

# SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



Sault College

## COURSE OUTLINE

**COURSE TITLE:** Applied Exercise Science ii  
**CODE NO. :** FIT200 **SEMESTER:** 3  
**PROGRAM:** Fitness and Health Promotion  
**AUTHOR:** Allan Kary  
**INSTRUCTOR:** Steve McLeod  
**DATE:** Sept. 2009 **PREVIOUS OUTLINE DATED:**  
**APPROVED:** "Lucy Pilon"

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**CHAIR, HEALTH PROGRAMS**

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**DATE**

**TOTAL CREDITS:** 6

**PREREQUISITE(S):**

**HOURS/WEEK:** 6

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*For additional information, please contact the Chair, Health Programs*

*School of Health and Community Services*

*(705) 759-2554, Ext. 2689*

**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  $\text{VO}_2$  max tests, a glucose and cholesterol test, lactic acid test, an ECG test and  $\text{VO}_2$  max test. 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.
  - Exercising during pregnancy
  - 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. Develop rehabilitation programs that target specific anatomical areas and related assessment techniques to monitor the clients progress.
  - Clinical applications of exercise physiology for oncology, cardiovascular disease, pulmonary disease, neuromuscular disease, renal disease, and cognitive/emotional diseases
5. Use health and fitness field and laboratory instruments, techniques and procedures for basic and advanced fitness evaluations including several aerobic and anaerobic sub  $\text{VO}_2$  max tests, a glucose and cholesterol test, lactic acid test, an ECG test and  $\text{VO}_2$  max test.
  - Resting lung volumes
  - Exercise ventilation
  - Resting electrocardiogram
  - Exercise electrocardiogram
  - Isotonic strength
  - Isometric strength
  - Isokinetic strength
  - Anaerobic treadmill running
  - Lower body flexibility
  - Astrand cycle test
  - YMCA test
6. Evaluate a participant's competency in performing physical fitness tests and exercise.

**III. TOPICS:**

1. Pulmonary structure and function, gas exchange and transport, and the dynamics of pulmonary ventilation
2. Neural control of human movement
3. Acute and chronic responses of the endocrine system to exercise
4. Aerobic and anaerobic power training. Special aids to training and exercise
5. Altitude and thermal stresses in relation to exercise
6. Physical activity for an aging population, cancer and cardiovascular and pulmonary rehabilitation

**IV. REQUIRED RESOURCES/TEXTS/MATERIALS:**

Exercise Physiology: Energy, Nutrition & Human Performance 6<sup>th</sup> ed. By McArdle, Katch and Katch.

**V. EVALUATION PROCESS/GRADING SYSTEM:**

Theory: 3 Tests - 20% each (Total of 60%)

Lab: Weekly Assignments – 30%

Final Exam – 10%

Total: 100%

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%                                                                           |                               |
| 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.                                                                                    |

**Note:** For such reasons as program certification or program articulation, certain courses require minimums of greater than 50% and/or have mandatory components to achieve a passing grade.

It is also important to note, that the minimum overall GPA required in order to graduate from a Sault College program remains 2.0.

***NOTE: Mid Term grades are provided in theory classes and clinical/field placement experiences. Students are notified that the midterm grade is an interim grade and is subject to change.***

## VI. SPECIAL NOTES:

### Course Outline Amendments:

The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

### Retention of Course Outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

### Prior Learning Assessment:

Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question. Please refer to the Student Academic Calendar of Events for the deadline date by which application must be made for advance standing.

Credit for prior learning will also be given upon successful completion of a challenge exam or portfolio.

Substitute course information is available in the Registrar's office.

### Disability Services:

If you are a student with a disability (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Disability Services office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

Communication:

The College considers **WebCT/LMS** as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the **Learning Management System** communication tool.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Code of Conduct*. A professor/instructor may assign a sanction as defined below, or make recommendations to the Academic Chair for disposition of the matter. The professor/instructor may:

- (i) issue a verbal reprimand,
- (ii) make an assignment of a lower grade with explanation,
- (iii) require additional academic assignments and issue a lower grade upon completion to the maximum grade “C”,
- (iv) make an automatic assignment of a failing grade,
- (v) recommend to the Chair dismissal from the course with the assignment of a failing grade.

In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Student Portal:

The Sault College portal allows you to view all your student information in one place. **mysaultcollege** gives you personalized access to online resources seven days a week from your home or school computer. Single log-in access allows you to see your personal and financial information, timetable, grades, records of achievement, unofficial transcript, and outstanding obligations. Announcements, news, the academic calendar of events, class cancellations, your learning management system (LMS), and much more are also accessible through the student portal. Go to <https://my.saultcollege.ca>.

Electronic Devices in the Classroom:

Students who wish to use electronic devices in the classroom will seek permission of the faculty member before proceeding to record instruction. With the exception of issues related to accommodations of disability, the decision to approve or refuse the request is the responsibility of the faculty member. Recorded classroom instruction will be used only for personal use and will not be used for any other purpose. Recorded classroom instruction will be destroyed at the end of the course. To ensure this, the student is required to return all copies of recorded material to the faculty member by the last day of class in the semester. Where the use of an electronic device has been approved, the student agrees that materials recorded are for his/her use only, are not for distribution, and are the sole property of the College.

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.