Agenda Item #15-11
Effective: Spring 2016

Eastern Illinois University
New/Revised Course Proposal Format
(Approved by CAA on 4/3/14 and CGS on 4/15/14, Effective Fall 2014)

Banner/Catalog Information (Coversheet)

1. **__X__New Course or _____Revision of Existing Course**

2. **Course prefix and number:** KSS 5630 _____

3. **Short title:** __Advanced Biomechanics

4. **Long title:** _ Advanced Biomechanics of Resistance Training

5. **Hours per week:** _3__ Class _0__ Lab __3_ Credit

6. **Terms:** ___ Fall _X__ Spring ___ Summer ___ On demand

7. **Initial term**: ___ Fall __X_ Spring ___ Summer Year: __2016____

8. **Catalog course description:** This course will explore the biomechanical basis of the transduction process that promotes skeletal muscle adaptation. An emphasis will be placed on qualitative and quantitative description of resistance training techniques. There will be detailed discussion concerning the application of resistance training biomechanics to promote specificity of training.

9. **Course attributes:** N/A

   General education component: _____

   ___ Cultural diversity ___ Honors ___ Writing centered ___ Writing intensive ___Writing active

10. **Instructional delivery**
    Type of Course:

    _X__ Lecture ___ Lab ___ Lecture/lab combined ___ Independent study/research

    ___ Internship ___ Performance ___ Practicum/clinical ___ Other, specify: _____

    Mode(s) of Delivery:

    _X__ Face to Face ___ Online ___ Study Abroad

    ___ Hybrid, specify approximate amount of on-line and face-to-face instruction_____

11. Course(s) to be deleted from the catalog once this course is approved. _KSS 5125_____

12. **Equivalent course(s):** None._____

    a. **Are students allowed to take equivalent course(s) for credit?** ___ Yes _X__ No

13. **Prerequisite(s):** KSS Biomechanics 3800 or equivalent course

    a. **Can prerequisite be taken concurrently?** ___ Yes _X__ No

b. Minimum grade required for the prerequisite course(s)? "C" or better

c. Use Banner coding to enforce prerequisite course(s)? _X__ Yes ___ No

d. Who may waive prerequisite(s)?

___ No one _X__ Chair ___ Instructor ___ Advisor ___ Other (specify)

14. Co-requisite(s): None. _____

15. Enrollment restrictions

a. Degrees, colleges, majors, levels, classes which <u>may</u> take the course: Restricted to KSS Graduate Students within the Exercise Science Concentration who have passed KSS Biomechanics 3800 or equivalent course with a "C" grade or better.

b. Degrees, colleges, majors, levels, classes which may <u>not</u> take the course: Students who are not KSS Graduate Students within the Exercise Science Concentration.

16. Repeat status: __X_ May not be repeated ___ May be repeated once with credit

17. Enter the limit, if any, on hours which may be applied to a major or minor:

18. Grading methods: __X_ Standard ___ CR/NC __ Audit ___ ABC/NC

19. Special grading provisions:

___ Grade for course will <u>not</u> count in a student's grade point average.

___ Grade for course will <u>not</u> count in hours toward graduation.

___ Grade for course will be removed from GPA if student already has credit for or is registered in:

___ Credit hours for course will be removed from student's hours toward graduation if student already has credit for or is registered in: _____

20. Additional costs to students:
Supplemental Materials or Software__ None. _____

Course Fee _X__No ___Yes, Explain if yes_____

21. Community college transfer:

___ A community college course may be judged equivalent.

_X__ A community college may <u>not</u> be judged equivalent.

Note: Upper division credit (3000+) will <u>not</u> be granted for a community college course, even if the content is judged to be equivalent.

<u>Rationale, Justifications, and Assurances (Part I)</u>

1. ___Course is required for the major(s) of _____

___Course is required for the minor(s) of _____

___Course is required for the certificate program(s) of _____

__X_ Course is used as an elective for the KSS Graduate Students within the Exercise Science Concentration

Rationale for proposal: Presently, there are no Biomechanics courses within the KSS Graduate Program. Biomechanics is an area that Graduate Students have consistently commented should be included within the Exercise Science Concentration. Students that obtain employment in clinical, commercial, or corporate fitness settings need this information to effectively prescribe resistance training exercises.

2. Justifications for (answer N/A if not applicable)

Similarity to other courses: N/A

Prerequisites: The KSS Biomechanics 3800 or equivalent course is needed to understand basic foundational material that will enable in-depth study of complex biomechanical concepts in the proposed course.

Co-requisites: N/A

Enrollment restrictions: Graduate Students with the KSS Exercise Science Concentration would have the foundational knowledge for effective study in an advanced Biomechanics course.

Writing active, intensive, centered: Research articles that are relevant to class lectures will be assigned with summary essays assigned to address questions from each article.

3. General education assurances (answer N/A if not applicable) N/A

General education component:

Curriculum:

Instruction:

Assessment:

4. Online/Hybrid delivery justification & assurances (answer N/A if not applicable) N/A

Online or hybrid delivery justification:

Instruction:

Integrity:

Interaction:

Model Syllabus (Part II)

1. Course number and title: KSS 5630 Advanced Biomechanics of Resistance Training

2. Catalog description: This course will explore the biomechanical basis of the transduction process that promotes skeletal muscle adaptation. An emphasis will be placed on qualitative and quantitative description of resistance training techniques. There will be detailed discussion concerning the application of resistance training biomechanics to promote specificity of training.

3. Learning objectives:
    1. Students will demonstrate knowledge of the microanatomy of skeletal muscle and associated connective tissue. (Depth of content knowledge)
    2. Students will demonstrate knowledge of the transduction process in skeletal muscle in response to biomechanical overload. (Depth of content knowledge)
    3. Students will demonstrate knowledge of the underlying mechanism of muscular torque production. (Depth of content knowledge)
    4. Students will analyze different sources of resistive torque. (Critical thinking and problem-solving skills)
    5. Students will demonstrate application of varying resistive torque to alter the difficulty level of resistance exercises. (Effective oral and written communication skills)
    6. Students will analyze resistance exercise techniques from a qualitative perspective. (Evidence of advanced scholarship through research and/or creative activity)
    7. Students will analyze resistance exercise techniques from a quantitative perspective. (Evidence of advanced scholarship through research and/or creative activity)
    8. Students will assimilate and interpret biomechanical concepts in resistance training prescription to promote different adaptational characteristics. (Critical thinking and problem-solving skills)
    9. Students will assimilate and interpret biomechanical concepts in resistance training prescription to promote transfer of training to daily activities or sports performance based on individual needs, training background, and equipment availability. (Critical thinking and problem-solving skills; Effective oral and written communication skills)

4. Course materials: Zatsiorsky, V. & B. Prilutsky. *Biomechanics of Skeletal Muscles*. Human Kinetics. 2012.

5. Weekly outline of content.

Weeks 1 and 2	Skeletal Muscle Microanatomy (Objective 1)
Weeks 3 and 4	Mechanotransduction (Objective 2) Exam 1
Weeks 5 and 6	Mechanism of muscular torque production (Objective 3)

Weeks 7 and 8	Applying/varying resistive torque (Objectives 4 and 5) Class-Group Assignment 1 Exam 2 (Mid-term)
Weeks 9 and 10	Qualitative analysis (Objective 6) Class Group Assignment 2
Weeks 11 and 12	Quantitative analysis (Objective 7) Research Assignment #1 (see requirements below) Exam 3
Weeks 13 and 14	Resistance training for different adaptational characteristics in skeletal muscle (Objective 8) Research Assignment #2
Weeks 15 and 16	Biomechanical considerations in resistance exercise selection (Objective 9) Research Assignment #3 Exam 4 (Final)

6. Assignments and evaluation, including weights for final course grade.

Research Assignment Requirements:

Students will be asked to seek out an original research study that specifically relates to the current class topic (e.g. "Weeks 11 and 12-- Quantitative analysis of resistance exercises"). Students will be asked to write a summary of the study to address the following five questions:

1. What research hypothesis and/or research question was being addressed?
2. How did the authors justify addressing the research hypothesis and/or research question?
3. How did the authors address the research hypothesis and/or research question?
4. What were the key findings from the study?
5. How might these findings be utilized in a practical setting?

For each of the three Research Assignments, grading will be based on the EIU written rubric found at the following website:

http://www.eiu.edu/assess/RubricSP08rev.pdf

Class Group Assignments:

Students will be divided into groups and given a sub-topic that specifically relates to the current overall class topic (e.g. "Weeks 7 and 8—Applying/varying resistive torque"). Each group of students will be asked to give a 15-minute oral presentation to demonstrate practical skills in utilizing resistance exercises.

For the two Class Group Assignments, grading will be based on the EIU oral rubric found at the following website:

http://www.eiu.edu/~assess/speaking%20rubric.pdf

7. Grading scale:

Exams = 60%
Research Assignments = 25%
Class Group Assignments = 15%

90-100%	=	A
80-89%	=	B
70-79%	=	C
60-69%	=	D
<59%	=	F

8. Correlation of learning objectives to assignments and evaluation.

Objective	Exams	Assignments	Group Project
1	X		
2	X		
3	X		
4	X	X	X
5		X	X
6		X	X
7	X	X	X
8	X	X	X
9	X	X	X

Date approved by the department or school: 10/24/14
Date approved by the college curriculum committee: 2/9/15
Date approved by the Honors Council *(if this is an honors course):*
Date approved by CAA: CGS: