OAKLAND UNIVERSITY
SCHOOL OF HEALTH SCIENCES
EXERCISE SCIENCE PROGRAM

COURSE:	EXS 4310/5310, Section 15035
COURSE TITLE:	Environment and Human Performance
COURSE CREDIT:	2 credits
SEMESTER/YEAR:	Winter 2018
COURSE LOCATION/ TIME:	1031 Human Health Building Friday --- 5:30 pm – 7:17 pm
PROFESSOR:	Tamara Hew-Butler DPM, Ph.D., FACSM
OFFICE:	3157 Human Health Building
OFFICE HOURS:	1:00 pm to 3:00 pm Wednesday, or by appointment.
TELEPHONE:	Office - 248-364-8686
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COURSE DESCRIPTION: A multi-perspective consideration of human adaptation to major factors which can significantly influence human movement in diverse micro- and macro-environments. To be considered are temperature, altitude, precipitation, light, noise, and socio-cultural factors. Health/safety factors in locomotion, rehabilitation, sport/recreation, and occupational contexts are emphasized. Prerequisite: EXS 304, 520.

COURSE OBJECTIVES: At the conclusion of the course, the students will have an understanding of the following:

1. The multifaceted nature of the environment for human movement.
2. The nature of human adaptation to a diversity of environments.
3. The effect of environmental conditions on both acute and chronic exercise.
4. The detrimental effects of environmental extremes on human health.
5. Gender and age as factors during exercise in various environments.
6. Exercise prescription in various environmental conditions.
7. Successfully apply critical thinking, effective communications, and subject-specific information literacy to an ergogenic aid/technique related to an environmental challenge to physical activity.
8. Demonstrate a knowledge of the elements, presentation processes, and organizing strategies for creating an effective analysis and presentation of an ergogenic aid/technique related to an environmental challenge to physical activity.

TEXT/READINGS:

Recommended - Armstrong, Lawrence E. (2000) Performing in Extreme Environments. Human Kinetics Publishers, Champaign, IL. (ISBN 0-88011-837-7)

COURSE PROCEDURES: This course will be a combination of lectures, labs and discussions. There is an assignment or Laboratory each week, with the exception of **February 2** and **March 16**. Each of these assignments is worth **5%** of your grade, so **IF YOU MISS CLASS, YOU WILL GET ZERO CREDIT FOR THAT ASSIGNMENT**. Each student will be expected to contribute to class discussions regarding the weekly assignments and may be randomly called upon to discuss their findings.

Tentative Topic Outline: Winter Semester, 2018

Week	Date	Topics	DUE In class
1	1/5	Introduction to the course. How to search and read the literature. Good vs. bad science	Understand the scientific method **Assignment 1 (5%)**
2	1/12	Definitions. Stress adaptation. Hot environments. Thermoregulation. Clothing effects. Individual differences.	**Assignment 2 (5%)**
3	1/19	Hot environments. Acclimation and acclimatization.	**Assignment 3 (5%)**
4	1/26	Hot environments. Age and gender effects	**Assignment 4 (5%)**
5	**2/2**	**Home Experiment** ***(No class)***	**Assignment 5 (5%)**
6	2/9	Hot environments. Thermal comfort. Heat Illnesses.	**Heat Lab**
7	2/16	Cold environments. Thermal protection. Acclimation.	**Assignment 6 (5%)**
	2/23	**WINTER BREAK**	
8	3/2	Cold environments. Acclimatization. Clothing effects. Wind chill.	**Assignment 7 (5%)**
9	3/9	Cold environments	**Cold Lab** **Assignment 8 (5%)**
10	**3/16**	. **Online Quiz (20%)** ***No class***	**Complete quiz in 60 minutes on this day**
11	3/23	The external environment. Exercise effects of surfaces, wind, circadian rhythm and air pollution.	***LAB WRITE-UP DUE***
12	3/30	High altitude. Effects of hypoxia. Acclimation and acclimatization. . Effects on human performance. Man at extreme altitude	**Assignment 9 (5%)**
13	4/6	Extra-terrestrial space and weightlessness	**Assignment 10 (5%)**
14	4/13	**MS Student Presentations (15%)**	**Attendance and evaluation forms mandatory**

Assignments/
Evaluation/Grading % of Grade Date/Due

Assignments……..... 50% .....Assignments 1-10 due in class

Online Quiz……20%.....March 16, 2018

Lab Write-up …..…..... 15% .....March 23, 2018

MS Presentations……15%.....April 13, 2018

GRADING SCALE

A	90-100%	4.0	C	79%	2.9	D	65%	1.5
				78%	2.8		64%	1.4
B	89%	3.9		77%	2.7		63%	1.3
	88%	3.8		76%	2.6		62%	1.2
	87%	3.7		75%	2.5		61%	1.1
	86%	3.6		74%	2.4		60%	1.0
	85%	3.5		73%	2.3			
	84%	3.4		72%	2.2	F	<59%	0.0
	83%	3.3		71	2.1			
	82%	3.2		70%	2.0			
	81%	3.1						
	80%	3.0						

Assignments (10 total, worth 50% of total grade):

The professor will either assign you a scientific research paper or ask you to find a relevant published report on a specific topic from a peer-reviewed scientific journal. You will write and submit a **1-page summary (hard copy)** of the scientific paper (introduction, methods, results, conclusions, and a statement of ***YOUR OPINION*** of the article) for discussion in class. You must also forward an electronic pdf file of the research article to the professor the ***preceding Monday*** to post on Moodle. Each paper/summary will count for **5%** of your final grade in the course. Grading: a) content of summary (Intro, methods, results, conclusion, your opinion statement) 4% and b) participation in discussion 1%.

Lab Assignment (worth 15% of total grade):

There will be a heat experiment and a cold experiment conducted during class. You will need to **reference a minimum of five scientific articles** in your write-up**.** Your write-up will be worth 15% and will be based on answering three questions thoughtfully and from an evidenced-based perspective. You must integrate your own findings with those observations documented in the scientific literature.

Online Quiz (worth 20% of total grade):

This quiz will be online (you do NOT have to come to class) and there will be a time limit. When you access the quiz, you will have exactly 60 minutes to complete the questions. The quiz will be available the entire day (1:01am to 11:59pm) and only accessed ***ONCE***.

Master's Student Presentations (15% of total grade):

Each graduate student will be asked to give a 15-minute presentation on an environmental ergogenic aid/technique related to heat, cold, altitude, pollution or weightlessness. They will present the physiological rationale (3%) for their chosen product and then present **scientific evidence both for (5%) and against (5%)** the usefulness of this product/technique. The student will finish with his/her own opinion of this product (2%). All undergraduate students will be evaluating each presentation for credit (15%). ***ANY student who is absent during these presentations will have 5% deducted from his or her own grade for this assignment.*** Examples of products/techniques would be ice slurries, cooling vests, forearm cooling, neck cooling, cryotherapy training, glycerol, altitude tents, specialty fabrics, face masks, nose strips, G-trainers, etc.).