BROWARD COMMUNITY COLLEGE
COURSE OUTLINE

LAST REVIEW: 2006-2007 *(i.e. 2003-2004)* **NEXT REVIEW:** 2011-2012 *(i.e. 2008-2009)* **STATUS:** A *(A, I, D)*

COURSE TITLE: Physical Principles for the Physical Therapist Assistant

COMMON COURSE NUMBER: PHT 1010

CREDIT HOURS: 1

CLOCK HOURS: *(Voc. Course ONLY)*

CONTACT HOUR BREAKDOWN *(per 16 week term)*

Lecture: 16 Lab:

Clinic: Other:

PREREQISITE(S):

COREQUISITE(S):

PRE/COREQUISITE(S): PHT 1200 and PHT 1103

COURSE DESCRIPTION *(750 characters, maximum)*:

Course introduces the student to the basic physical principles that apply to commonly utilized therapeutic procedures in the field of physical therapy. Topics include but are not limited to body mechanics, ergonomics, the use of heat, cold, sound and electricity to facilitate healing

UNIT TITLES

1.0 Principles of Stability
2.0 Principles of Motion
3.0 Levers
4.0 Ergonomics
5.0 Therapeutic Application of Heat
6.0 Therapeutic Application of Cold
7.0 Electromagnetic Spectrum
8.0 Fluids

ASSESSMENT:

Please provide a brief description (250 characters maximum) that details how students will be assessed on the course outcomes.

1. **Announced and unannounced quizzes and Unit examinations:**
2. **Mid term and/or Final Exam (cumulative/comprehensive);**
3. **Assessment of reading and online assignments via submission of homework projects;**
4. **Participation in Discussion Forums on the WebCT site**

****** Complete the following only if course is seeking general education status ******

GENERAL EDUCATION Competencies and Skills *:

Please highlight in green font all Competencies/Skills from the list below that apply to this course. In the box to the right of the Competency/Skill, enter all specific learning outcome numbers (i.e. 1.1, 2.7, 5.12) that apply.

1. Read with critical comprehension	
2. Speak and listen effectively	
3. Speak and listen effectively	
4. Think creatively, logically, critically, and reflectively (analyze, synthesize, apply, and evaluate)	
5. **Demonstrate and apply literacy in its various forms:** *(highlight in green ALL that apply)* (1. technological, 2. informational, 3. mathematical, 4. scientific, 5. cultural, 6. historical, 7. aesthetic and/or 8. environmental)	
6. Apply problem solving techniques to real-world experiences	
7. Apply methods of scientific inquiry	
8. Demonstrate an understanding of the physical and biological environment and how it is impacted by human beings	
9. Demonstrate an understanding of and appreciation for human diversities and commonalities	
10. Collaborate with others to achieve common goals.	
11. Research, synthesize and produce original work	
12. Practice ethical behavior	
13. Demonstrate self-direction and self motivation	
14. Assume responsibility for and understand the impact of personal behaviors on self and society	
15. Contribute to the welfare of the community	

* *General Education Competencies and Skills endorsed by '05-'06 General Education Task Force*

Common Course Number: PHT 1010

UNITS

Unit 1 Principles of Stability

General Outcome:

1.0 The student will be able to describe and discuss how the principles of stability relate to the delivery of physical therapy.

Specific Instructional Objectives:

Upon successful completion of this unit, the student will be able to:

1.1 Define basic terms related to stability:
- gravity
- center of gravity
- line of gravity
- static/dynamic balance
- base of support

1.2 Discuss how the definitions in 1.1 interrelate when performing physical therapy procedures.

1.3 Discuss how the principles of stability are regarded when performing patient transfers and gait training techniques.

Common Course Number: PHT 1010

Unit 2 Principles of Motion

General Outcome:

2.0 The student will be able to explain the principles of motion and how they correlate to human movement and patient care interventions.

Specific Instructional Objectives:

Upon successful completion of this unit, the student will be able to:

2.1 List the causes of motion and the kinds of motion.
2.2 Review rotary, linear, and curvilinear motion.
2.3 Discuss determining factors for motion.
2.4 Define Newton's Laws of Motion.
2.5 Apply concepts such as momentum and friction to patient care interventions as used in physical therapy.
2.6 Correlate principle of motion to human movement.
2.7 List the characteristics of a force.

Common Course Number: PHT 1010

Unit 3 Levers

General Outcome:

3.0 The student will be able to understand principles of levers and how they relate to human movement.

Specific Instructional Objectives:

Upon successful completion of this unit, the student will be able to:

3.1 Define lever, force arm, resistance arm and torque.
3.2 Classify levers as first, second or third class and differentiate between the classes.
3.3 Define mechanical advantage and describe how it can be utilized to increase resistance to an exercise or activity.

Common Course Number: PHT 1010

Unit 4 Ergonomics

General Outcome:

4.0 The student will be able to understand the relationship between ergonomics and body mechanics/posture.

Specific Instructional Objectives:

Upon successful completion of this unit, the student will be able to:

4.1 Recognize the elements of good posture.
4.2 List the purposes of maintaining good posture.
4.3 Evaluate proper chair sitting postures at a work station.
4.4 Explain how to assess and modify a workstation from the perspective of:

- Chair fitting
- Telephones
- Computer terminals
- Driving

4.5 Relate the concepts of proper body mechanics and posture to ergonomic modifications.
4.6 Recognize the relationship between Repetitive Movement Injuries and ergonomics.

Common Course Number: PHT 1010

Unit 5 Therapeutic Application of Heat

General Outcome:

5.0 The student will be able to describe how the concepts of heat are applied to the delivery of physical therapy.

Specific Instructional Objectives:

Upon successful completion of this unit, the student will be able to:

5.1 List the various methods of heat transfer.
5.2 State the examples of heat transfer that are commonly encountered in delivery of physical therapy.
5.3 List sources of heat.
5.4 Summarize the biophysical aspects of heat loss.
5.5 Define the first law of thermodynamics.
5.6 Define temperature.
5.7 Utilize the conversion formulas for Fahrenheit and Celsius scales.
5.8 Define thermal conductivity.
5.9 Relate how the concept of thermal conductivity is applied therapeutically.
5.10 Relate when to utilize heating modalities versus those that result in heat loss.
5.11 Understand how the body maintains thermal homeostasis.

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Unit 6 Therapeutic Application of Cold

General Outcome:

6.0 The student will be able to describe how describe how the concepts of cold are applicable to therapeutic interventions used in PT

Specific Instructional Objectives:
Upon successful completion of this unit, the student will be able to:

6.1 List the various methods of cold delivery.
6.2 State the examples of cold transfer that are commonly encountered in delivery of physical therapy.
6.3 List sources of cold.
6.4 Summarize the biophysical aspects of heat loss.

Common Course Number: PHT 1010

Unit 7 Electromagnetic Spectrum

General Outcome:

7.0 The student will be able to interpret the electromagnetic spectrum and relate its significance to the delivery of physical therapy.

Specific Instructional Objectives:

Upon successful completion of this unit, the student will be able to:

7.1 Provide graphic representation of the range of wavelengths of energy.
7.2 Relate the electromagnetic spectrum to the various modalities that function on specific wavelengths.
7.3 Define the laws governing electromagnetic radiation:
- Grotthus Draper Law
- Cosine Law
- Inverse Square Law
- Law of refraction
- Law of reflection
- Law of absorption

7.4 Describe various modalities to which the laws governing electromagnetic radiations apply.
7.5 Describe the primary characteristics of a laser and how it is utilized therapeutically.

Common Course Number: PHT 1010

Unit 8 Fluids

General Outcome:

8.0 The student will be able to detail the considerations regarding fluid principles as they relate to the delivery of physical therapy.

Specific Instructional Objectives:

Upon successful completion of this unit, the student will be able to:

8.1 Define density, hydrostatic pressure and specific gravity.
8.2 Discuss the clinical application of buoyancy and Archimede's principles.
8.3 Describe how properties such as surface tension, cohesion, adhesion and turbulence of water are related to the performance of exercise while receiving a hydrotherapy intervention.
8.4 Discuss how hydrotherapy is effective in treating conditions commonly seen in PT.