INSTRUCTOR:

Timothy Davis, MS ATC/PTA
tdavis@siu.edu
Office:
ASA 118A
(618) 453-8820

OFFICE HOURS:

Monday 9:00 am - 10:00 a.m.
Tuesday 2:00 p.m. - 4:00 p.m.
Wednesday 9:00am-10:00am, 1:00p.m. – 2:00 p.m.
Thursday 12:30 p.m. – 1:30 p.m.

CLASS SCHEDULE: Monday and Wednesday
10:00-10:50am

PREREQUISITE: Program major or consent of instructor

PREREQUISITE TO: PTH 234 and PTH 321

COURSE DESCRIPTION:

Students will be able to describe the theories and physiological effects of massage and thermal physical agents such as superficial and deep heat, cryotherapy, hydrotherapy and laser therapy.

COURSE OBJECTIVES:

Upon successful completion of this course, the student will be able to discuss, explain, and identify selected components of interventions identified in the plan of care established by the physical therapist. These include:

1. Describing the principles of physics appropriate to this course.
2. Describing the basic physiological responses to massage, heat, cold, radiant energy, and laser and how they may be evidenced in a patient’s reaction to treatment.
3. Discussing the importance of and testing for sensation and circulation prior to applying heat or cold.
4. Determining the need, when given a patient scenario, for physical agent treatment modifications by:
   a. Identifying changes in a patient’s physical status, mental status and tolerance to treatment.
   b. Identifying any deviation from anticipated rate of progress.
   c. Identifying all objective and subjective indications of patient intolerance to treatment.
   d. Identifying and listing all physiological, biomechanical and psychological secondary effects of treatment.

5. Determining the appropriate modifications of ongoing physical agent intervention by:
   a. Determining whether appropriate modifications are within the limits specified in the treatment plan.
   b. Verbally and/or orally communicating with the physical therapist the proposed medication and reason behind modification. Preparing the patient for intervention in supine, prone, and side-lying positions providing proper draping, support, comfort, and good alignment.

6. Measuring a classmate’s response to heat or cold treatment by pre and post treatment observation and measurement of: respiratory rate, pulse rate, blood pressure, color of body part, palpated temperature of body part, local and/or general perspiration, skin turgor, and capillary refill.

7. Providing adequate explanations to patients (student lab partner) prior to, during, and following treatment physical agent.

8. Correctly naming describing, and preparing modality equipment which in this course includes conductive heat, hydrotherapy, fluidotherapy, ultrasound, infrared, ultraviolet, diathermy and cryotherapy by:
   a. Identifying and correctly describing the modalities’ characteristics, indications, contraindications, precautions, safety considerations and safety requirements.
   b. Describing accurately the requirements, idiosyncrasies and contraindications of the different body areas and medical conditions.

9. Correctly and safely applying the intervention by:
   a. Correctly identifying and manipulating all controls and switches.
   b. Correctly performing all operations in correct sequence.
   c. Establishing, monitoring, and varying dosage according to patient tolerance and appropriate to the modality, the patient’s condition, and treatment goals.
   d. Describing and applying the safety and comfort rules.
   e. Describe, apply, and manipulate the time, distance, and intensity rules.
   f. Recognizing and responding to objective and/or subjective patient responses to therapeutic heat and cold 100% of the time.

10. Determining the need for physical agent treatment modification by:
    a. Recognizing changes in patient’s physical status, mental status, and tolerance to treatment.
    b. Recognizing any deviating from anticipated rate of progress.
    c. Recognizing all objective and subjective indications of patient intolerance to treatment.

11. Determining the appropriate modifications of ongoing physical agent intervention by:
   a. Determining whether appropriate modifications are within the limits specified in the treatment plan.
   b. Verbally and/or orally communicating with the physical therapist the proposed modifications and reason behind modifications.
   c. Correctly implementing modification of treatment plan.

12. Apply knowledge and basic skill in sterile techniques for wound care by:
   a. Describing the purpose and methods of providing "isolation" for specific patients in a health care setting.
   b. Identifying personal and patient related hazards that may result from poor technique.
   c. Performing sterile gowning and gloving techniques.
   d. Defining universal precautions and identifying sources of infection control.

13. Demonstrate knowledge of and the ability to obtain and measure vital signs by:
   a. Describing the basic physiology, characteristics and normal values of pulse, blood pressure, and respiration.
   b. Describing the factors which influence vital signs and their implications.
   c. Demonstrate basic competency in monitoring vital signs.

**TOPICAL OUTLINE:**

I. Review
   A. Patient positioning
   B. Vital Signs

II. Introduction to heat
   A. What is a physical agent?
   B. Uses of heat
   C. Kinetic theory of thermal energy
   D. Sources of heat
   E. Methods of heat transfer
   F. Principles of heat
II. Physiology of Heat
   A. Homeostasis
   B. Normal temperature regulation
   C. Physiological effects of heat
   D. Therapeutic effects of heat

IV. Conductive heat
   A. Hot packs
   B. Paraffin
   C. Application, indications, contraindications, and precautions

V. Hydrotherapy
   A. Physical properties of water
   B. Therapeutic effects of hydrotherapy
   C. High-boy, low-boy, Hubbard tank, aquatic pool and contrast baths
   D. Application, indications, contraindications, and precautions

VI. Massage

VI. Fluidotherapy
   A. Physical properties
   B. Application, indications, contraindications, and precautions

VII. Ultrasound
   A. Direct
   B. Indirect
   C. Applications, indications, contraindications, and precautions

IX. Overview of Radiant Energy
   A. Theories
   B. Laws

X. Infrared
   A. Physical properties
   B. Longwave or far
   C. Shortwave or near
   D. Physiological effects
   E. Application, indications, contraindications, and precautions
XI. Ultraviolet

A. Physical properties
B. Near UV
C. Far UV
D. Physiological effects
E. Types of UV lamps
F. Application, indications, contraindications, and precautions

XII. Cryotherapy

A. Physiological reaction to cold
B. Therapeutic effects of cold
C. Ice massage, ice packs, cold packs, contrast baths, and sprays
D. Applications, indications, contraindications, and precautions

TEXTBOOK:

Required:
Cameron, M. (2003). Physical Agents in Rehabilitation from Research to Practice. (2nd ed.). Philadelphia: W.B. Saunders Company. You will also be using this textbook for PTH 213, Physical Agents II.

STUDENT EVALUATION:

A percentage scale will be used for all written assignments, tests, and course grades:

A = 90-100%
B = 80-90%
C = 70-80%
D = 60-70%
F = Below 60%

All check-offs must be satisfactorily completed prior to scheduling the final practical. The final practical will be graded pass/fail. A student must achieve 90% of the total points awarded to receive a passing grade for the practical. One retake of the practical exam is permitted. The score on the retake is automatically lowered to 80% maximally.

Tests (6) = 50 points each
Quiz (3-5) = 10 points each
Final Exam = 60 points
Attendance = 1 point each day
<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sterile technique Vital Signs</td>
<td>Sterile technique Vital Signs</td>
</tr>
<tr>
<td>2</td>
<td>Heat Conductive</td>
<td>Patient Positioning Hot Packs</td>
</tr>
<tr>
<td>3</td>
<td><strong>Test 1</strong></td>
<td>Hot Packs Paraffin</td>
</tr>
<tr>
<td>4</td>
<td>Hydrotherapy Fluidotherapy</td>
<td>Whirlpool Fluidotherapy</td>
</tr>
<tr>
<td>5</td>
<td>Massage <strong>Test 2</strong></td>
<td>Practical Exam</td>
</tr>
<tr>
<td>6</td>
<td>Massage</td>
<td>Massage</td>
</tr>
<tr>
<td>7</td>
<td><strong>Test 3</strong> Ultrasound</td>
<td>Massage Day</td>
</tr>
<tr>
<td>8</td>
<td>Ultrasound</td>
<td>Ultrasound Diathermy</td>
</tr>
<tr>
<td>9</td>
<td>Diathermy <strong>Test 4</strong></td>
<td>Ultrasound Diathermy</td>
</tr>
<tr>
<td>10</td>
<td>Cryotherapy Cryotherapy</td>
<td>Cryotherapy</td>
</tr>
<tr>
<td>11</td>
<td>Review <strong>Test 5</strong></td>
<td>TBA</td>
</tr>
<tr>
<td>12</td>
<td>Ultraviolet/infrared LASER</td>
<td>LASER</td>
</tr>
<tr>
<td>13</td>
<td>Review <strong>Test 6</strong></td>
<td>Practical Exam</td>
</tr>
<tr>
<td>14</td>
<td>Patient scenarios</td>
<td>Practical Makeup</td>
</tr>
<tr>
<td>15</td>
<td>TBA</td>
<td>Final Practical Practice</td>
</tr>
<tr>
<td>16</td>
<td>Review for Final</td>
<td>Practical Final</td>
</tr>
</tbody>
</table>

**Final on Wednesday, December 16th from 10:15 a.m. – 12:15 a.m.**