Part One: Catalog Description

Catalog description

1. Course Number: KSS 4460
2. Short title: PRIN RES TRAIN
3. Long Title: Principles of Resistance Training
4. Credit: 3-0-3
5. Term to be offered: On Demand
6. Initial term of course offering: Spring, 2008
7. Course Description:
   Application of scientific principles towards the development of safe and
effective resistance training programs designed to improve general health
and physical performance in various populations.

8. Registration restrictions:
   a. There are no course equivalents
   b. Prerequisites: Grade of “C” or better in BIO 2001G, KSS 1500, KSS
      2440, KSS 4340, KSS 4440.
   c. The Department Chair can waive the pre-requisites
   d. There are no co-requisites
   e. Repeat status: Course may not be repeated.
   f. This course is not restricted to any degree, college, major or level
   g. There are no exclusions from this course

9. This course is writing active. Assignments require students to write such
   things as case studies and article reviews. Students will also be required to
   provide answers to some exam questions in an essay format.

10. Grading methods: Standard letter ABCDF
11. Instructional delivery method: Lecture

Part Two: Assurance of Student Learning

1. Student Learning Objectives and Evaluation
   Students will be able to:
   - Identify the neuromuscular, hormonal, bioenergetic, and cardio respiratory
     adaptations to resistance training
   - Describe and demonstrate the biomechanics of resistance training
   - Compare resistance training programs designed for different populations
   - Analyze and apply resistance training principles towards programs designed to
     improve muscular strength, power, hypertrophy and endurance

   a. This is not a general education course.
   b. This is not a graduate level course.
2. Assessment of student achievement:

**Sample Assessment Table for Undergraduate Students**

<table>
<thead>
<tr>
<th></th>
<th>Exams (50%)</th>
<th>Assignments (30%)</th>
<th>Case Studies (20%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscle physiology</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adaptations</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biomechanics</td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>Populations</td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>Testing</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Programs</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

3. Evaluation

Exams (50%)
Assignments (30%)
Case Studies (20%)

Grading scale

- ≥90% A
- 80-89% B
- 70-79% C
- 60-69% D
- ≤59% F

4. This course is neither a technology-delivered course nor a nontraditional-delivered course

5. This course is number 4460 therefore it does not meet the requirements for more stringent grading for graduate credit

6. Writing Active. This course will include written case studies, lab reports and in-class assignments.

**Part III: Outline of the Course**

Outline of the Course:

1. Course will be delivered in a 50 minute lecture format, three times per week for fifteen weeks.

**Week One-Two**

Review of basic muscle anatomy and physiology
- Muscle macrostructure and microstructure
- Sliding-filament theory
- Muscle fiber types

**Week Three**

Review of exercise bioenergetics
- Biological energy systems
- Substrate depletion and repletion

**Week Four**

Application of biomechanics to resistance training
- Human strength and power
- Sources of resistance to muscle contraction
• Joint biomechanics
• Movement analysis

**Week Five-Six** Resistance training for various populations
• Gender
• Elderly
• Children
• Special Populations

**Week Seven-Nine** Testing procedures
• Strength and power
• Endurance and flexibility
• Agility and speed

**Week Ten-Eleven** Resistance training techniques and safety
• Technique fundamental
• Spotting free-weight exercises

**Week Twelve-Fourteen** Program Design
• Strength and power training programs
• Hypertrophy and endurance programs
• Speed and agility programs

**Week Fifteen** Exercise prescription principles
• Periodization and training variability
• Injuries and healing

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**Part IV: Purpose and Need**

1. **Rationale**
   Resistance training improves general health as well as physical performance and has increased in general popularity. This course applies scientific principles and current understanding to the proper development and application of resistance training testing and program design. Also, this course will help prepare students to become certified by the National Strength and Conditioning Association or other professional organizations.
   a. This is not a general education course.
   b. This course will not be technology delivered.

2. **Justification of the level of the course.**
   Course content applies and expounds upon knowledge from lower level courses [e.g. KSS 2440 (Kinesiology, and KSS 4340 (Exercise Physiology)]; therefore this is a senior level course.

3. **a. This course is not similar to any existing course.**
   b. Resistance training improves general health as well as physical performance and has increased in general popularity. This course applies scientific principles and current understanding to the proper development and
application of resistance training testing and program design. Also, this course will help prepare students to become certified by the National Strength and Conditioning Association or other professional organizations.

4. Impact on program.
   a. This course will be required of all Kinesiology and Sports Studies majors within the Exercise Science concentration.
   b. This is not a graduate level course.

**Part Five: Implementation**

1. Faculty members to whom course may be assigned: Dr. Jeff Willardson, Dr. Jake Emmett, and Mr. John McInerney

2. Additional costs to students: none

3. Texts and supplementary materials to be used:

   Texts:

**COMMUNITY COLLEGE TRANSFER**

A community college course will not be judged equivalent to this course.

**PART VII: APPROVALS**

Date approved by the department or school ______ 9/22/06 _________________

Date approved by the college curriculum committee ______ 10/9/06 _________________

Date approved by the Honors Council (if this is an honors course) **Not applicable**

Date approved by CAA ______ 10/26/06 _________________