Medical and Health Professions Program Grade 10
- Course Outline-

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Overview

The Medical and Health Professions Program (MHPP) will be offered as a three-year program. During this program students will prepare for further study/training and careers related to the Health/Medical Fields. A focus on Anatomy/Physiology terminology and understanding will be emphasized. A variety of experiences and activities through the use of anatomical models and medical equipment will also be used. A career exploration project will include site visits and guest speakers in order to expose students to the daily responsibilities of a variety of medical professions. Career skills will be taught through customer service training and the completion/presentation of a career portfolio.

Objectives

The Grade Ten level of this course will introduce students to basic anatomy and physiology involving the cardiovascular, musculoskeletal, and integumentary systems. Students will receive training in CPR/First Aid and be eligible for certification. Exposure to various medical professionals and off-site visits will be an important component of the course. Lectures, lab activities, group work, and portfolios will provide students with the necessary skills to be successful in the program.

Course Outline:

Unit 1 – Anatomy and Physiology Overview

- Teach strategies to reflect on personal wellness, and life balance.
- Define anatomy and physiology.
- Name the different levels of structural organization of the human body (at the chemical level, cellular level, organ level, organ system and organismal level).
- Overview human organ systems.
- Describe anatomical position (include directional terms, regional terms, body planes and sections).
- Locate and name major body cavities and their subdivisions, and list major organs contained within.

Unit 2 – First Aid Certification

- Assess the scene of an emergency.
- Respond appropriately to the assessed emergency.
- Administer appropriate emergency First Aid.

Unit 3 – CPR/AED Training and Certification

- Assess the scene of an emergency.
- Respond appropriately to the assessed emergency.
- Administer appropriate CPR/AED strategies.

Unit 4 – Gross Anatomy I – Integumentary and Musculoskeletal Systems

Integumentary System

- Name and describe tissue types composing epidermis and dermis.
- Describe the different functions of the skin (protection, thermoregulation, cutaneous sensation, metabolic function, blood reservoir, excretion).
- Discuss three major types of skin cancers (basal cell, squamous, and melanoma).
- Explain different types and severity of skin burns (1^{st}, 2^{nd}, and 3^{rd} degree).
- Describe how changes in skin colour may be indicative of certain disease states (ex. Jaundice).

Skeletal System

- Describe three types of skeletal cartilage tissue (hyaline, elastic and fibrocartilage.
- Describe the classification of bones (four bone classes) and identify the functions of the major regions of the skeleton (axial and appendicular).
- List and describe the important functions of the bones (include support, protection, movement, mineral storage, blood cell formation).
- Describe the gross anatomy of a typical long bone and flat bone.
- Describe the process of long bone growth and epiphyseal plates.
- Describe the process of fracture repair.
- Learn all the major bones of the skeleton and major connecting ligaments (skull, vertebral column, bony thorax, pectoral girdle, upper limb, pelvic girdle, lower limb).
- Classify joints structurally and functionally (fibrous, cartilaginous, and synovial).
- Name and describe/perform common body movements (flexion, extension, adduction, rotation, etc…).
- Describe common joint injuries and treatment.
- Research common diseases associated with the Skeletal System (osteoporosis, osteoarthritis, bone cancer, etc…).

Muscular System

- Compare and contrast the three muscle types of the body.
- List the four important functions of muscle tissue (movement, posture, stabilizing joints, heat generation).
- Describe the gross and structure of skeletal muscle.
- Describe the cellular structure of the myofibril. Explain sliding filament mechanism.
- Define motor unit and explain how muscle fibres contract (action potentials).
- Differentiate between isometric and isotonic contractions.
- Name major skeletal muscles in the body and their main actions.
- List criteria used in naming muscles.
- Describe the function of prime movers, antagonists, synergists, and fixators.
- Name the three types of lever systems, and describe how they correspond to the musculoskeletal system.
- Research common muscular injuries and disorders (muscle strains, degenerative conditions, etc…).
- Learn to use goniometer in order to take range of movement measurements and resistance measurements.

Unit 5 – Patient Communication

Charting

- Learn the importance and needs of charting in a health care environment.
- Recognize and understand the components of a medical record.
- Compare and contrast the different types of medical records.
- Create a personal medical chart based on a common template.

Dealing with patients

- Basics of customer service
- Learn the skills of empathy and effective communication.
- Using active listening to understand patient needs.
- Dealing with disgruntled patients.

Unit 6 – Gross Anatomy II – Cardiorespiratory Systems

Cardiovascular System

- Describe functions and composition of blood.
- Describe process of blood clotting.
- Explain importance of blood testing as a diagnostic tool.
- Describe gross anatomy of Cardiac system. Include heart, pulmonary circulation and systemic circulation.
- Describe the anatomy of the heart and blood flow.
- Calculate stroke volume and cardiac output.
- Name the components of the conduction system and trace the conduction pathway.
- Describe the cardiac cycle.
- Learn to administer and interpret an ECG.
- Describe normal heart sounds, and how heart murmurs differ from normal sounds.
- Learn the proper use of a stethoscope in listening to heart/chest sounds.
- Compare and contrast the different types of blood vessels and their structure.
- Differentiate between vasoconstriction and vasodilation.
- Define blood flow, blood pressure and resistance.
- Explain factors that influence the regulation of blood pressure.
- Learn to use a sphygmomanometer to measure blood pressure.
- Define hypertension and its symptoms, causes, and treatment.
- Define shock and possible causes of shock.

Respiratory System

- Identify gross anatomy of the respiratory system and its functions.
- List and describe the protective mechanisms of the respiratory system.
- Describe Boyle's law as it pertains to breathing. Include a discussion on the mechanics of breathing.

- Describe importance of pleural membranes.
- Describe the difference between alveolar air and atmospheric air.
- Explain the process of gas exchange at the lungs and at the tissues.
- Describe how oxygen is transported in the blood and describe how oxygen unloading is affected.
- Describe CO_2 transport in the blood.
- Compare the causes and consequences of chronic bronchitis, emphysema, asthma, and lung cancer.

Unit 7 – Career Explorations- Ongoing

- Bi-weekly speaker series, covering a range of health care professions.
- Development of a professional career portfolio.
- Tours of medical and health related institutions in the community.

Course Expectations:

The Medical and Health Professions Program is intended to teach students how to become successful in both academics and careers. Therefore, a high level of expectation regarding professional behaviour and manner is expected at ALL times. You should treat this course in the same way that you would treat any career, work or on-job experience. Failure to act appropriately could result in removal from the program.

YOU are responsible for the following:

- Come to class ON TIME.
- Come to class prepared to learn with the appropriate materials.
- Failure to attend class will result in you falling behind in your studies and could affect your placement in the program. This is a highly academic course, which requires dedication to study and complete your homework on time (deadlines!!).
- 12 absences → Loss of Credit and REMOVAL from Program
- 4 lates = 1 absence
- Stay on task! The class portion is your time to work on projects and learn! Not to socialize.
- Ask for help when you need it – in class, at lunch, during spares, or after school! This shows initiative! If you are shy you can always email us questions!
- Be respectful to others in the class and be responsible. Failure to do so shows us that you may not be prepared to represent this program and Daniel McIntyre during outings and on-job experience.

Materials

Students are expected to come to class on time and prepared. This includes having your **textbook**, a **pen**, **pencil**, **ruler**, **calculator**, **paper**, **binder**, etc. with you for **EACH CLASS**. Various texts, worksheets, technology applications and resources will also be used.

Laboratory Behaviour

We will be doing labs whenever possible in this course, and it is expected that all students behave in an acceptable manner when labs are being conducted. It is important for students to build good laboratory practices and observe the safety rules outlined. Lab instructions must be followed and lab equipment must be used properly, to ensure the safety of the whole class. Inappropriate behaviour or failure to follow instructions will result in a mark of zero on the lab.

Evaluation

Students will be graded based on their fulfillment of the stated objectives. Assignments, in-class work, homework, individual and group projects, weekly quizzes, labs, career portfolio (including presentation) and tests are some of the methods that will be used to evaluate you during this course.

Mark Breakdown:

Assignments and Labs:	20%
Tests:	30%
Career Exploration	20%
Exam (Lab and Written)	30%

Extra Help:

I am available throughout the day and before school. It is important that students keep up, and continually review the material, as the tests and assignments are cumulative.
If you would like to make an appointment to receive extra help, we can discuss a time that works for both of us or find me in Room 21. You can also email me any questions you may have at: **krmelnyk@wsd1.org or mhegel@wsd1.org**

Missed Unit Tests, Assignments, Projects, Labs, Quizzes

Unexcused Absences:

- If you miss a unit test, assignment, project, lab, or quiz due to an unexcused absence you will receive a mark of zero.

Excused Absences:

- If you miss a unit test due to an excused absence you must write it on the next day you are back at school (normally outside of class time).
- If you miss an assignment or project due to an excused absence you must get the instructions from the teacher and then hand in the assignment/project, on the next day you are back at school.
- If you miss a lab or quiz due to an excused absence you will get an opportunity to make up the lab or quiz.

Lates:

- If you miss a quiz because you are late you will receive a mark of zero.

It is your responsibility to remember these requirements and take appropriate actions.

Missed Notes, Homework, & Assignments

It is **your responsibility** to find out what you missed and to get any notes, assignments, homework, etc. that you missed.