motion.
- 2.0 Utilize appropriate data collection techniques to monitor response to treatment.
- 3.0 Demonstrate the ability to read and interpret professional literature relative to evidence-based practice and the application of selected physical agents or physical therapy interventions.

Competencies:

- 1.0 To demonstrate competency in safely and effectively applying the following physical agents within the plan of care established by the physical therapist: thermal agents, hydrotherapy, massage, ultrasound, ultrasound combined with electrical stimulation, electrical current, biofeedback, traction, intermittent compression, diathermy, infrared, ultraviolet, laser, and continuous passive motion, the student should be able to:
 - 1.1 *Describe mechanisms of injury, inflammation and repair.
 - 1.2 Identify theories of pain transmission and perception.
 - 1.3 *Explain methods for pain management.
 - 1.4 *Describe the rationale, physiological effects and indications of each physical agent.
 - 1.5 *Describe / discuss the role of physical agents in achieving short and long term goals within the plan of care.
 - 1.6 *List and/or explain contraindications and precautions of each physical agent.
 - 1.7 *Become familiar with equipment and supplies prior to performance of a treatment.

- 1.8 *Inspect the area to be treated.
 - 1.9 *Explain purpose and effects of each physical agent to patient prior to application.
 - 1.10*Perform and/or explain correct application of each physical agent according to the guidelines established.
 - 1.11*Monitor the patient's response to each of the physical agents applied and modify the treatment as indicated.
 - 1.12*Document application of and patient's response to physical agents.
- 2.0 To demonstrate competency in utilizing appropriate data collection techniques to monitor response to treatment, the student should be able to:
- 2.1 *Visually identify normal versus abnormal skin responses (including but not limited to color, blanching and mottling) to application of the physical agents listed above.
 - 2.2 *Assess normal versus abnormal changes in vital signs (blood pressure, pulse, respiration and temperature) in response to application of the physical agents listed above.
 - 2.3 *Assess the degree of edema before and after treatment using both circumferential measurement and volumetric water displacement.
 - 2.4 *Use palpation to assess soft tissue and skin temperature.
 - 2.5 *Identify responses to treatment that necessitate immediate action or adjustments within the plan of care and communication with the supervising physical therapist.
- 3.0 To demonstrate competency in reading and interpreting professional literature relative to evidence-based practice and the application of selected physical agents or physical therapy interventions, the student should be able to:
- 3.1 *Locate, examine and interpret professional literature related to assigned topics according to guidelines provided in class.
 - 3.2 *Complete Blackboard assignments and participate in discussion boards according to guidelines provided in class.

** Indicates integrated, core curriculum skills (math, reading, communication, technological literacy and/or critical thinking)*

Methods of Presentation:

Lectures, demonstrations, laboratory practice, reading assignments, and Blackboard projects and/or assignments.

Course Requirements:

In order to receive credit for this course, all students must:

- 1. Complete all unit exams.
- 2. Complete laboratory check-offs.
- 3. Complete all assigned Blackboard assignments/projects and class presentations.
- 4. Complete the final lab practical.
- 5. Complete the final exam.

Grade Compilation:	Blackboard Assignments	10%
	Lab Check-offs/Practicals	10%
	Quizzes	5%
	Unit Tests	50%
	Final Exam	25%

Grading Scale:	90-100 = A
	80-89 = B
	70-79 = C
	60-69 = D
	Below 60 = F

Note: Students must make a minimum grade of C in each PTA course in order to remain in the program.

Procedure for Requesting Special Accommodations

Odessa College complies with Section 504 of the Vocational Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. If the student has any special needs or issues pertaining to access to and participation in

any class at Odessa College, please contact Becky Rivera-Weiss in the Office of Disability Services at 432-335-6861 to request assistance and accommodations.

Physical therapist assistant students with a disability who request reasonable accommodations should meet with the Program Director no later than the first week of classes. Reasonable accommodations will be provided as authorized by the Office of Disability Services as long as the ability to meet course requirements is not compromised. Physical Therapist Assistant faculty provide no accommodations without authorization. It is the student's responsibility to be a self-advocate when requesting accommodations. The student will need to meet with each course instructor at the beginning of class to discuss the particular accommodation needed. Documentation of special needs will be maintained in the student's file.

Professional Behavior:

Professional behavior is absolutely essential both while the individual is a student in this program as well as after graduation. The Professional Behaviors Assessment form provides a standard for behavior and a mechanism for self-assessment by the student as well as assessment by faculty during the academic component of the program. If a faculty member observes consistent failure to demonstrate acceptable professional behavior by a student, the faculty member will utilize the assessment form as a tool for counseling the student. **Failure to respond appropriately to counseling regarding professional behaviors will result in dismissal from the program.**

Attendance:

Regular attendance at lecture and lab is essential and has a direct effect on the final grade that a student earns in class. Non-attendance on the part of a student may result in grade penalty or may lead to dismissal from the program.

A student should attend all lecture and laboratory sessions. Habitual or patterned absenteeism in lecture or lab will not be tolerated. As soon as such a problem is identified, the student will be required to meet with the faculty to determine a course of action and, if the problem is not corrected, the student will be subject to dismissal from the program. Absences in laboratory sessions are particularly problematic because of the lost opportunity to practice skills; therefore, students will be penalized for missing more than one lab session per semester. Should a student miss more than one lab session, one point for each missed session will be deducted from the final course grade.

All absences must be reported to the appropriate faculty member prior to the start of class. If the faculty member cannot be reached directly, a voice mail message may be left. Failure to notify the faculty prior to an absence will affect the student's Professional Behaviors Assessment.

Acceptance of Late Assignments:

Projects or outside assignments are due at the beginning of class on the assigned due date. Late papers will receive a 5% per day grade penalty. This penalty will continue to be assessed each day the assignment is not turned in.

Missing an Exam:

Exams are defined as formally scheduled examinations covering a major portion of the course content and cumulatively comprising a relatively large percentage of the overall grade for a course. Every effort should be made by the student to be present for all exams. If it is necessary for a student to miss an exam, the instructor must be notified prior to the scheduled exam time and arrangements must be made for make-up. It is the instructor's option to give the same exam as the one missed or a different exam over the same content. If the exam is not made up within one class day, a 5% per day penalty will be assessed each day the exam is not taken.

Quizzes:

Announced quizzes over indications, contraindications, and precautions for selected physical agents will be given at the beginning of class. Dates can be found on the course schedule. The lowest quiz grade will be dropped and the remaining quiz grades will be averaged for a total of 10% of the final grade. **Missed quizzes cannot be made up. If one quiz is missed, it will be the grade that is dropped before averaging.** If more than one is missed, zeroes will be recorded and averaged with the other quiz grades.

OC Blackboard Assignments:

Students will be required to log on to Blackboard weekly, and complete discussion questions, group projects, and documentation assignments in designated modules. Detailed instructions will be provided in class. Expect 24 hour turn around for answers to questions regarding Bb assignments via email. (HINT: Don't wait until the last minute to

complete the assignment.) Blackboard assignments and projects will be averaged for a total of 10% of the final grade.

Netiquette:

Remember we're all human.

It's easy to forget that there is a person behind the other computer, but try to remember. We can't see facial expressions or body language, so words can easily be misinterpreted. Be the same person online you are offline – which has two meanings: first, behave with the same ethics and standards of behavior online that you do offline; and second, feel free to let your personality show in your work and communication. Bottom line – be respectful, professional, and careful about what you say and how you say it.

Emotions:

Research with online groups indicates that emotions are strongly felt in cyberspace. People take a long time to mull over messages they feel are rude, inflammatory, or even questionable. People may interpret messages as hurtful and react to them in a defensive manner.

Be careful how you express your emotions and humor within in your emails or postings; avoid sarcasm completely. Due to the lack of verbal and nonverbal clues to our speech, our comments or jokes may be considered as unnecessary criticism and lead to serious misunderstandings. What means one thing to you may mean something completely different in a different culture; be sensitive to all people.

Avoid "all caps." Internet or email messages written in all caps are generally seen as SHOUTING, and that's considered just plain rude. Judicious capitalization to highlight an important point or to distinguish a title or heading is acceptable.

If you feel particularly strongly about a point, it may be best to write it first as a draft and then to review it before posting, in order to remove any strong language.

Avoid angry outbursts. Do not post, send, or reply when you are angry. Wait until you have calmed down and then compose the message.

Manners:

When joining a group or discussion, politely listen to others. Check for any "Frequently Asked Questions" (FAQs) that pertain to communications and read these before contributing.

Follow all guidelines given.

Read first, write later. Don't add comments to a discussion until you have read the comments of other students, unless the assignment specifically asks you to.

Comments related to the content of previous messages should be posted under them to keep related topics organized and you should specify the person and the particular point you are following up on.

Keep your comments relevant to the topic of discussion. If you introduce a new topic, change the subject line appropriately.

Keep communication short and to the point. If you have several points you want to make, consider posting them individually in several focused messages rather than a single, lengthy, all-encompassing message.

Do not use acronyms unless they are common to the class.

Do not send commercial advertisements or SPAM to your classmates or instructors. Not only is it rude, it can result in adverse reactions.

Treat your faculty and fellow students with respect.

Never use profanity or slang. This isn't Facebook or Twitter or text-messaging.

Be forgiving. When someone makes a mistake – whether it's a spelling error, a so-called stupid question, or an unnecessarily long answer – be kind about it. If you decide to inform someone of a mistake, point it out politely and preferably by private email rather than in public.

Validate other members' ideas and efforts. Research indicates that groups that validate more have better outcome products. Use critical thinking skills while validating. Messages that contain "Way to go," "Right on," or simple

“Wow!” require time to download and do not contribute to the group process. Comments mentioning why something is appreciated are more valuable.

If someone states something that you find offensive, mention this directly to the instructor in an email, not on the discussion board. Remember that the person contributing to the discussion may be new to this form of communication. What you find offensive may quite possibly have been unintended and can best be cleared up by the instructor.

Flaming:

Flaming is what people do when they express a strongly held opinion without holding back their emotions. It's the kind of message that usually gets a strong reaction from readers. Although flames might appear to be fun to write and to read, Netiquette forbids the perpetuation of flame wars – a series of angry messages, most of them from two or three people directed toward each other that can dominate the tone and destroy the camaraderie of a discussion group. It's unfair to the other members of the group.

Writing and Posting:

Use college level writing skills in all messages and postings. Use correct grammar, punctuation and spelling.

Messages are best constructed in a word processor, spell checked, and then pasted into the discussion board. It allows for more creativity and less online time. It will also minimize the chance that your message will be “lost.”

Lay out your message for readability. Use spaces and breaks between paragraphs and long sentences to make your message easier to read.

Break messages down into short paragraphs for easier electronic reading.

Your message may be perfectly clear to you but confusing to your classmates. A good way to test for clarity is to read your message aloud to see if it flows smoothly and makes sense. Reading it aloud to another person is even better.

Use a meaningful and concise subject line so your readers will have a clear idea of your topic and ideas.

Acronyms and emoticons are popular but excessive use of them can make your message difficult to read. Some common and usually acceptable ones include:

FYI = for your information	:-) or :) = smiley face, happiness, pleasure
B/C = because	:-) or :(= frowning face, displeasure
W/ = with	;-) or ;) = wink
BTW = by the way	:0 or :O = shock, surprise
LOL = laughing out loud	:-/ or :/ = skepticism, unease, apologetic
IMO = in my opinion	:-D or :D = big grin, laughing
IMHO = in my humble opinion	:-p or :p = cheeky, playful

Online Resources:

Both textbooks for this course have free online student resources. [Physical Agents in Rehabilitation: From Research to Practice](#) online resources can be accessed at www.evolve.elsevier.com. [Outcome-Based Massage](#) online resources can be accessed at <http://thepoint.lww.com/andrade2e>. Students are encouraged to utilize these resources to enhance learning.

Course Outline:

- I. INTRODUCTION TO PHYSICAL AGENTS
 - A. Introduction
 - B. Effects
 - C. Inflammation
 - D. Chronic Inflammation
 - E. Skin
 - F. Pain
 - G. Tone Abnormalities
 - H. Motion Restrictions
 - I. Red Flags
 - J. General Contraindications

- II. THERMAL AGENTS
 - A. Principles
 - B. Effects and Purposes
 - C. General Indications, Contraindications, and Precautions
 - D. Specific Procedures with Indications, Contraindications, and Precautions
 - 1. Moist Heat
 - 2. Infrared
 - 3. Paraffin
 - 4. Cryotherapy
 - 5. Contrast Bath/Pack
 - 6. Vapocoolant Spray
- III. MASSAGE
 - A. Principles
 - B. Effects and Purposes
 - C. General Indications, Contraindications and Specific Precautions
 - D. Specific Procedures
 - 1. Back
 - 2. Extremities
 - 3. Face
- IV. HYDROTHERAPY
 - A. Principles
 - B. Effects and Purposes
 - C. General Indications, Contraindications, and Precautions
 - D. Specific Procedures with Indications, Contraindications, and Precautions
 - 1. Full Body
 - 2. Extremity
 - E. Texas Hazard Communication Act
 - 1. Chemical List
 - 2. MSDS's
 - 3. Training Program
- V. ULTRASOUND
 - A. Principles
 - B. Effects and Purposes
 - C. Indications, Contraindications, and Precautions
 - D. Procedures
 - 1. Continuous
 - 2. Pulsed
 - 3. Underwater
 - 4. Phonophoresis
- VI. INTRODUCTION TO THERAPEUTIC ELECTRIC CURRENT
 - A. Principles
 - B. Direct Current
 - 1. Effects and Purposes
 - 2. Indications, Contraindications and Precautions
 - C. Alternating Current
 - 1. Effects and Purpose
 - 2. Indications, Contraindications and Precautions
- VII. ULTRASOUND/ELECTRICAL STIMULATION COMBINATION
 - A. Principles
 - B. Effects and Purposes
 - C. Indications, Contraindications, and Precautions
 - D. Procedure
- VIII. ELECTRICAL STIMULATION
 - A. Principles

- 1. DC
 - 2. AC
 - B. Types and Effects
 - 1. Muscle Stimulation
 - 2. Edema Reduction
 - 3. Wound Healing
 - 4. Pain Control
 - C. Clinical Applications
 - 1. Iontophoresis
 - 2. Denervated Muscle
 - 3. HVPG
 - 4. Muscle Stimulation
 - 5. Edema Reduction
 - 6. Wound Healing
 - 7. Pain Control
 - D. Indications, Contraindications, and Precautions
- IX. BIOFEEDBACK
- A. Principles
 - B. Effects and Purposes
 - C. Indications, Contraindication, and Precautions
 - D. Procedures
 - 1. EMG
 - 2. Thermal
 - 3. GSR
- X. ELECTRODIAGNOSTIC PROCEDURES
- A. Introduction
 - B. Types of Tests
 - 1. Reaction of Degeneration
 - 2. Strength Duration Curve
 - 3. Galvanic-Tetanus Ratio
 - 4. Nerve Conduction Velocity
 - 5. Electromyography
- XI. TRACTION
- A. Intermittent
 - 1. Principles
 - 2. Effects and Purposes
 - 3. Indications, Contraindications, and Precautions
 - 4. Procedures
 - B. Static
 - 1. Principles
 - 2. Effects and Purposes
 - 3. Indications, Contraindications, and Precautions
 - 4. Procedures
- XII. DIATHERMY
- A. Principles
 - B. Effects and Purposes
 - C. Indications, Contraindication, and Precautions
 - D. Procedures
 - 1. Shortwave
 - 2. Microwave
- XIII. INTERMITTENT COMPRESSION
- A. Principles
 - B. Effects and Purposes
 - C. Indications, Contraindications, and Precautions

D. Procedures

XIV. ULTRAVIOLET

A. Principles

B. Effects and Purposes

C. Indications, Contraindications, and Precautions

D. Procedures

XV. LASER

A. Principles

B. Effects and Purposes

C. Indications, Contraindications, and Precautions

D. Procedures

XVI. CONTINUOUS PASSIVE MOTION

A. Principles

B. Effects and Purposes

C. Indications, Contraindications, and Precautions

D. Procedures

Course Schedule

Assignments/Comments	MONDAY 12:30 – 3:30	TUESDAY 12:30 – 3:00	THURSDAY 12:30 – 3:00
<p style="text-align: right;">Week 1</p> <p>READ: <u>Physical Agents in Rehabilitation (PAR)</u> Chs 1, 2, 3, 4, 5</p>	<p style="text-align: right;">1/16</p> <p style="text-align: center;">HOLIDAY!!</p>	<p style="text-align: right;">1/17</p> <p style="text-align: center;">LECTURE Introduction</p>	<p style="text-align: right;">1/19</p> <p style="text-align: center;">LECTURE Introduction</p>
<p style="text-align: right;">Week 2</p> <p>READ: <u>PAR</u> Ch 6</p>	<p style="text-align: right;">1/23</p> <p style="text-align: center;">LECTURE Introduction Thermal Agents</p>	<p style="text-align: right;">1/24</p> <p style="text-align: center;">LECTURE Cryotherapy Superficial Heat</p>	<p style="text-align: right;">1/26</p> <p style="text-align: center;">LAB Thermal Agents QUIZ: Cryo</p>
<p style="text-align: right;">Week 3</p> <p>READ: <u>Outcome-Based Massage</u> Ch 1 pp 1-19; Ch 3 pp 59-72; Ch 4; Ch 5 pp 103-126; Chs 6, 7, 8, 9, 10, 11, 12, 13; Ch 14 pp 422-440</p>	<p style="text-align: right;">1/30</p> <p style="text-align: center;">LECTURE Massage QUIZ: Sup Heat</p>	<p style="text-align: right;">1/31</p> <p style="text-align: center;">LECTURE Massage</p>	<p style="text-align: right;">2/2</p> <p style="text-align: center;">LAB Massage</p>
<p style="text-align: right;">Week 4</p>	<p style="text-align: right;">2/6</p> <p style="text-align: center;"><u>TEST 1</u> Intro, Cryo, Sup Heat</p>	<p style="text-align: right;">2/7</p> <p style="text-align: center;">LAB Massage</p>	<p style="text-align: right;">2/9</p> <p style="text-align: center;">LAB Massage QUIZ: Massage</p>

Assignments/Comments	MONDAY 12:30 – 3:30	TUESDAY 12:30 – 3:00	THURSDAY 12:30 – 3:00
Week 5 READ: <u>PAR</u> Ch 7	2/13 LECTURE Ultrasound	2/14 LECTURE Ultrasound Diathermy	2/16 LAB Ultrasound Diathermy QUIZ: US
Week 6 READ: <u>PAR</u> Ch 14	2/20 LAB Ultrasound Diathermy QUIZ: Dia	2/21 LAB Ultrasound Diathermy	2/23 TEST 2 Massage, Ultrasound, Diathermy
Week 7 READ: <u>PAR</u> Ch 8 NOTE: ALL PERTINENT CHECK-OFF'S MUST BE COMPLETED BEFORE LAB PRACTICAL	2/27 <u>LAB PRACTICAL</u> All physical agents studied up to this point	2/28 LECTURE Electrical Stimulation	3/1 LECTURE/LAB Electrical Stimulation
Week 8	3/5 LECTURE Electrical Stimulation QUIZ: E Stim	3/6 LECTURE Biofeedback Electrodiagnosis	3/8 LAB Electrical Stimulation

Assignments/Comments	MONDAY 12:30 – 3:30	TUESDAY 12:30 – 3:00	THURSDAY 12:30 – 3:00
Week 9	3/19 LAB Electrical Stimulation	3/20 LAB Electrical Stimulation	3/22 TEST 3 Electrical Stim, Biofeedback, Electrodiagnosis
Week 10 READ: PAR Ch 11; Ch 13	3/26 LAB Electrical Stimulation REVIEW LAB	3/27 LECTURE Intermittent Pneumatic Compression Ultraviolet	3/29 LAB IPC, UV QUIZ: IPC
Week 11 READ: PAR Ch 10 NOTE: ALL PERTINENT CHECK-OFF'S MUST BE COMPLETED BEFORE LAB PRACTICAL	4/2 LAB PRACTICAL All physical agents since first practical	4/3 LECTURE/LAB Traction	4/5 LECTURE/LAB Traction
Week 12 READ: PAR Ch 9; Ch 12	4/9 LAB Traction QUIZ: Traction	4/10 LECTURE Hydrotherapy	4/12 LECTURE Laser Continuous Passive Motion QUIZ: Hydro

Assignments/Comments	MONDAY 12:30 – 3:30	TUESDAY 12:30 – 3:00	THURSDAY 12:30 – 3:00
Week 13	4/16 LAB Laser, CPM, Hydrotherapy QUIZ: Laser	4/17 LAB Laser, CPM, Hydrotherapy	4/19 TEST 4 IPC, UV, Laser, CPM, Hydro, Traction
Week 14 NOTE: ALL PERTINENT CHECK-OFF'S MUST BE COMPLETED BEFORE LAB PRACTICAL	4/23 <u>LAB PRACTICAL</u> All physical agents since second practical	4/24 LECTURE Clinic Readiness	4/26 LECTURE Clinic Readiness
Week 15	4/30 <u>FINAL LAB PRACTICALS</u>	5/1 <u>FINAL LAB PRACTICALS</u>	5/3 Review for Final
Week 16 FINAL EXAM WEEK Date and time of final exam to be arranged	5/7	5/8	5/10 12:30 - 1:30 (after the last Final Exam) PTA MACS distribution and final Clinical preparation