THE DR. G.W. WILLIAMS SECONDARY SCHOOL
York Region District School Board

PHYSICAL AND HEALTH EDUCATION DEPARTMENT

GRADE 12U EXERCISE SCIENCE

Course Code: PSE 4U1
Level: University **Credit Value:** 1 Credit
Prerequisites: Any Grade 11 U or U/C course in science or any Grade 11 or 12 open course in Health and Physical Education
Courseware Developed by: Sue Milburn – Subject Head of Physical and Health Ed. Dept.
Courseware Reviewed yearly by: Sue Milburn
Ministry of Education Document: The Ontario Curriculum, Grade 12, Health and Physical Education , 1999
Course Resources:
Text Book: Exercise Science An Introduction to Health and Physical Education, Temerzogolou, Ted., Thompson Educational, Publishing, Toronto, 2003
Accessing Course Outlines and Curriculum Policy Documents:
School Website: http://drgwwilliams.ss.yrdsb.edu.on.ca/
Ontario Ministry of Education: http://www.edu.gov.on.ca/

COURSE DESCRIPTION: This course focuses on the study of human movement and of systems, factors, and Principles involved in human development. Students will learn about the effects of physical activity on health and performance, the evolution of physical activity and sports, and the factors that influence and individual's participation in physical activity. This course prepares students for university programs in physical education, kinesiology, recreation, and sports administration.

UNITS OF STUDY

ANATOMY and PHYSIOLOGY: Students learn the structure and function of the body, and the physiological principles relating to human performance.

MOTOR DEVELOPMENT :Students explore the relationship between physical activity, sport, and society. They explore the evolution of physical activity by studying the history of sport. They identify issues in society that are related to sports and physical activity.

BIOMECHANICS AND HUMAN PERFORMANCE: Students learn the biomechanical principles related to improving movement. motion. They analyse the effects of performance-enhancing methods and substances, and evaluate the effects of various training methods on human performance.

PHYSICAL ACTIVITY AND SPORT IN SOCIETY: Students explore the relationship between physical activity, sport, and society. They explore the evolution of physical activity by studying the history of sport.

OVERALL CURRICULUM EXPECTATIONS

By the end of this course, students will

THE BIOLOGICAL BASIC OF MOVEMENT:

- describe the structure and function of the body and of physiological principles relating to human performance;
- demonstrate an understanding of biomechanical principles related to improving movement;
- Demonstrate an understanding of the ways in which nutrition and training principles affect human performance

MOTOR DEVELOPMENT:

- demonstrate and understanding of individual differences in performance, growth, and development
- demonstrate and understanding of the principles of motor learning

PHYSICAL ACTIVITY AND SPORTS IN SOCIEY:

- describe the evolution of physical activity and sports
- analyse the relationship of society and culture to sports and physical activity

INSTRUCTIONAL STRATEGIES

Instructional strategies may include: Lecture , Demonstrations/modelling , Drill and Practice
Guides for Reading, Listening, and Viewing, Inquiry, Problem Research Case Studies Concept Formation items, Reflection, Debate, Independent assignments.

ASSESSMENT AND EVALUATION

Students will be provided with specific DUE dates and ABSOLUTE DEADLINES for all assignments.
The above Units of Study will constitute **70%** of the student's overall evaluation. Within each unit students will be assessed and evaluated under four achievement categories.

TERM WORK VALUE: 70%

KNOWLEDGE AND UNDERSTANDING 30%	THINKING AND INQUIRY 10%	COMMUNICATION 15%	APPLICATION 15%
z Quizzes z Tests z Assignments z Diagrams	z Quizzes z Portfolio Assignments z Assignments z Diagrams z Labs	z Assignments z Presentations z Demonstrations z Portfolio Assignments	z Daily Participation z assignments z Leadership z Initiative z Group work z presentations

SUMMATIVE WORK VALUE: 30%

Final Exam: **30%** Written during the exam schedule

LEARNING SKILLS & WORK HABITS

Students will be assessed throughout the course on their achievement in the learning skills areas. These assessments may be teacher, peer or self assessments.

(Abridged list of Learning Skills descriptors from Curriculum Guidelines for Grades 9 – 12)

Responsibility	Organization	Independent Work	Collaboration	Initiative	Self-regulation
-completes and submits class work, homework, and assignments according to agreed-upon timelines - takes responsibility for and manages own behaviour	- devises and follows a plan and process for completing work and tasks - establishes priorities and manages time to complete tasks and achieve goals	-uses class time appropriately to complete tasks -follows instructions with minimal supervision -independently monitors, assesses and revises plans to complete tasks and meet goals	-responds positively to the ideas, opinions, values and traditions of others -shares information, resources and expertise and promotes critical thinking to solve problems and make decisions	-demonstrates the capacity for innovation and a willingness to take risks - demonstrates curiosity and interest in learning -approaches new tasks with a positive attitude	-sets own individual goals and monitors progress towards achieving them -seeks clarification or assistance when needed -identifies learning opportunities and strategies to meet personal needs and achieve goals

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Please sign below to indicate that you understand and accept the evaluation policies
Please provide the contact information below
STUDENT NAME(print) _____ Date: _____
Parent/Guardian Name (Print)_____ Signature:_____
Parent e-mail _____

*** PLEASE RETURN THIS FORM TO THE TEACHER

Unit Overviews

Unit 1: Anatomy and Physiology

Time: 40 hours

Unit Description

Students learn the structure and function of the body, and the physiological principles relating to human performance. Through the use of practical lab exercise, students further their understanding of skeletal and muscular concepts. Group work within these lab activities emphasize social responsibility, and build on student integrity, morals and ethics. Challenging students to examine and evaluate specific muscle location, structure, and function encourages them to apply their knowledge of interdependent systems. Students are provided with an opportunity to understand muscle contraction and energy systems and to link this information to physical activity. Comprehension of exercise physiology is acquired through the study of the cardio-respiratory system and the production of energy. Students focus on acute and chronic effects of physical activity and on the effects of environmental conditions on the body.

Unit 2: Biomechanics and Human Performance

Time: 20 hours

Unit Description

Students learn the biomechanical principles related to improving movement. They explain and describe the laws of physics, biomechanical principles and joint mechanics as they relate to movement. Examples include Newton's laws related to levers, velocity and linear acceleration, stability, the relationship between force and movement, angular motion, types of joints and range of motion. Students use these laws to analyse human performance. Students describe the relationship between nutrition and activity, including caloric and nutrient balance, hydration, and the needs of specific populations. They analyse the effects of performance-enhancing methods and substances, and evaluate the effects of various training methods on human performance.

The Unit 3: Motor Development

Time: 20 hours

Unit Description

This unit focuses on the motor development of individuals from infancy to adulthood. Students examine performance, growth and development, and the principles of motor learning. Students incorporate the knowledge of fundamental skills in sports to understand and examine the process of skill acquisition. They investigate physical and psychological factors that affect skill performance. Students apply their knowledge of motor learning, and growth and development in designing activities and teaching skills to people of all ages.

y use their acquired knowledge to adapt physical fitness and activity programs to address their personal needs.

Unit 4: Physical Activity and Sport In Society

Time: 30 hours

Unit Description

Students explore the relationship between physical activity, sport, and society. They explore the evolution of physical activity by studying the history of sport. They identify issues in society that are related to sports and physical activity. These may include violence, exploitation, cheating, equal access, and physical activity trends. Students analyse the factors that influence participation in physical activity and sports, including current trends, coaching, role models and personal perception of physical activity. Students identify Canadian athletes who have contributed to sports and physical activity and describe their contributions. The relationship of society and culture to sports and physical activity is taught through the study of various issues. These include sport management, physical activity and the importance of being an informed consumer. Students describe how societal and cultural factors, including gender representation and ethno-cultural preferences, influence programs. They describe the benefits of school and community programs, and identify career opportunities in fields related to physical activity and sports.

Unit 5: Independent Study

Time: Decided by Instructor

Unit Description

The Independent Study unit focuses on students' specified areas of interest. The teacher presents various topics at the beginning of the course. Students are expected to research and write an essay (expository or report) and prepare a fifteen to thirty-minute presentation to the class.

The teaching and learning strategies can be categorized under four headings as identified below:

Direct Instruction

Lecture – an oral presentation of facts or principles during which the learner is responsible for taking appropriate notes

Demonstrations/modelling – performing a skill or activity in order to show how to do it

Didactic Questions – guiding students to predetermined learning through the use of lower order questions

Drill and Practice – repetition of fundamental skills to enhance speed and accuracy of performance

Guides for Reading, Listening, and Viewing – structured formats intended to direct students to appropriate learning expectations in reading, listening, or viewing

Indirect Instruction

Inquiry – an organized process for investigating a significant question

Problem Solving – an organized process for solving a problem

Research – gathering and interpreting data on a specific topic

Case Studies – investigation of a specific event, situation, or person to develop an understanding of factors that can be generalized to other situations

Concept Formation – an inductive thinking strategy in which students sort, classify, and/or group items, ideas, opinions, into categories to draw inferences, make generalizations, and develop concepts

Concept Attainment – clarifying a concept by providing positive and negative examples of that concept

Reflection – process of thinking about and connecting ideas, experiences, and learnings

Debate – the presentation of opposing sides of an issue by two teams/individuals before an audience or judge

Interactive Instruction

Cooperative Learning – a variety of interdependent learning structures where students learn in small heterogeneous groups

 Jigsaw – Students are divided into "home" groups. Each student in the group moves into a different expert group to gather information (provided by the teacher or through research) and then goes back to the home group to share that information

 Think/Pair/Share – Students begin thinking about a concept on their own, then work with a partner to share and discuss ideas

 Snowballing – pairs of students begin sharing ideas. After a few minutes, the pairs join with another pair to form a group of four to share ideas. The groups continue to combine to form groups of eight, then 16. New ideas are added and discussed

 Numbered Heads – Numbered heads is a structure whereby students number off, e.g., four in a group, and the teacher poses a problem and sets a time limit for each group to investigate. The teacher calls a number and the student with that number in each group responds.

Learning Circles – small groups of students who discuss a common test, topic, or problem in order to deepen understanding

Brainstorming – a group activity in which participants are encouraged to think uncritically about all possible ideas, approaches, or solutions

Role Playing – assuming the role of another and acting out a situation to develop understanding and insights

Peer Coaching – a structured situation where students teach and learn from each other

Experiential Learning – a situation requiring a high level of active involvement in his/her own learning that is inductive, learner centred and activity oriented. These activities may include field trips, simulations, model building, analysing, drawing inferences or conclusions, providing reasons and evidence for conclusions, or reflecting on experiences in analysing, inferring, decision-making, and conclusions.

Independent Instruction

Independent Project – a formal assignment on a topic related to the curriculum

Learning Centres – a specially organized space containing specific resources and/or equipment

Learning Contracts – a plan of instruction allowing students to proceed at their own rate in learning specified material

Many of the learning expectations in this course focus on students' ability to communicate their understanding of concepts/principles and their use of higher-thinking skills. Indirect and interactive instruction strategies have been used widely throughout the Course Profile to provide students with multiple opportunities to learn and practise before they are required to demonstrate the learning. Access the Ministry of Education Electronic *Curriculum Unit Planner* for a complete collection of Teaching/Learning Strategies.

3. Help students develop effective learning skills.

Consider:

 the skills and knowledge required to participate in learning, e.g., working independently, selfassessment,
setting goals and monitoring progress, adapting to change, inquiry skills;

 the self-knowledge, personal and interpersonal skills to interact positively with others, e.g., selfmanagement,
getting along with others, social responsibility;

 the skills and knowledge required to plan their present and future lives and to determine the learning required to implement the plan, e.g., self-assessment, exploring and obtaining information, awareness of opportunities.