

**Ontario College of Health & Technology**  
**Accelerated Massage Therapy Program Required Prior Learning**  
**Entrance Exam Content (if Required)**

**MUSCULOSKELETAL ANATOMY**

**Musculoskeletal Anatomy (Equivalent to MANA 103 Musculoskeletal Anatomy 103)**

**GENERAL BONY ANATOMY**

Anatomical position.  
Anatomical names and the corresponding common names for various regions of the body.  
Directional terms used to describe the human body.  
Skeleton organization into axial and appendicular divisions.  
Histology of bone.  
Classification of bones based on shape or location.  
Principal markings on bones and the functions of each.

**SPECIFIC BONY ANATOMY**

Bones, locations, surface features: cranium  
Bones, locations, surface features: face  
Bones, locations, surface features: vertebral column  
Bones, locations, surface features: thorax  
Bones, locations, surface features: pectoral girdle, upper limb  
Bones, locations, surface features: pelvic girdle, lower limb  
Practical Component: palpation of all bones, bony landmarks

**GENERAL ARTHROLOGY**

Structural and functional classifications of joints.  
Structure and functions of the three types of fibrous joints.  
Structure and functions of the two types of cartilaginous joints.  
Structure of synovial joints.  
Structure and function of bursae and tendon sheaths.  
Types of movements that occur at synovial joints.  
Subtypes of synovial joints.  
Factors that influence the type of movement and range of motion possible at a synovial joint.  
All joints of the body by location, classification, and movements.

**SPECIFIC JOINT and LIGAMENOUS ANATOMY**

Anatomical components of the joints and explain the movements that can occur at these joints: skull  
Anatomical components of the joints and explain the movements that can occur at these joints: TMJ  
Anatomical components of the joints and explain the movements that can occur at these joints:  
cervical, thoracic, lumbar  
Anatomical components of the joints and explain the movements that can occur at these joints:  
scapula, upper limb  
Anatomical components of the joints and explain the movements that can occur at these joints: pelvis,  
lower limb

## Musculoskeletal Anatomy (Equivalent to MANA 203 Musculoskeletal Anatomy 203)

### **GENERAL MUSCULAR ANATOMY**

Relationship between bones and skeletal muscles in producing body movements.  
Lever and fulcrum, types of levers based on location of the fulcrum, effort and load.  
Fascicle arrangements in a skeletal muscle, strength of contraction and range of motion.  
Prime mover, antagonist, synergist, and fixator.  
Features in naming skeletal muscles.

### **MUSCLES OF THE AXIAL SKELETON**

Origin, insertion, action, and innervation of the muscles of facial expression.  
Origin, insertion, action, and innervation of the muscles of the TMJ  
Origin, insertion, action, and innervation of the muscles of the anterior neck  
Origin, insertion, action, and innervation of the muscles of the posterior neck  
Origin, insertion, action, and innervation of the muscles of the trunk and vertebral column  
Origin, insertion, action, and innervation of the muscles of the anterior trunk and abdomen.

### **NERVE AND BLOOD SUPPLY OF THE AXIAL SKELETON**

Major routes of blood through the head, neck, trunk, vertebral column and abdomen.  
Distribution of nerves in the head, neck trunk vertebral column and abdomen.

## Musculoskeletal Anatomy (Equivalent to MANA 303 Musculoskeletal Anatomy 303)

### **MUSCLES OF THE APPENDICULAR SKELETON**

Origin, insertion, action, and innervation of the muscles of the hip and thigh  
Origin, insertion, action, and innervation of the muscles of the lower leg and ankle  
Origin, insertion, action, and innervation of the muscles of the foot  
Origin, insertion, action, and innervation of the muscles of the shoulder and arm  
Origin, insertion, action, and innervation of the muscles of the forearm and hand

### **MUSCLES OF THE APPENDICULAR SKELETON**

Major routes of blood through the head, neck, trunk, vertebral column and abdomen.  
Distribution of nerves in the head, neck trunk vertebral column and abdomen.

## PHYSIOLOGY

### Cellular Physiology (Equivalent to PHYS 103 Physiology 103)

#### INTRODUCTION TO PHYSIOLOGY

Definition of anatomy and physiology several subspecialties of these sciences.  
The body's six levels of structural organization.  
The 11 systems of the human body, representative organs present in each, and their general functions.  
The important life processes of the human body.  
Homeostasis and its relationship to interstitial fluid.  
Components of a feedback system.  
Operation of negative and positive feedback systems.  
How homeostatic imbalances are related to disorders.

#### BIOCHEMISTRY

Main elements of the human body.  
Structure of atoms, ions, molecules, free radicals and compounds.  
Ionic, covalent, and hydrogen bonds.  
Properties of water and those of inorganic acids, bases and salts.  
pH and buffer systems in homeostasis.  
Functional groups of organic molecules.  
Building blocks and functions of carbohydrates, lipids and proteins  
Structure and functions of DNA, RNA, and ATP

#### CELLULAR PHYSIOLOGY

How cells differ in size and shape.  
Cytoplasm, cytosol and organelles.  
Structure and function of the nucleus.  
Intracellular fluid (ICF) and extracellular fluid (ECF)  
Fluid movement between compartments.  
Electrolyte composition of the three major fluid compartments  
Selective permeability.  
Electrochemical gradient and its components.  
Stages, events, and significance of somatic and reproductive cell division.  
Cell transcript systems  
Protein synthesis

#### METABOLISM

Anabolism and catabolism  
Oxidation-reduction reactions  
Role of ATP in metabolism  
Fate, metabolism and functions of carbohydrates.  
Lipoproteins that transport lipids in the blood  
Fate, metabolism and functions of lipids and proteins  
Key molecules in metabolism and the reactions and the products they form.  
Sources, functions and importance of minerals and vitamins in metabolism

## **HISTOLOGY**

Basic types of tissues that make up the human body and the characteristics of each.  
General features of epithelial tissue, connective tissue, muscular tissue, nervous tissues.  
Location, structure and function of each different type of epithelial tissues.  
Structure, location, and function of the various types of connective tissues.  
Structure, location and mode of control of skeletal, cardiac and smooth muscle tissue.

## **THERMOREGULATION**

Basal metabolic rate (BMR), and explain several factors that affect it  
Factors that influence body heat production.  
How normal body temperature is maintained by negative feedback loops involving the hypothalamic thermostat.

## **Musculoskeletal and Neurological Phys (Equivalent to PPHY 103 Pathophysiology 103)**

### **INTRODUCTION TO PATHOLOGY**

The body's reaction to disease, injury & injurious stimuli.  
Vascular responses to injury and cellular exudates associated with acute inflammation.  
Causes of chronic inflammation and sequelae of acute inflammation.  
Process of chronic inflammation

### **NEUROPHYSIOLOGY**

Anatomical and functional organization of the nervous system.  
Cranial nerves, spinal, and peripheral nerves.  
Synapses, neurotransmitters and the mechanism of synaptic transmission.  
Mechanism of generator potentials / action potentials.  
Modalities of sensation, associated receptors, and sensory pathways.  
Major motor and sensory tracts.  
Function of the spinal cord coverings.  
Components and functions of the spinal reflexes.  
Sclerotomes, myotomes and dermatomes.  
Grey and white matter, features and functions.  
Function of the spinal cord, brain stem, cerebellum, cerebrum, diencephalon and the limbic system.  
Anatomy and the physiology of the olfactory pathway.  
Anatomy and the physiology of the taste buds, the mechanism of gustation.  
Anatomy and the physiology of the visual pathway.  
Anatomy and the physiology of the auditory and equilibrium pathways.  
Anatomical and functional organization of the autonomic nervous system. (ANS)  
Anatomy of the sympathetic and parasympathetic divisions and the structures they innervate.  
Preganglionic and post ganglionic neurons.  
ANS neurotransmitters and their receptors.  
Effects of sympathetic and parasympathetic stimulation, and autonomic reflexes.  
Control of the ANS by the hypothalamus

## **MUSCULOSKELETAL PHYSIOLOGY**

Muscle types: skeletal, smooth, cardiac.  
Gross anatomy of skeletal muscle.  
Microscopic anatomy of skeletal muscle  
Mechanism of muscle contraction.  
Regulatory mechanisms of muscle contraction in the three types of muscles.  
Types of skeletal muscle fibers  
Metabolic pathways for energy production at rest and during exercise in skeletal muscle  
Muscle tone in skeletal and smooth muscle.  
Oxygen debt, muscle fatigue and their relation to types of muscle fibres

## **Nutrition (Equivalent to NUTR 103 Nutrition 103) 45 Hours**

### **NUTRITION**

Basic nutrition terminology.  
Nutrients and non-nutrients in food and describe their effects to body function.  
Social and cultural meanings attached to food.  
Basic wellness and issues related to nutrition.  
Effects of food processing, refining, enriching, fortification and engineering on nutrition.  
Nutritional information on food packaging  
Pros, cons, and uses of popular diets  
Structure, significance and function of carbohydrates, lipids, proteins, fiber in the body  
Primary sources of carbohydrates, lipids and proteins in food.  
Disorders of carbohydrate, lipid, protein, fiber metabolism.  
Major vitamins and minerals and describe their importance to body function.  
Primary sources of vitamins in food.  
Disorders of vitamin metabolism.  
Over nutrition.  
Nutritional requirements at various stages of the life cycle.

## **THERAPEUTIC EXERCISE**

### **Functional Rehabilitation (Equivalent to FNRH 103 Functional Rehabilitation 103)**

<p><b>STRETCHING</b></p> <p>Theory and practical application of stretching techniques Theories and physiology related to warm-up Theories and physiology related to stretching (static stretching, dynamic stretching) Muscle length testing Passive and facilitated stretching Stretching techniques for all muscles of body Prescription parameters for stretching in home exercise programs Direct patient in stretching</p>
<p><b>RANGE OF MOTION EXERCISES</b></p> <p>Theories and physiology related to range of motion exercises Joint mobilization theory and physiology ROM exercises for all joints of the body Direct patient in ROM exercises</p>
<p><b>STRENGTHENING</b></p> <p>Theory and physiology related to types of muscles contractions (isometric, isotonic, isokinetic) Equipment review Isometric strengthening Concentric strengthening Eccentric strengthening Compound strengthening exercises Activities of daily living and sport Prescription parameters for adding these exercises to a home exercise program Direct patient in strengthening exercises</p>
<p><b>BALANCE, PROPRIOCEPTION AND PERTURBATIONS</b></p> <p>Balance and proprioception and their relevance to activities of daily living and sport Prescription parameters for adding these exercises to a home exercise program Direct patient in balance and proprioception exercises.</p>
<p><b>CARDIOVASCULAR FITNESS</b></p> <p>Theory and physiology related to CV Fitness Direct patient in cardiovascular exercises.</p>
<p><b>POWER AND PLYOMETRICS</b></p> <p>Theory and physiology related to power exercises Theory and physiology related to plyometric exercises Direct patient in power and plyometric exercises.</p>

## **Functional Rehabilitation (Equivalent to FNRH 203 Functional Rehabilitation 203)**

### **CONSOLIDATION AND PRACTICAL APPLICATION OF THERAPEUTIC EXERCISE**

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