College/Department/Unit:  AT 685 Principles and Application of Kinesiological EMG
Category:  New
Date for Council Review:  =
Recommendation is:  Approve
Investigator:  S. Legan
E-mail Address = sjlegen@uky.edu
1_Modifications:  None
2_Considerations:  See below
3_Contacts:  Contact was made with Dr. Tim Uhl who will be teaching this course, which will serve students in the new Ph.D. program in Rehabilitation Sciences. It consists of a weekly 3-hour class that will primarily consist of lectures and discussions, but will also include student presentations, and several labs, in which students will learn to collect electromyographic data. This course will fill the current need for students to understand the clinical application of electromyography, and to critically evaluate use of this approach in the literature. Dr. Uhl, who recently taught this course, and is now applying for a permanent new listing, clarified that there are not enough actual labs to warrant changing the listing or number of credit hours. Approval is recommended.
4_Additional_Information:  =
March 16, 2005

Memorandum

TO: Jeannine Blackwell, Dean of the Graduate School
FR: Sharon R. Stewart, Associate Dean for Academic Affairs
RE: Request for Addition of a New Course

The College of Health Sciences Academic Affairs Committee recommends approval of the attached request for the addition of a new course: AT 685 – Principles and Application of Kinesiological EMG.

Rationale: In the accompanying memo from the course instructor, Dr. Uhl states that the course has been offered twice in two years under the title series of KHP 781. The KHP Biomechanics faculty and Rehabilitation Sciences doctoral program faculty would like to make AT 685 a permanent course to be offered every two years for graduate students, especially doctoral students. Dr. Uhl indicates that course content addresses a commonly-used research and clinical tool. History indicates that there is sufficient interest in the course to make it a regular course offering.

Contact Person: Tim L. Uhl (3-1100, ext. 80858)
APPLICATION FOR NEW COURSE

1. Submitted by College of Health Sciences Date 11/13/04

Department/Division offering course Department of Rehabilitation Sciences/Division of Athletic Training

2. Proposed designation and Bulletin description of this course

a. Prefix and Number AT 685

b. Title* Principles and Application of Kinesiological EMG

*NOTE: If the title is longer than 24 characters (including spaces), write a sensible title (not exceeding 24 characters) for use on transcripts Princip & Appl Kinesiol EMG

c. Lecture/Discussion hours per week 2

d. Laboratory hours per week 2

e. Studio hours per week

f. Credits 3

g. Course description

To introduce the student to the principles and application of kinesiologic electromyography (EMG). Kinesiological EMG research incorporates the study of human movement with direct assessment of the muscles involved with human motion. The primary aim for this course is to provide the student with background and practical knowledge of kinesiological EMG in order to be able to perform and critically analyze kinesiological EMG studies. Students will enhance their understanding of neuromuscular properties of skeletal musculature. Students will be exposed to the common procedures used to collect, analyze, and interpret both surface and indwelling kinesiological EMG research.

h. Prerequisites (if any)

KHP 615 or comparable graduate level biomechanics course, the course can be taken concurrently.

Approval of instructor

i. May be repeated to a maximum of ________________ (if applicable)

4. To be cross-listed as

Prefix and Number

Signature, Chairman, cross-listing department

5. Effective Date Spring 06 will be offered in Spring 07 (semester and year)

6. Course to be offered

☐ Fall ☒ Spring ☐ Summer

7. Will the course be offered each year?

(Explain if not annually)

☐ Yes ☒ No

No, it will be offered on a two year rotating cycle with other advanced biomechanic type courses offered in association with the Department of Kinesiology and Health Promotion and the Department of Rehabilitation Sciences graduate programs. Due to the limited number of faculty we are unable to offer this course annually. Additionally, the number of graduate students requiring this as part of their course of study is relatively small, in 5-8 range.

8. Why is this course needed?

This course will serve primarily to educate our master and doctoral students in Biomechanics and Rehabilitation Sciences who use this instrument in their research endeavors. This course will also improve the student's ability to critically analyze scientific literature in area of biomechanical research that incorporates electromyography as a component of the research.
9. a. By whom will the course be taught? Tim L. Uhl PhD ATC PT

b. Are facilities for teaching the course now available? ☑ Yes ☐ No
If not, what plans have been made for providing them?
APPLICATION FOR NEW COURSE

10. What enrollment may be reasonably anticipated? 5-8

11. Will this course serve students in the Department primarily? ☐ Yes ☐ No
Will it be of service to a significant number of students outside the Department? ☐ Yes ☐ No
If so, explain.

This course will be of interest to any graduate student in the fields or human performance, rehabilitation, and neuromuscular control. I expect it to be of interest only to a relatively small number of graduate students primarily in the fields listed above. The other potential area of interest would be with some neuroscientists that are interested in clinical assessment techniques.

12. Will the course serve as a University Studies Program course? ☐ Yes ☐ No
If yes, under what Area?

13. Check the category most applicable to this course

☐ traditional; offered in corresponding departments elsewhere;
☒ relatively new, now being widely established
☐ not yet to be found in many (or any) other universities

14. Is this course applicable to the requirements for at least one degree or certificate at the University of Kentucky? ☐ Yes ☐ No

15. Is this course part of a proposed new program: ☐ Yes ☐ No
If yes, which?

16. Will adding this course change the degree requirements in one or more programs?* ☐ Yes ☐ No
If yes, explain the change(s) below

16. Attach a list of the major teaching objectives of the proposed course and outline and/or reference list to be used.

17. If the course is a 100-200 level course, please submit evidence (e.g., correspondence) that the Community College System has been consulted. ☐ Check here if 100-200.

18. If the course is 400G or 500 level, include syllabi or course statement showing differentiation for undergraduate and graduate students in assignments, grading criteria, and grading scales. ☐ Check here if 400G-500.

19. Within the Department, who should be contacted for further information about the proposed course?

Name Tim L. Uhl PhD ATC PT Phone Extension 323-1100 x 80858

*NOTE: Approval of this course will constitute approval of the program change unless other program modifications are proposed.
APPLICATION FOR NEW COURSE

Signatures of Approval:

Judith Page
Department Chair
3/16/05
Date

Sharon A. Heath
Dean of the College
3-16-05
Date

Date of Notice to the Faculty

Date

*Undergraduate Council

Date

*University Studies

Date

*Graduate Council

Date

*Academic Council for the Medical Center

8/25/05
Date

*Senate Council (Chair)

Date of Notice to University Senate

*If applicable, as provided by the Rules of the University Senate

ACTION OTHER THAN APPROVAL

Rev 3/04
Memo

To: College of Health Sciences Academic Council

From: Tim L. Uhl PhD ATC PT

Re: Addition of New Course AT685

Date: 12/06/04

Over the last 5 years I have offered a kinesiological EMG course two times as a professional seminar course under the title series of KHP 781. Upon discussion with the KHP Biomechanics faculty (Drs. Shapiro and Umberger) and the Rehabilitation Sciences faculty (Drs. Nitz and Malone) we would like to make this a permanent course that is offered every two years for graduate students, primarily directed toward PhD students.

The new AT 685 course will cover both principles of kinesiological EMG in research and will incorporate practical hands-on laboratory experiences. The anticipated benefit of this new course will be to expose graduate students in a more formal manner to this commonly-used research and clinical tool. Please contact me if you have further questions.

Respectfully

Tim L. Uhl
Assistant Professor
Department of Rehabilitation Sciences
Instructors:
Co-instructor: Tim L. Uhl PhD ATC PT
Office: Charles T. Wethington Bldg, 210c
Phone: 323-1100 ext. 80858, cell phone 859-230-7841
E-mail: tuhl2@uky.edu

Course Rationale
Kinesiological application of electromyography is to introduce the student to the principles and rationale for utilizing electromyographic assessment in kinesiological studies. The primary aim for this course is to provide the student background and practical knowledge of using both surface and intramuscular electromyography to perform and analyze electromyographical studies.

Course Goals and Objectives
At the completion of this course, the student will be able to:
- Understand the capabilities and limitation of kinesiological electromyographical data.
- Develop the skills necessary to apply surface and fine wire electrodes.
- Understand the various parameters in collecting and analyzing electromyographic data.
- Understand how to utilize software to analyze electromyographic data, primarily DataPac software.

Instructional Strategies
The class will meet for one three hour session per week. The class will meet on Wednesday evenings in the Musculoskeletal laboratory (Rm 222) in the Charles T. Wethington building. This class will be taught primarily as a discussion class with practical laboratory experiences to familiarize the student with the proper use of equipment involved in electromyographic assessment in kinesiological studies. Students will be given readings to complete for class discussion. Students will also have the opportunity to collect and analyze EMG data to interpret as project for a grade.

Learning Resources
Required Text:

Assigned Readings:
See below

Recommended Texts:

Basmajian JV and De Luca CJ. Muscle Alive, Their Functions Revealed by Electromyography. 5th ed Williams and Wilkins, Baltimore 1985.
Assessments and Evaluations

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<tr>
<th>Assignment</th>
<th>Percentage of final grade</th>
<th>Date due</th>
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<tr>
<td>Annotated bibliography of 3 similar articles related to a specific EMG topic</td>
<td>15</td>
<td>Week 4</td>
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<tr>
<td>Presentation of EMG topic</td>
<td>5</td>
<td>Week 5</td>
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<td>Mid-term examination</td>
<td>15</td>
<td>Week 9</td>
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<td>Laboratory project – proposal</td>
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<td>Laboratory project – data collection/analysis</td>
<td>20</td>
<td>TBD</td>
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<td>Laboratory project – final write up</td>
<td>15</td>
<td>Finals week</td>
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<tr>
<td>Final examination</td>
<td>15</td>
<td>Finals week</td>
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Unexcused absence from class will result in 5% drop in final grade for each absence

A = 90 – 100%
B = 80 – 89%
C = 70 – 79%
E= Below 70%

Administrative

Feedback
1. Students are encouraged to come to the instructor's office to discuss progress in the class.
2. Tests and/or papers will be retained by the course coordinator until approximately three weeks into the succeeding semester.

Academic Honesty
1. Each student in the class is expected to adhere to the highest standards of academic honesty. Cheating and plagiarism violate the rules of the University and the ethical standards of members in the allied health profession. Violations of the university’s rules regarding academic honesty can lead to a failing grade in the course and expulsion from the University. Students may view the Student Rights & Responsibilities Document at http://www.uky.edu/StudentAffairs/Code/part1.html.

Withdrawals and Incompletes
1. The last day to withdraw from the course is at the end of the ninth week for fall or spring semester. No withdrawals will be approved after that date.

2. It is the student's responsibility to properly process withdrawals. Students who fail to process withdrawals or who process them after the time that grade report sheets are printed, will receive a grade of E on the official grade sheet. To correctly process a withdrawal the student must obtain the signature of Dr. Uhl, obtain the signature of the student's advisor, and take the withdrawal form to the Registrar's office.
3. Incomplete (I) grades will be given only in extenuating circumstances and never as a replacement for a failing or substandard grade. Any student requesting an incomplete grade must see the course coordinator, Dr. Uhl, for approval and for additional rules governing incomplete grades.

University Closing
Students should be aware of the following sources of information in the event of inclement weather or other problems that might cause the University to close. Remember, if the University is open, students are expected to be in attendance and all tests will be administered. If the University is closed on a test day, the test will be given on the next class day.

The cancellation or delay of classes will normally be announced by 6:00 a.m. through the local media. The latest information will be available on the University of Kentucky INFOLINE at 257-5684, University of Kentucky TV Cable Channel 16, and WUKY or the UK Website at www.uky.edu.

Course Content

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<td>Overview, Motor Unit, Application of EMG</td>
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<td>Week 2</td>
<td>Applications and Limitations of surface EMG</td>
<td>Chp 3 (Cram and Kasman) Limitations and application of surface EMG</td>
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<td></td>
<td>Instrumentation and Data Collection</td>
<td>J. Biomech 13:135-163, 1997 Standards for EMG reporting</td>
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<td>Week 4</td>
<td>Laboratory session</td>
<td>Electrode application (surface and indwelling), skin preparation, Introduction to data collection hardware</td>
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<td>Interpretation of research findings</td>
<td>Write up of results following guideline standards</td>
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<td><strong>Final Examination</strong></td>
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