

Date of request: 11-SEP-2018

Request ID: E-2018-HPHE-64

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:

New Course HPHE 6750

New course selected: This new course is not seeking approval as a general education course.

1. Proposed course prefix and number:

HPHE 6750

2. Proposed credit hours:

3

3. Proposed course title:

Laboratory Techniques in Biomechanics

4. Proposed course prerequisites:

HPHE 6730

5. Proposed course corequisites:

None

6. Proposed course prerequisites that may be taken concurrently (before or at the same time):
None

7. Minimum grade for prerequisites (default grades are D for Undergrad and C for Grad):
C

8. Major and/or minor restrictions:
Not Applicable

9. List all the four-digit major and/or minor codes (from Banner) that are to be included or excluded:
EXSM

10. Classification restrictions:
Include

11. List all the classifications (freshman, sophomore, junior, senior) that are to be included or excluded:
Graduate

12. Level restriction:
Include

13. List the level (undergraduate, graduate) that is to be included or excluded.
GR

14. Do prerequisites and corequisites for 5000-level courses apply to undergraduates, graduates, or both?
Not Applicable

15. Is this a multi-topic course?
No

16. Proposed course title to be entered in Banner:
Lab Techniques in biomechanics

17. Is this course repeatable for credit?
No

18. Is this course mandatory credit/no credit?
No

19. Select class type:

Lab or Discussion

20. How many contact hours per week for this course?

2.5

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 new course will now allow students more hands on experiences with biomechanics through a separate laboratory 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 be able to:

Demonstrate how to use various biomechanical measurement devices.

Demonstrate the use of high speed cameras to collect kinematic data

Demonstrate the use of force plates to collect kinetic data

Demonstrate the use of Electromyography as an adjunct data collection device

Demonstrate the ability to collect and analyze various biomechanical data and report the 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.

This added course will not effect any other program offered in the department.

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.

It is expected that students will continue to meet graduation requirements on time. 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:

Not Applicable

P. Proposed catalog copy:

HPHE 6750 Laboratory Techniques in Biomechanics

This course will enable students to understand how biomechanical equipment works and how to collect data using the equipment. The practical understanding obtained from the hands-on experience will allow students to better understand what they learned from the previous lecture course and to apply these concepts to various projects.

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 6750: Laboratory Techniques in Biomechanics

Instructor Information

Sangwoo Lee, Ph.D., Assistant Professor

Office: SRC 1060

Phone: (269) 387-2546

Email: sangwoo.lee@wmich.edu

Office Hours: by appointment

Classroom: TBD

Course Description

This course will enable students to understand how biomechanical equipment works and how to collect data using the equipment. The practical understanding obtained from the hands-on experience will allow students to better understand what they learned from the previous lecture course and to apply these concepts to various projects.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Demonstrate how to use various biomechanical measurement devices.
2. Demonstrate the use of high speed cameras to collect kinematic data
3. Demonstrate the use of force plates to collect kinetic data
4. Demonstrate the use of Electromyography as an adjunct data collection device
5. Demonstrate the ability to collect and analyze various biomechanical data and report the results.

Course Textbook

Noraxon electromyography (EMG), Vicon Motion Capture System, and Kwon3d XP Software manuals.

Course Outline & Topics Covered

Part I: Lab Techniques	Part II: Motion Analysis Project
Vicon Motion Capture System Force Plate	Data Collection Data Extraction & Interpretation

EMG Human Body Modeling using Kwon3d XP	Project Presentation
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Academic Integrity and Disability Support

You are responsible for making yourself aware of and understanding the policies and procedures in the Undergraduate and Graduate Catalogs that pertain to Academic Honesty. These policies include cheating, fabrication, falsification and forgery, multiple submission, plagiarism, complicity and computer misuse. (The policies can be found at <http://catalog.wmich.edu> under Academic Policies, Student Rights and Responsibilities.) 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). 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. In addition, you are encouraged to read important information on the following web page: <http://osc.wmich.edu>, www.wmich.edu/registrar, and www.wmich.edu/disabilityservices to access the Code of Honor and general academic policies on such issues as diversity, religious observance, student disabilities, etc.

Grading Policy

1. Exam (40%)
 - A. 1 exam (100 points)
 - B. Format:
 - Short explanations/definitions
 - Essay questions
2. Motion Analysis Project (40%)
3. Attendance (20%)
4. Grading: A (92%+), BA (87%+), B (83%+), CB (78%+), C (70%+), DC (65%+), D (60%+), and E (59%-),

Course-Specific Policies

1. Attendance: Full attendance is expected. **One point** will be taken off for each tardy (or early retirement).
2. Cell phone: TURN OFF your cell phone before entering the classroom.
3. Students must print out/download lecture slides in advance and bring them to the class. Those who do not bring printed/downloaded slides will be sent to a nearby computer lab.
4. Manners: Treat each other (between instructor and students) with respect. No whispering and chatting while teaching and collecting data.