

BA Health Science 12

District Name:	Kamloops/Thompson
District Number:	73
Developed by:	Mary Bartucci
Date Developed:	February 2005
School:	Sa-Hali Secondary School
Principal:	Bob Cowden
Board/Authority Approval Date:	2005/05/30
Board/Authority Signature:	
Course Name:	Health Science 12 (11's may take course with teacher's permission)
Grade Level of Course:	12
Number of Course Credits:	4
Number of Hours of Instruction:	120
Prerequisites:	Science 10
Special Training, Facilities or Equipment Required:	

Training: Teacher must have a background in Biology. Experience in Athletics/Physical Education is recommended.

Equipment:

- Athletic tape and accessories
- Models and charts of human anatomy
- Sphygmomanometer/stethoscopes
- Spirometer
- Videos
- Access to gymnasium weight room.
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Course Synopsis:

In Health Science 12, students will learn the basics of human anatomy, physiology and performance. Students will also learn how to maintain a healthy lifestyle by studying exercise management, nutrition and injury prevention/rehabilitation. Lastly, students will be exposed to careers in the allied health sciences and to contemporary issues and technologies related to the Health field.

Rationale:

- This is a good background course for those entering Health, Physical Education, Kinesiology, and /or Biology related fields.

- This course provides exposure to different career possibilities (other than traditional ones) in the health field.
- This course provides the students with exposure to current health issues.
- Students involved in athletics gather useful information about training, injuries and rehabilitation.
- This course helps students learn more about their own bodies - how they function and how to take care of themselves.

Goals: *For the students to...*

- Become aware of the anatomy and physiology of the body so they can assess and appreciate their own health and needs (fitness, nutrition, disease and injuries).
- Become aware of issues in health today.
- Become aware of potential career paths in the health field.
- Learn how to assess and treat an injury and plan its rehabilitation.
- Be able to plan an exercise routine specific to a desired outcome.

Objectives: *Students will reach these goals by...*

- Learning the anatomy and physiology of the human body.
- Learning about and performing a variety of different exercises, as well as training for specific health/athletic outcomes.
- Training in First Aid as well as Injury Assessment and Management.
- Researching different health related professions and listening to a variety of guest speakers.
- Researching and discussing, in a group setting, health issues of their generation and future generations.
- Learning about a variety of medical technologies currently used in the health field.

Training:

- Students will be trained in basic first aid and sports injury management.
- Students will be trained in basic medical terminology.
- Students will be trained in the proper technique or execution of a variety of exercises.

Learning Outcomes:

a) **Introductory Unit: ~5 hours**

It is expected the student will...

- Explain the meaning of "Health".
- Understand the levels of organization in the human body.
- Define the term *anatomical position*.
- Define the directional terms used to describe structural features of the body.
- Describe the major body regions.
- Describe the four common planes used in sectioning the body or organs.
- Describe the two major cavities of the body.
- Explain the meaning of "*Homeostasis*".
- Describe the different methods of medical imaging and careers that specialize in it.

b) **Cells and Tissues of the Body: ~15 hours**

It is expected the student will...

- Identify and discuss the basic structure and function of a cell.
- Explain what cancer is and how it forms, as well as describe various treatments.
- Describe the make up, function and locations of the different types of epithelial, muscle, connective, and nervous tissues.

- Describe the functions of the integument system.
- Describe the two major categories of body membranes.
- Describe the structure of skin and identify accessory structures.
- Explain the causes, effects, symptoms and treatment of hypothermia, fever, heat exhaustion and heat stroke.
- Describe the general structure of bone and the functions of its parts.
- Explain the process of bone growth and repair.
- Explain the causes, effects, symptoms and treatment of osteoporosis.
- Describe the components and their functions of blood.
- Describe common disorders associated with the blood.
- Contrast the structural and functional characteristics of skeletal, smooth and cardiac muscle tissues.
- Describe the structure of a skeletal muscle sarcomere and motor unit.
- Describe the structure and function of neurons and neuroglial cells.
- Describe the structure and function of a nerve.
- Briefly describe the processes of impulse formation and conduction, and synaptic transmission.
- Describe common disorders of the nervous system.
- Understand and define physical fitness and each of its components.
- Understand and define muscular strength and endurance training.

c) The Cranial Cavity: (head) ~15 hours

It is expected the student will...

- Locate and identify the muscles, bones and organs of the head.
- Identify and give the function of the different regions of the brain.
- Identify and give the function of the different sensory organs found in the head.
- Explain a number of disorders associated with the brain and senses.
- Define *stress* as well as understand the physical and emotional effects of stress and strategies to cope with it.
- Describe careers associated with this part of the body and/or stress management – i.e. Psychologist.
- Discuss one type of medical research currently being done on this part of the body.

d) The Thoracic Cavity: (chest) ~20 hours

It is expected the student will...

- Locate and identify major muscles, bones and organs of the chest cavity.
- List the general functions of the circulatory, respiratory, immune and lymphatic systems.
- Describe common disorders of the circulatory, respiratory, immune and lymphatic systems.
- Describe various medical technologies used to study/assess the functions of the circulatory and respiratory systems.
- Contrast the different types of blood vessels with respect to their structures and functions.
- Identify the parts of the heart and their functions.
- Describe the path of blood through the body.
- Explain how the exchange of materials between the blood and body cells occurs.
- Explain how blood pressure is regulated.
- Differentiate between *blood pressure* and *pulse*.
- Describe the parts of the respiratory system and their functions.
- Describe the mechanism of breathing.
- List and describe the various volumes and explain their importance.
- Describe the process of gas exchange in the lungs and body tissue.
- Understand the mechanisms of oxygen and carbon dioxide transport through the blood.

- Understand and define *cardiorespiratory fitness*.
- Describe how to monitor target heart rate.
- Understand how to train the cardiorespiratory system.
- Differentiate and between the body's specific and non-specific defenses.
- Explain the role of white blood cells, antibodies and the complement system in the body's immune response.
- Explain the main structures and functions of the lymphatic system.
- Explain what stem cell research is and discuss the advantages and disadvantages of it.
- Describe careers of the health field related to maintenance and care of the thoracic cavity.

e) The Neck and Spine: ~20 hours

It is expected the student will...

- Locate and identify the major muscles and bones of the neck and spine.
- Explain the structure and function of the spinal cord.
- Contrast the peripheral and autonomic nervous systems.
- Describe common injuries of the neck and spine along with prevention and treatment.
- Contrast *paralysis, paraplegic* and *quadriplegic*.
- Discuss safety in the workplace and risk management.
- Describe careers of the health field related to maintenance and care of the dorsal cavity.

f) The Abdomen/Pelvis: ~20 hours

It is expected the student will...

- Locate and identify the major muscles, bones and organs of the abdomen and pelvis.
- Describe the structures and functions of the organs of the digestive, excretory and reproductive systems.
- Describe common disorders of the digestive, excretory, and reproductive systems.
- Explain the processes of ingestion, chemical and mechanical digestion, absorption and elimination of food as it passes through the digestive system.
- Describe the structures and functions of a nephron with respect to urine formation.
- Describe fertilization, pregnancy and birth.
- Discuss the concepts of genetic engineering and gene therapy with respect to the health field.
- Explain what the body's "core" is and describe exercises involved in core strengthening.
- Describe careers of the health field related to maintenance and care of the abdominal and pelvic cavities.

g) Nutrition: ~15 hours

It is expected the student will...

- Define *nutrition, anabolism* and *catabolism*.
- Describe the metabolic roles of carbohydrates, fats, proteins, vitamins and minerals and their recommended dietary intake.
- Explain the role of cholesterol in the body.
- Describe the importance of fiber in a well-balanced diet.
- Understand how food preparation and cooking can affect vitamin content in food.
- Identify problems associated with mineral imbalances.
- Define basal metabolic rate and a list of factors that affect it.
- Consider the caloric value of each of the bulk nutrients and discuss the implications for weight control and exercise.
- Make small changes in their daily food selections and preparations that make a significant change in their nutritional wellness.
- Describe and compare body fluid compartments.
- Understand mechanisms that maintain fluid and acid/base balance of the body.

- Explain how an athlete can maintain a state of hydration during an event.
- Describe careers of the health field related to nutrition.

h) The Appendages: ~10 hours

It is expected the students will...

- Understand basic weight training systems and identify correct safety guidelines.
- Define *flexibility* and identify correct guidelines for flexibility development.
- Explain the importance and types of stretching.
- Identify basic flexibility exercises.
- Define and understand the basic concepts and medical terminology involved in injury assessment and rehabilitation.
- Recognize and evaluate signs and symptoms of an injury.
- Understand the importance of “patient history” in assessing an injury.
- Identify and perform some functional tests.
- Understand and apply the P.R.I.C.E. principle at the time of injury.
- Describe careers of the health field related to fitness, exercise and/or injury management.

Instructional Component:

Methods used to achieve course goals and objectives:

- Direct instruction – note taking, class discussion etc.
- Practical experience
- Research
- Brainstorming
- Group work
- Invitation of a variety of guest speakers
- Use of models, posters and diagrams

Assessment Component:

Formative:		Summative:	
• Assignments, homework and labs	25%	• Tests and Quizzes	25%
• Projects	25%	• Final Project (Case Study – in lieu of traditional final exam)	10%
• Performance (demonstration of skills and participation level)	15%		
Total:	65%	Total:	35%

Methods of Assessment used in this course:

- Teacher observation
- Written assignments
- Lab reports
- Research projects
- Presentations
- Case studies

- Tests/quizzes
- Homework collection or checks
- Peer evaluation

Learning Resources:

Student:

- *Structure and Function of the Human Body* by Martini and Bartholomew
- *Concepts of Physical Fitness with Laboratories – 8th Edition* by Corbin and Lindsey
- *Essentials of Nutrition and Dietary Therapy* by Williams (Optional)
- *Laboratory Experiments In Human Structure and Function* by Banister, Mekjavic, Asmundson and Ward (Optional)

Teacher: (same as student and...)

- *Sport First Aid* by Flegel
- *Health Science 12 - A Teacher's Resource* by Paula Curtis (Cambie Secondary)
- *Stretching* by Anderson