

I. COURSE DESCRIPTION:

This course is the second in a two part series (Applied Exercise Science I and Applied Exercise Science II). The course will be equally divided between theory and practical laboratory time.

Theory: This course examines the physiological adaptations that take place within the human body during exercise and work, including altitude training, thermal stress, and aging so that accurate assessments of fitness and well being can be performed and monitored. Assessment of physical fitness and interpretation of laboratory results will provide the basis for developing and evaluating safe and goal oriented strategies tailored to maximize the benefits of health, fitness and well being. Students will develop a working knowledge of how to train specific body systems (aerobic, anaerobic, and muscular) for optimal performance and develop rehabilitation programs that target specific anatomical areas and related assessment techniques to monitor the clients progress.

Laboratory: This course introduces health and fitness field and laboratory instruments, techniques and procedures for basic and advanced fitness evaluations including several aerobic and anaerobic sub VO₂ max tests. Fitness evaluations are used to establish starting points and used to evaluate a participant's competency in performing physical fitness tests and exercise.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

1. **Apply knowledge of physiological adaptations that take place within the human body during exercise and work, including altitude training, thermal stress, and aging.**
 - The stress of altitude
 - Acclimatization
 - Metabolic, physiologic and exercise capacities at altitude
 - Altitude training and sea-level performance
 - Mechanisms of thermoregulation
 - Thermoregulation and environmental stresses during exercise
 - Aging and physiologic function
 - Age trends
 - Trainability and age
 - Physical activity, health, and longevity

2. **Assess levels of physical fitness to develop and evaluate safe and goal oriented strategies tailored to maximize the benefits of health, fitness and well being.**
 - Muscle soreness and stiffness
 - Stress test protocols
 - Structure and function of the respiratory system
 - Gas exchange and transport
 - Regulation of pulmonary ventilation
 - Pulmonary ventilation during exercise
 - Acid-base regulation
3. **Develop a working knowledge of how to train specific body systems (aerobic, anaerobic, and muscular) for optimal performance.**
 - Training principles
 - Physiology of training
 - Aerobic and anaerobic system changes with training
 - Methods of training
 - Overtraining
4. **Use health and fitness field and laboratory instruments, techniques and procedures for basic and advanced fitness evaluations including several aerobic and anaerobic sub VO₂ max tests.**
 - Isotonic strength
 - Isometric strength
 - Isokinetic strength
 - Anaerobic treadmill running
 - Lower body flexibility
 - Astrand cycle test
 - YMCA test
5. **Evaluate a participant's competency in performing physical fitness tests and exercise.**

III. TOPICS:

1. Exercise in the Heat
2. Exercise in the Cold
3. Exercise at Altitude
4. Nutritional Support for Exercise and Sport
5. Ergogenic Aids in Exercise and Sport I
6. Ergogenic Aids in Exercise and Sport II
7. Body Composition in Exercise and Sport
8. Ergonomics
9. Electrocardiography
10. Common Medications
11. Legal and Ethical Considerations & Referrals
12. Special Topics in Exercise Science

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

None

V. EVALUATION PROCESS/GRADING SYSTEM:

Theory: (4) Online Quizzes – 20% (5% each)

Theory: Weekly in class assignments/homework – 30%

Lab: Weekly Assignments – 30% (All Lab classes are **mandatory** attendance)

Lab: Final Practical Exam – 20%

Total: 100%

Note: Missed Tests and Late Assignments

If you miss a written test, you must call/email your instructor **BEFORE** the test to explain your absence. Only medical emergencies and extreme circumstances will warrant the opportunity to write the missed test at a later date. Official supporting documentation, such as a physician's certificate, may be required as confirmation of your illness. Arrangements with your instructor must be made as soon as you resume attendance at Sault College. Failure to comply with this policy will result in a zero grade for the missed test.

Written assignments must be submitted on the date and time specified. If the student is unable to do so, the teacher must be notified 24 hours prior to the due date and time. Failure to request an extension or requesting an extension later than 24 hours prior to the due date, will result in a zero grade for the assignment. For example; if the due date is on September 16, anything submitted after the 16th, will be counted as 0 grade. Similarly, if the assignment is due on September 16th by 5pm, anything submitted after 5pm will be considered late and will receive a 0 grade. Five marks per day of extension (with permission) will be deducted from the assignment for up to three academic days. For example, if an assignment has been granted a three day extension, there will be a five mark penalty each day it is late (total of 15 marks).

The request for an extension does not necessarily result in an extension. The final decision to permit an extension resides with the professor. The professor may choose to discuss the situation with the coordinator and/or dean of the program.

In the event of extenuating circumstances (ie. death, acute illness, disaster, etc.) where the extension could not be anticipated and which precludes the student from submitting the assignment on the due date an extension will be granted without penalty. The student is obliged to notify the teacher within 24 hours of the due date and collaborate on a date of submission. Appropriate documentation may be requested by the teacher to validate the extenuating circumstances.

Please see additional expectations for this course on your course syllabus.

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The following semester grades will be assigned to students in post-secondary courses:

<u>Grade</u>	<u>Definition</u>	<u>Grade Point Equivalent</u>
A+	90 – 100%	4.00
A	80 – 89%	3.00
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field /clinical placement or non-graded subject area.	
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.	
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.	
NR	Grade not reported to Registrar's office.	
W	Student has withdrawn from the course without academic penalty.	

If a faculty member determines that a student is at risk of not being successful in their academic pursuits and has exhausted all strategies available to faculty, student contact information may be confidentially provided to Student Services in an effort to offer even more assistance with options for success. Any student wishing to restrict the sharing of such information should make their wishes known to the coordinator or faculty member.

VI. SPECIAL NOTES:Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.

OFC Certification:

To be considered an ideal candidate for the OFC Group Fitness and Personal Fitness Trainer Certification, students must obtain a minimum overall grade of 75%.

VII. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located in D2L and on the portal form part of this course outline.