

KINE 096A: BIOMECHANICS OF STRENGTH TRAINING

Originator

mdillon

Justification / Rationale

This course will change from lecture and lab to all lab. Course size needed to be adjusted to reflect actual class size.

Effective Term

Fall 2020

Credit Status

Credit - Degree Applicable

Subject

KINE - Kinesiology

Course Number

096A

Full Course Title

Biomechanics of Strength Training

Short Title

BIO OF STRENGTH TR

Discipline**Disciplines List**

Kinesiology

Modality

Face-to-Face

Catalog Description

This course provides the advanced application of strength training principles. Includes safety and personal health issues, advanced strength and conditioning principles, testing and evaluation, exercise techniques, and program design.

Schedule Description

Advanced application of training principles utilizing resistance machinery, free weight apparatus and other selected physical conditioning methods.

Lecture Units

0

Lab Units

1

Lab Semester Hours

54

In-class Hours

54

Out-of-class Hours

0

Total Course Units

1

Total Semester Hours

54

Class Size Maximum

35

Course Content

1. Safety and Personal Health Issues
 - a. Health and exercise history
 - b. Rules and etiquette
2. Biomechanics of Strength Training Principles
 - a. Cardiovascular and respiratory anatomy and physiology
 - b. General adaptations to resistance and endurance training programs
 - c. Individual differences and their implications to training programs
3. Testing and Evaluation
 - a. Selecting appropriate tests
 - b. Organizing testing procedures
 - c. Testing protocols and procedures
 - d. Evaluating test data
4. Exercise Techniques
 - a. Warm-up and cool-down
 - b. Speed and agility development and plyometric training
 - c. Strength training techniques
 - d. Dynamic flexibility
5. Program Design
 - a. Training methods and modes
 - b. Exercise selection
 - c. Muscle balance
 - d. Exercise order
6. Load assignment
7. Training volume
8. Rest periods
9. Training frequency
10. Periodization: concepts and application
11. Functional strength exercises
 - a. Ground based
 - b. Multiple joint
 - c. Three dimensional
12. Biomechanics
 - a. Form, technique, and history
 - i. Powerlifting
 1. squat, bench press, deadlift
 - ii. Olympic lifting
 1. Clean, jerk, snatch
 - iii. Bodybuilding
 - b. Neuromuscular adaptations to resistance training
 - i. Muscle and neurological recruitment
 - c. Nutritional factors in resistance training, fitness, and performance
 - d. Physiological benefits of resistance training
 - e. TRX training
 - i. Benefits, techniques, and core strength

Lab Content

1. Application of proper exercise techniques
 - Warm-up and cool-down
 - Speed and agility development and plyometric training
 - Strength training techniques
 - Dynamic flexibility
2. Design an individualized program including proper
 - Training methods and modes
 - Exercise selection

- Muscle balance
- Exercise order
- Load assignment

Course Objectives

Objectives	
Objective 1	Design and implement a safe and effective conditioning program.
Objective 2	Describe advanced strength and conditioning principles.
Objective 3	Select, organize, and implement testing procedures which will give reliable evaluation results.
Objective 4	Explain what proper exercise techniques are with regards to dynamic flexibility, speed, agility and strength training.

Student Learning Outcomes

Upon satisfactory completion of this course, students will be able to:	
Outcome 1	Students will demonstrate proper biomechanical lifting techniques.

Methods of Instruction

Method	Please provide a description or examples of how each instructional method will be used in this course.
Activity	Instructor lead demonstrations of proper biomechanics when lifting and students will perform each activity.
Individualized Study	Students will watch instructional videos on the correct biomechanics of certain lifting techniques.
Discussion	Students will work in pairs to discuss concepts of flexibility, speed, agility, and strength training.
Demonstration, Repetition/Practice	Students will work in groups and practice proper program designs concepts including: warm up and cool down, flexibility and strength training techniques.

Methods of Evaluation

Method	Please provide a description or examples of how each evaluation method will be used in this course.	Type of Assignment
Tests/Quizzes/Examinations	Students will perform pre-test and post-test biomechanical strength testing.	In Class Only
Group activity participation/observation	Students will work in partners to collaborate on program design and discuss proper biomechanics while lifting.	In Class Only
Student participation/contribution	Students will earn active daily participation points.	In Class Only
Mid-term and final evaluations	Students will design and implement an advanced strength training program.	In and Out of Class

Assignments

Other In-class Assignments

1. Students will practice the biomechanics of strength training as approved by the instructor.
2. Students will design an individualized strength training program.

Other Out-of-class Assignments

1. Students will read journal articles about the biomechanics of strength training.
2. Students will watch approved videos on the biomechanics of strength training.

Grade Methods

Letter Grade Only

Comparable Transfer Course Information

University System

CSU

Campus

CSU East Bay

Course Number

KINE 210

Course Title

Intermediate Weight Training

MIS Course Data

CIP Code

31.0501 - Health and Physical Education/Fitness, General.

TOP Code

083500 - Physical Education

SAM Code

E - Non-Occupational

Basic Skills Status

Not Basic Skills

Prior College Level

Not applicable

Cooperative Work Experience

Not a Coop Course

Course Classification Status

Credit Course

Approved Special Class

Not special class

Noncredit Category

Not Applicable, Credit Course

Funding Agency Category

Not Applicable

Program Status

Program Applicable

Transfer Status

Transfer CSU, limited UC

Allow Audit

No

Repeatability

No

Materials Fee

No

Additional Fees?

No

Approvals**Curriculum Committee Approval Date**

11/21/2019

Academic Senate Approval Date

12/12/2019

Board of Trustees Approval Date

1/17/2020

Chancellor's Office Approval Date

1/18/2020

Course Control Number

CCC000554180