

**Ontario College of Health & Technology
Accelerated Massage Therapy Program Entrance Exam Content**

PHYS 103 Physiology 103

PHYS 103: Cellular Physiology
<ul style="list-style-type: none"> • Define anatomy and physiology and name several subspecialties of these sciences. • Describe the body's six levels of structural organization. • List the 11 systems of the human body, representative organs present in each, and their general functions. • Define the important life processes of the human body. • Define homeostasis and explain its relationship to interstitial fluid. • Describe the components of a feedback system. • Contrast the operation of negative and positive feedback systems. • Explain how homeostatic imbalances are related to disorders.
<ul style="list-style-type: none"> • Identify the main elements of the human body. • Describe the structure of atoms, ions, molecules, free radicals and compounds. • Distinguish among ionic, covalent, and hydrogen bonds. • Describe the properties of water and those of inorganic acids, bases and salts. • Define pH and explain the role of buffer systems in homeostasis. • Describe the functional groups of organic molecules. • Identify the building blocks and functions of carbohydrates, lipids and proteins • Describe the structure and functions of DNA, RNA, and ATP
<ul style="list-style-type: none"> • Describe how cells differ in size and shape. • Distinguish between cytoplasm and cytosol. • Describe the structure and function of cytoplasm, cytosol and organelles. • Describe the structure and function of the nucleus. • Compare the locations of intracellular fluid (ICF) and extracellular fluid (ECF) and describe the various fluid compartments of the body. • Explain how fluid moves between compartments. • Compare the electrolyte composition of the three major fluid compartments: plasma, interstitial fluid and intracellular fluid. • Explain the concept of selective permeability. • Define the electrochemical gradient and describe its components. • Describe the stages, events, and significance of somatic and reproductive cell division. • Describe the processes that transport substances across the plasma membrane. • Describe the sequence of events in protein synthesis
<ul style="list-style-type: none"> • Distinguish between anabolism and catabolism and give examples of each. • Describe oxidation-reduction reactions • Explain the role of ATP in metabolism • Describe the fate, metabolism and functions of carbohydrates. • Describe the lipoproteins that transport lipids in the blood • Describe the fate, metabolism and functions of lipids and proteins • Identify the key molecules in metabolism and describe the reactions and the products they may form. • Compare the sources, functions and importance of minerals and vitamins in metabolism
<ul style="list-style-type: none"> • Name the four basic types of tissues that make up the human body and state the characteristics of each. • Describe the general features of epithelial tissue, connective tissue, muscular tissue, nervous tissues. • List the location, structure and function of each different type of epithelial tissues. • Describe the structure, location, and function of the various types of connective tissues. • Contrast the structure, location and mode of control of skeletal, cardiac and smooth muscle tissue. • Define basal metabolic rate (BMR), and explain several factors that affect it • Describe the factors that influence body heat production. • Explain how normal body temperature is maintained by negative feedback loops involving the hypothalamic thermostat.
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PPHY 103 Pathophysiology

PPHY 103: Pathophysiology of the Neurological and Musculoskeletal Systems

- Explain the body's reaction to disease, injury & injurious stimuli.
 - Summarize vascular responses to injury and cellular exudates associated with acute inflammation.
 - Summarize the causes of chronic inflammation and sequelae of acute inflammation.
 - Describe the process of chronic inflammation
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- Describe the anatomical and functional organization of the nervous system.
 - Describe the cranial nerves, spinal, and peripheral nerves.
 - Describe synapses, neurotransmitters and the mechanism of synaptic transmission.
 - Describe the mechanism of generator potentials / action potentials.
 - Summarize the modalities of sensation, associated receptors, and sensory pathways.
 - Summarize the major motor and sensory tracts.
 - Describe the function of the spinal cord coverings.
 - Describe the components and functions of the spinal reflexes.
 - Describe sclerotomes, myotomes and dermatomes.
 - Differentiate between grey and white matter and describe their features and functions.
 - Describe the function of the spinal cord, brain stem, cerebellum, cerebrum, diencephalon and the limbic system.
 - Describe the anatomy and the physiology of the olfactory pathway.
 - Describe the anatomy and the physiology of the taste buds, the mechanism of gustation.
 - Describe the anatomy and the physiology of the visual pathway.
 - Describe the anatomy and the physiology of the auditory and equilibrium pathways.
 - Summarize the anatomical and functional organization of the autonomic nervous system. (ANS)
 - Describe the anatomy of the sympathetic and parasympathetic divisions and the structures they innervate.
 - Describe preganglionic and post ganglionic neurons and their sources.
 - Identify the major ANS neurotransmitters and their receptors.
 - Explain the specific effects of sympathetic and parasympathetic stimulation, and autonomic reflexes.
 - Describe the control of the ANS by the hypothalamus
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- Describe muscle type: skeletal, smooth, cardiac.
 - Describe the gross anatomy of skeletal muscle.
 - Describe the microscopic anatomy of skeletal muscle
 - Describe the mechanism of muscle contraction.
 - Describe the different regulatory mechanisms of muscle contraction in the three types of muscles.
 - Describe the types of skeletal muscle fibers
 - Explain the metabolic pathways for energy production at rest and during exercise in skeletal muscle
 - Describe muscle tone in skeletal and smooth muscle.
 - Explain oxygen debt, muscle fatigue and their relation to types of muscle fibres

FNRH 103 Functional Rehabilitation 103 45 Hours

FNRH 103: Functional Rehabilitation
<ul style="list-style-type: none"> • Stretching: Theory and Practical Application of Stretching Techniques • Theories and Physiology related to warm-up • Theories and physiology related to stretching (Static stretching, Dynamic stretching) • Review muscle length testing • Passive and facilitated stretching review and practice • Discuss, demonstrate and practice stretching techniques for muscles of body • Discuss prescription parameters for stretching in home exercise programs • Perform and direct patient / client in stretching
<ul style="list-style-type: none"> • Range of Motion Exercises • Theories and physiology related to range of motion exercises • Review Joint Mobilization Theory and Physiology • Discuss, demonstrate and practice ROM exercises for joints of the body • Perform and direct patient / client in range of motion exercises
<ul style="list-style-type: none"> • Strengthening: Theory and Practical Application of Strengthening Techniques • Theory and Physiology related to types of muscles contractions (isometric, isotonic, isokinetic) • Equipment review • Discuss, demonstrate and practice isometric strengthening • Discuss, demonstrate and practice concentric strengthening • Discuss, demonstrate and practice eccentric strengthening • Direct patient / client in strengthening exercises • Compound Strengthening Exercises • Define and discuss compound exercises and their relevance to activities of daily living and sport • Discuss, demonstrate and practice compound strengthening exercises • Discuss prescription parameters for adding these exercises to a home exercise program
<ul style="list-style-type: none"> • Balance, Proprioception and Perturbations • Define and discuss balance and proprioception and their relevance to activities of daily living and sport • Discuss, demonstrate and practice balance, proprioceptive and perturbation exercises • Discuss prescription parameters for adding these exercises to a home exercise program • Direct patient / client in proprioception exercises.
<ul style="list-style-type: none"> • Cardiovascular Fitness • Theory and Physiology related to CV Fitness • Direct patient / client in cardiovascular exercises.
<ul style="list-style-type: none"> • Power and Plyometrics • Theory and Physiology related to power exercises • Theory and Physiology related to plyometric exercises

FNRH 203 Functional Rehabilitation 203 45 Hours

FNRH 203: Functional Rehabilitation

- Breathing and Deep Core Exercises
- Upper Cross Syndrome strength and length tests, corrective exercises
- Lower Cross Syndrome strength and length tests, corrective exercises
- Neck conditions: corrective exercises
- Low back conditions: corrective exercises
- Shoulder conditions: corrective exercises
- Knee conditions: corrective exercises
- Hip conditions: corrective exercises
- Elbow and Hand conditions: corrective exercises
- Special populations ie. pregnancy neurological conditions: corrective exercises

NUTR 103 Nutrition 103

NUTR 103: Nutrition

- Describe basic nutrition terminology.
- Identify nutrients and non-nutrients in food and describe their effects to body function.
- Describe social and cultural meanings attached to food.
- Identify basic wellness and issues related to nutrition.
- Summarize effects of food processing, refining, enriching, fortification and engineering on nutrition.
- Explain nutritional information on food packaging
- Identify pros, cons, and uses of popular diets
- Describe the basic structure, significance and function of carbohydrates, lipids, proteins, fiber in the body
- Identify primary sources of carbohydrates, lipids and proteins in food.
- Summarize the disorders of carbohydrate, lipid, protein, fiber metabolism.
- List major vitamins and minerals and describe their importance to body function.
- Identify primary sources of vitamins in food.
- Summarize the disorders of vitamin metabolism.
- Describe problems of over nutrition.
- Identify the importance of nutritional requirements at various stages of the life cycle.