

# **Master of Physical Therapy Program: Year 2**

## ***NEURO COURSE OBJECTIVES***

### **Course: PT 7121: Clinical Skills for Physical Therapy in Neurological Conditions**

#### **COURSE DESCRIPTION:**

A theory and practical course on the basic principles of the application of techniques used in the Physical Therapy management of clients with neurological conditions, with a focus on neurological assessment and the treatment.

#### **COURSE OVERVIEW:**

This course involves lecture, lab and tutorial work; students are expected to prepare for each activity by completing the required readings. Clinical skills labs and tutorials will consolidate theoretical knowledge learned in lectures. Clinical skills are taught in laboratories by faculty, clinicians or peer coaches. Labs will incorporate practice with peers, standardized clients and model patients.

#### **COURSE OBJECTIVES:**

Upon successful completion of this course students will be able to:

1. Demonstrate professional behaviour and respectful communication with participants in all educational activities
2. Self-assess knowledge, skills, behaviors and attitudes during learning sessions;
3. Demonstrate professional and academic integrity;
4. Demonstrate team work for group activities;
5. Incorporate Patient Safety Competencies in all relevant learning activities. Apply the conceptual framework to;
6. Apply the conceptual framework to;
7. Understand the typical progressions of motor milestones in infancy and childhood.
8. Perform a basic neurological assessment to provide the relevant information for effective treatment planning for clients across the lifespan (refer to the Neurological Clinical Checklist)
  - Safely administer and interpret standardized assessment procedures with published guidelines for reference
  - Safely administer and interpret non- standardized assessment procedures:
    - Functional activities
    - Gait
    - Motor control
    - Voluntary / non-voluntary movement
    - Strength
    - Tone
    - Coordination of movement
    - Postural control / balance
    - Sensation / perception
  - Recognize when modification of the assessment is necessary or referral to other professionals is required.
9. Apply knowledge from co-requisite courses to the interpretation of clinical findings and formulation of a basic physical therapy management plan.
10. Identify and prioritize client's problems based on:
  - Knowledge of client's pathology and its clinical manifestations
  - Client's presentation

- Client's goals
  - Client's environment
  - Environment in which the therapist is working
11. Formulate a safe and effective treatment plan, including principles of disease and injury prevention, with short and long-term goals that consider the patient as a whole within a specific environment, cultural background for clients with neurological conditions.
  12. Apply principles of motor control and motor learning to formulate and implement a safe and effective treatment plan with short and long-term goals that accounts for:
  13. To apply the Clinical Decision Making Process to older adult clients and individuals with neurological diagnoses across the lifespan within varied socio-cultural environments. The following will be emphasized:
    - Identification of issues
    - Development of goals
    - Development of a strategy for intervention
    - Application of the intervention
    - Re-examination to determine effectiveness of treatment
  14. Identify when medications make an impact on physiotherapy management of clients with neurological conditions.
  15. Explain the principles of exercise prescription and the rationale for selecting specific exercises for the purposes of health and fitness promotion for individuals with neurological conditions.
    - Evidence regarding the efficacy and effectiveness of the treatment
    - Client's goals
    - Client's environment
    - Environment in which the therapist is working
  16. Use available evidence to provide education and feedback to standardized clients, model patients and peers.

**REQUIRED TEXTBOOKS/READINGS:**

1. Shumway-Cook A, Woollacott MH (2012). Motor Control – Translating Research into Clinical Practice. 4th edition. Wolters Kluwer - Lippincott, Williams & Wilkins; Philadelphia.
2. O'Sullivan, S.B., Schmitz, T. (2010). Improving Functional Outcomes in Physical Rehabilitation. F.A.Davis; Philadelphia
3. Effgen, S (2013) Meeting the Physical Therapy Needs of Children. 2nd edition. FA Davis; Philadelphia

**Course: PT 7130 Applied Sciences for Physical Therapy 3**

**COURSE DESCRIPTION:**

Through lecture, tutorial and laboratory sessions, students will learn the application of anatomy, physiology and pathology to the neurological and cardiorespiratory systems. Scientific and medical theoretical basis for physical therapy intervention will be covered

**COURSE OVERVIEW:**

This course involves lecture, lab and tutorial work; students are expected to prepare for each activity by completing the required readings for lectures, tutorials and the assigned skills laboratories. Class work includes lectures, in-class small group work, and tutorial sessions. Clinical skills are taught in laboratories by either faculty. Students will integrate pre-requisite courses information.

## **COURSE OBJECTIVES:**

Upon successful completion of this course students will be able to:

1. Demonstrate professional behaviour and respectful communication with participants in all educational activities;
2. Self-assess knowledge, skills, behaviors and attitudes during learning sessions;
3. Demonstrate professional and academic integrity;
4. Demonstrate team work for group activities;
5. Demonstrate Patient Safety Competencies in all relevant learning activities;
6. Integrate knowledge of anatomical structures into assessment and intervention planning;
7. Describe the inter-relationships between structure and ventilation of the lungs and how this is assessed through pulmonary function tests;
8. Distinguish between normal and abnormal pulmonary function tests;
9. Describe the relationship underlying the oxy-hemoglobin saturation curve and how this is monitored clinically;
10. Describe the relationships between the electrical and hemodynamic functions of the heart;
11. Describe the role of the kidneys in regulating long term maintenance of blood pressure and the use of pharmacological agents to manage blood pressure;
12. Describe the co-operative roles of the lungs and kidneys in regulating acid-base balance;
13. Identify key drug resources for availability, interactions, dosage, and side effects ;
14. Integrate information about the following pathological/disease conditions when identifying patient risk and impairment:
  - a. Chronic obstructive lung disease (COLD or COPD);
  - b. Restrictive pulmonary disease;
  - c. Infectious diseases;
  - d. Acute cardiovascular pathology and sequelae of cardiovascular pathology
  - e. Supplementary oxygen systems and mechanical ventilation
  - f. Critical Care
15. Describe the medical assessment / management considerations of the above conditions;
16. Explain the normal cardiac rhythm, basic cardiac arrhythmias and implications for exercise.
17. Be proficient in performing a physical assessment of:
  - a. Single-lead ECG at rest and during exercise
  - b. Submaximal graded exercise testing on a treadmill and bicycle ergometer
18. Describe the natural history, pathology, clinical manifestations, general management (including pharmacology, medical or surgical management) and prognosis of neurological conditions, and in particular
  - a. Acquired Brain Injury
  - b. Cerebral Vascular Accident (Stroke)
  - c. Neurodevelopmental disorders including; Cerbral Palsy, Spina Bifida, Fetal Alcohol Spectrum Disorder, Down's Syndrome, Autism Spectrum Disorder, Attention Deficit Hyperactivity Disorder
  - d. Degenerative Diseases including; Amyotrophic Lateral Sclerosis, Multiple Sclerosis , Alzheimer's Disease
  - e. Infectious diseases including; Guillain-Barré Syndrome and Post-polio Syndrome
  - f. Spinal Cord Injury
  - g. Movement Disorders of the basal ganglia and cerebellum
  - h. Bowel, Bladder and Sexual Dysfunction
  - i. Metabolic Neuropathy
  - j. Myasthenia Gravis
  - k. Vestibular Disorders

19. Demonstrate knowledge of basic neurophysiology in order to understand the neurological basis and mechanisms involved in:
  - a. Volitional movement to include roles of the cerebral cortex, cerebellum, basal ganglia, brain stem and spinal cord,
  - b. Higher brain functions, such as language, cognition and memory
  - c. Neuroplasticity and neuro-adaptation following brain injury
20. Determine the appropriate exercise tolerance assessment and exercise program prescription for the following Chronic Health Conditions: Hypertension, Diabetes and Peripheral Vascular Disease, Chronic Renal Failure and Chronic Heart Failure.

**COURSE RESOURCES:**

**1. REQUIRED TEXTBOOKS / READINGS:**

- Thompson, W.R. (Ed.) (2010) American College of Sports Medicine. ACSM's guidelines for exercise testing and prescriptions. (8th Ed.). Philadelphia, PA: Lippincott Williams & Wilkins.
- American College of Sports Medicine. (2012) Exercise management for persons with chronic diseases and disabilities. Champaign: Human Kinetics.
- Goodman, C. & Fuller, K. (2009). Pathology – Implications for the Physical Therapist. (3rd ed.) Saunders.
- Purves, D., et. al. (Eds.). (2011). Neuroscience (5th ed.). Sunderland: Sinauer Associates Inc.

**2. RECOMMENDED TEXTBOOKS**

- E-book – Hall, John E. (Ed.) Guyton and Hall Textbook of Medical Physiology, 12th ed. (2011) Philadelphia, PA: Elsevier.

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## **Course: PT 7150 Integrated Practice for Cardiorespiratory and Neurological Conditions**

**COURSE DESCRIPTION:**

Students integrate relevant information for physical therapy management of complex cardiorespiratory and neurological conditions through lectures, labs and small group work with a focus on Interprofessional collaborative practice. Case studies may include but are not limited to: geriatrics, developmental disorders, spinal cord injuries, ARDS, critical care, etc.

**COURSE OVERVIEW:**

This course involves in-class small group work, client specific problem-based learning tutorials and case-based presentations. There will be sessions with invited speakers to present on the topics of Bariatric and Communication Challenges for individuals with neurological impairments. Students are expected to continue to develop communication and professional behaviour as well as when applying any component of the Department of Physical Therapy Conceptual Framework. Evidenced based referencing is an expectation for information gathering for tutorials as well as for the case presentations.

**COURSE OBJECTIVES:**

Upon successful completion of this course students should be able to:

1. Demonstrate professional behaviour and respectful communication with participants in all educational activities;
2. Self-assess knowledge, skills, behaviors and attitudes during learning sessions;
3. Demonstrate professional and academic integrity;
4. Demonstrate team work for group activities;
5. Participate in both informal and formal peer assessments;
6. Incorporate Patient Safety Competencies in all relevant learning activities;

7. Apply the Clinical Decision Making Process (CDMP) and integrate related knowledge for case studies of:
  - a. HIV
  - b. Older adults
  - c. Leukemia
  - d. Spinal cord injury in the acute and rehab setting
  - e. Duchene's Muscular Dystrophy
  - f. Cerebral Palsy
  - g. Pregnancy
8. Analyze the case issues relative to the components of the Conceptual Framework. This analysis should incorporate relevant clinical lab data as well as accessing key online drug resources for clients with multisystem presentations;
9. Incorporate relevant community resources as part of the discharge planning discussion;
10. Demonstrate appropriate use of the literature to present evidenced based information to support the tutorial group discussion and the answers to the guided questions in the case presentations;
11. Incorporate Interprofessional knowledge, as appropriate, to identify communication and collaboration with other members of the health care team;
12. Participate in formal, objective feedback of the tutorial leader.

**COURSE RESOURCES:**

1. Effgen, S (2013) Meeting the Physical Therapy Needs of Children. 2nd edition. FA Davis; Philadelphia
  2. Frownfelter, D. and Dean, E. (2012) Cardiovascular and Pulmonary Physical Therapy – Evidence and Practice. (5th Ed.) Elsevier
  3. Goodman,C.,& Boissonault,W., (2009). Pathology: Implications for the Physical Therapist (4th ed). St. Louis: Saunders (Elsevier).
  4. O'Sullivan, S.B., Schmitz, T. (2010). Improving Functional Outcomes in Physical Rehabilitation. F.A.Davis; Philadelphia
  5. Shumway-Cook A, Woollacott MH (2012). Motor Control – Translating Research into Clinical Practice.4th edition. Wolters Kluwer - Lippincott. Williams & Wilkins; Philadelphia.
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