

Date of request: 12-SEP-2018

Request ID: E-2018-HPHE-67

College: E

Department: HPHE

Initiator name: Timothy Michael

Initiator email: tim.michael@wmich.edu

Proposed effective term: 201940

Does course need General Education approval?: N

Will course be used in teacher education?: N

If 5000 level course, prerequisites apply to: G

Proposed course data:

Change Course HPHE 6720

Specific Course Change type selected: Title

Specific Course Change type selected: Description

1. Existing course prefix and number:

HPHE 6720

2. Proposed course title:

Laboratory Techniques in Exercise Physiology

3. Existing Banner course title:

Lab Techniques in Exercise Sci

4. Proposed course title to be entered in Banner:

Lab Techniques in Exer Phys

A. Please choose Yes or No to indicate if this class is a Teacher Education class:

No

B. Please choose the applicable class level:

Graduate

C. Please choose Yes or No to indicate if this class is a General Education class:

No

D. Explain briefly and clearly the proposed improvement.

This course will now have a title that will let students know specifically what the course is about and will cover. Along with the new title the course description will lend to a greater clarity as to the content of the course.

E. Rationale. Give your reason(s) for the proposed improvement. (If your proposal includes prerequisites, justify those, too.).

The proposed improvement is part of an overall change in the degree. The current degree, MS Exercise and Sport Medicine: Exercise Physiology has been in place for approximately 10 years or so. Since then a number of things have occurred that prompt this change: 1) This degree was first established with two concentrations, Exercise Physiology and Athletic Training. Athletic Training has gone on to become its own degree, thus having the title as it is currently, is no longer appropriate; 2) the need to update the curriculum is apparent by professional changes in the field as well as student requests and concerns; 3) new faculty have been hired that changes the expertise and allows for a greater breadth of offerings than was previously.

F. List the student learning outcomes for the proposed course or the revised or proposed major, minor, or concentration. These are the outcomes that the department will use for future assessments of the course or program.

Upon completion of this course, students will gain:

- theoretical knowledge on a variety of assessments of physiological function and human performance
- hands-on experience utilizing laboratory equipment and resources
- experience in the scientific style of writing
- experience in conducting independent research using different methodologies typically utilized in exercise science
- experience in data collection, analysis, and the write-up of results

Program assessment learning outcomes:

- a. Demonstrate an understanding of exercise physiology and biomechanics beyond the undergraduate level.
- b. Demonstrate the ability to critically evaluate scientific literature and apply the scientific method in the exercise sciences.
- c. Interpret empirical data and communicate effectively in an academic setting and/ or professional meeting
- d. Be able to apply knowledge of the exercise sciences through successful oral and written presentations
- e. Demonstrate professional behavior and effective written and oral communication skills in academic and/or professional settings

f. Demonstrate an understanding of exercise physiology and biomechanical concepts related to human performance by evaluating current research related to biomechanics and exercise physiology

g. Demonstrate the ability to use, calibrate and operate a variety of exercise physiology and biomechanical laboratory equipment

G. Describe how this curriculum change is a response to student learning assessment outcomes that are part of a departmental or college assessment plan or informal assessment activities. The proposed improvement is part of an overall change in the degree. The current degree, MS Exercise and Sport Medicine: Exercise Physiology has been in place for approximately 10 years or so. Since then a number of things have occurred that prompt this change: 1) This degree was first established with two concentrations, Exercise Physiology and Athletic Training. Athletic Training has gone on to become its own degree, thus having the title as it is currently, is no longer appropriate; 2) the need to update the curriculum is apparent by professional changes in the field as well as student requests and concerns; 3) new faculty have been hired that changes the expertise and allows for a greater breadth of offerings than was previously.

H. Effect on other colleges, departments or programs. If consultation with others is required, attach evidence of consultation and support. If objections have been raised, document the resolution. Demonstrate that the program you propose is not a duplication of an existing one. There will be no effect on other colleges, departments or programs.

I. Effect on your department's programs. Show how the proposed change fits with other departmental offerings.

There will be a small effect on department's other programs.

J. Effects on enrolled students: are program conflicts avoided? Will your proposal make it easier or harder for students to meet graduation requirements? Can students complete the program in a reasonable time? Show that you have considered scheduling needs and demands on students' time. If a required course will be offered during summer only, provide a rationale.

Currently students complete their course work by taking classes

FALL>SPRING>SUMMER>FALL>SPRING and it is expected that this will continue with the revised program. We currently have 2 required courses that are offered every Summer, with the new revised curriculum we will continue to require 2 courses in the Summer. The rationale for offering courses in the summer is the same as it is now, that is all faculty who teach in this graduate program also teach in the heavily enrolled undergraduate program. To be able to have faculty teach in both programs, the graduate program has only been able to function by offering some of the required courses in the Summer.

K. Student or external market demand. What is your anticipated student audience? What evidence of student or market demand or need exists? What is the estimated enrollment? What other factors make your proposal beneficial to students?

As this is part of a revised curriculum of an already established program we can simply state that enrollment has been between approximately 20-30 students/ year over the past 10

years. Currently labor statistics show that employment for exercise science related careers to be "faster than average" between 2014-2024. Students who study exercise science, particularly exercise physiology and biomechanics often go on to careers in the health fields such as physical therapy, occupational therapy, kinesiotherapy, medical school, chiropractic school. Others may go on to biomedical engineering, prosthetics, research and development in exercise and sport related companies etc.

L. Effects on resources. Explain how your proposal would affect department and University resources, including faculty, equipment, space, technology, and library holdings. Tell how you will staff additions to the program. If more advising will be needed, how will you provide for it? How often will course(s) be offered? What will be the initial one-time costs and the ongoing base-funding costs for the proposed program? (Attach additional pages, as necessary.)

The current resources are adequate in terms of equipment, space, technology, and library holdings. However, because we will be offering an additional biomechanics course, Dr. Lee will need to teach one less undergraduate course during the Fall Semester, this will most likely require a part-time instructor be hired or to have a graduate teaching assistant assigned to this class.

M. With the change from General Education to WMU Essential Studies, this question is no longer used.

For courses requesting approval as a WMU Essential Studies course, a syllabus identifying the student learning outcomes and an action plan for assessing the student learning outcomes must be attached in the Banner Workflow system.

Not Applicable

N. (Undergraduate proposals only) Describe, in detail, how this curriculum change affects transfer articulation for Michigan community colleges. For course changes, include detail on necessary changes to transfer articulation from Michigan community college courses. For new majors or minors, describe transfer guidelines to be developed with Michigan community colleges. For revisions to majors or minors, describe necessary revisions to Michigan community college guidelines. Department chairs should seek assistance from college advising directors or from the admissions office in completing this section.

Not Applicable

O. Current catalog copy:

HPHE 6720 Laboratory Techniques in Exercise Science

The purpose of this course is to educate the graduate student in the areas of measurement and laboratory techniques used in the assessment of exercise and/or athletic performance.

Specifically, the student will study the process and procedures used to determine a variety of parameters used in the study of exercise and sport performance. This information will then be used to help qualify and quantify exercise and sport performance. Prerequisite: Permission of instructor. 3 hours

P. Proposed catalog copy:

HPHE 6720 Laboratory Techniques: Exercise Physiology

The purpose of this course is to educate the graduate student in the areas of measurement and laboratory techniques used in the physiological assessment of exercise and/or athletic performance. Specifically, the student will study the process and procedures used to determine a variety of physiological parameters used in the study of exercise and sport performance. This information will then be used to help qualify and quantify exercise and sport performance.

Prerequisite: Permission of instructor. 3 hours

Department Curriculum Chair approver: Carol Weideman

Department Curriculum Chair comment:

Date: 24-OCT-2018

Department approver: Yuanlong Liu

Chair comment:

Date: 25-OCT-2018

Western Michigan University

HPHE 6720: Laboratory Techniques in Exercise Physiology

Instructor Information

Nicholas Hanson, PhD

Office: SRC 1064

Phone: (269) 387-2670

Email: nicholas.hanson@wmich.edu

Office Hours: TBD

Classroom: TBD

Course Description:

The purpose of this course is to educate the graduate student in the areas of measurement and laboratory techniques used in the physiological assessment of exercise and/or athletic performance. Specifically, the student will study the process and procedures used to determine a variety of physiological parameters used in the study of exercise and sport performance. This information will then be used to help qualify and quantify exercise and sport performance. Prerequisite: Permission of instructor.

Course Outcomes:

Upon completion of this course, students will gain:

- theoretical knowledge on a variety of assessments of physiological function and human performance
- hands-on experience utilizing laboratory equipment and resources
- experience in the scientific style of writing
- experience in conducting independent research using different methodologies typically utilized in exercise science
- experience in data collection, analysis, and the write-up of results

Required Text:

Haff, G. & Dumke, C. Laboratory Manual for Exercise Physiology, 1st Edition – ISBN-13: 978-0-7360-8413-0

Grading:

Laboratory Write-ups: 80%

Attendance/Article Reviews: 20%

Grade scale:

100 – 92% A

91 – 87 % BA

86 – 83 % B

82 – 78 % CB

77 – 70 % C

69 – 65 % DC

64 – 60 % D

59 – 0% E

Course Content:

The following topics will be tentatively covered in this course:

1. Fitness Assessment

- Introduction to course and expectations
- Definitions, evaluation, data presentation, etc.

2. Aerobic Power – Direct Determination

- Measurement of VO₂max, criteria for achievement of VO₂max, reference values
- Direct assessment of VO₂max using a treadmill and cycle ergometer

3. Aerobic Power – Indirect Determination

- Estimations of VO₂max via various methods
- Power output, velocity, speed, HR variability, etc.

4. Lactate and Ventilatory Thresholds

- Relationship of blood and muscle lactate, practical significance of the anaerobic threshold, etc.
- Demonstration of a lactate threshold test

5. Anthropometry and Body Composition

- Multi-component models, air displacement plethysmography, DEXA
- Determination of body composition using hydrostatic weighing, skinfold thickness, bioelectrical impedance analysis, and circumferences

6. Muscle Function Testing

- The measurement of human mechanical power
- Force production during isometric and isokinetic knee extensions, isokinetic fatigue test.
- What is muscular strength? Why is measuring strength important? Physiological adaptations associated with strength training, testing modalities, etc.

7. Anaerobic Power Testing

- Measurement of peak and mean anaerobic power, accumulated O₂ deficit, testing issues, etc.
- Assessment of power using the Wingate Power Test, gender differences in power production.

8. Environmental physiology

- Core Temp, skin Temp
- Sweat rate
- Shivering

Things to Remember:

- This outline/syllabus is tentative and subject to change.
- Cell phones, computers must be silenced and PUT AWAY during class time. No texting, etc. The only exception is if you use your computer to take notes.
- All written work must be typed.
- Students should bring a calculator to class every day.
- Students should arrive in class each week prepared to exercise. This typically means short-sleeve shirt, shorts, and close-toed athletic shoes.
- If a student has a medical reason not to perform any of the laboratory exercises, it is the student's responsibility to notify the instructor.
- Assignments will be assessed a 10% penalty per day for each day they are late.
- Students are encouraged to work together. However, assignments should be independently prepared.
- You are responsible for making yourself aware of and understanding the University policies and procedures that pertain to Academic Honesty. These policies include cheating, fabrication, falsification and forgery, multiple submission, plagiarism, complicity and computer misuse. (The academic policies addressing Student Rights and Responsibilities can be found in the Undergraduate Catalog at <http://catalog.wmich.edu/content.php?catoid=22&navoid=882> and the Graduate Catalog at <http://catalog.wmich.edu/content.php?catoid=23&navoid=938>.) If there is reason to believe you have been involved in academic dishonesty, you will be referred to the Office of Student Conduct. You will be given the opportunity to review the charge(s) and if you believe you are not responsible, you will have the opportunity for a hearing. You should consult with your instructor if you are uncertain about an issue of academic honesty prior to the submission of an assignment or test.
- Students are directed to <http://osc.wmich.edu> and www.wmich.edu/registrar to access the Code of Honor and general academic policies on such issues as diversity, religious observance, student disabilities, etc.
- Reasonable accommodations will be made for students with disabilities