

**KINES 81 Course Outline as of Fall 2024****CATALOG INFORMATION**

Dept and Nbr: KINES 81 Title: INTRO TO EXERCISE PHYSIO  
 Full Title: Intro to Exercise Physiology, Assessment, and Program Design  
 Last Reviewed: 2/26/2024

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	2.50	17.5	Lecture Scheduled	43.75
Minimum	3.00	Lab Scheduled	1.50	5	Lab Scheduled	26.25
		Contact DHR	0		Contact DHR	0
		Contact Total	4.00		Contact Total	70.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 87.50

Total Student Learning Hours: 157.50

Title 5 Category: AA Degree Applicable

Grading: Grade Only

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly:

**Catalog Description:**

In this course the students will examine the human physiological responses and adaptations of exercise and physical training. Course content is part of the national American Council on Exercise (ACE) certification program, this course along with Kines 80 and 83 will prepare students to take the ACE Personal Trainer and/or Group Fitness Certification exam.

**Prerequisites/Corequisites:****Recommended Preparation:**

Eligibility for ENGL 100 OR EMLS 100 (formerly ESL 100) or equivalent

**Limits on Enrollment:****Schedule of Classes Information:**

Description: In this course the students will examine the human physiological responses and adaptations of exercise and physical training. Course content is part of the national American Council on Exercise (ACE) certification program, this course along with Kines 80 and 83 will prepare students to take the ACE Personal Trainer and/or Group Fitness Certification exam.  
 (Grade Only)

Prerequisites/Corequisites:

Recommended: Eligibility for ENGL 100 OR EMLS 100 (formerly ESL 100) or equivalent

Limits on Enrollment:

Transfer Credit: CSU;

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>	Effective:	Inactive:
<b>CSU GE:</b>	<b>Transfer Area</b>	Effective:	Inactive:
<b>IGETC:</b>	<b>Transfer Area</b>	Effective:	Inactive:
<b>CSU Transfer:</b>	Transferable	Effective: Fall 2010	Inactive:
<b>UC Transfer:</b>		Effective:	Inactive:

**CID:**

**Certificate/Major Applicable:**

Both Certificate and Major Applicable

## **COURSE CONTENT**

**Student Learning Outcomes:**

At the conclusion of this course, the student should be able to:

1. Identify and differentiate credible sources and concepts for interpreting scientific research.
2. Describe the principles of exercise training and adaptation on the skeletal muscles, nervous system, cardiorespiratory system, body composition, metabolism, environmental conditions, and fatigue and integrate them into a safe and effective training plan.

**Objectives:**

At the conclusion of this course, the student should be able to:

1. Assess one's health by completing a physical activity readiness questionnaire (PARQ), medical/health history, and lifestyle questionnaire.
2. Demonstrate the ability to administer baseline fitness assessments in each component of fitness and interpret the results.
3. Identify strategies, barriers, and methods of goal setting and design written exercise programs for various case studies.
4. Describe the principles and variables of training for a successful annual training plan.
5. Relate general principles and adaptations of aerobic, anaerobic, and resistance training to exercise training regimens.
6. Comprehend the role of metabolism, bioenergetics, and energy expenditure in varying levels of exercise intensity and at rest.
7. Describe the structure and function of the nervous system as it relates to neural control of human movement.
8. Define body composition and its relationship to health, exercise and sport participation.
9. Identify the principles and physiological responses to various environmental conditions (i.e. higher altitude, heat, and cold).

**Topics and Scope:**

## I. Resting Assessments and Anthropometric Measurements

### A. Sequencing assessments

1. preparticipation screening
  - a. physical activity readiness questionnaire
  - b. health history
  - c. medical clearance
2. heart rate and blood pressure
3. static posture and movement assessments
4. flexibility
5. cardiovascular fitness
6. body composition and anthropometric measurements
  - a. bioimpedance analysis
  - b. hydrostatic weighing
  - c. body mass index (BMI)
  - d. skinfolds
  - e. circumference
7. muscular fitness
8. skill-related fitness

## II. Cardiorespiratory Training, Physiology, Assessment, and Programming

### A. Cardiovascular system - heart and vascular system

### B. Respiratory system

1. oxygen carrying capacity
2. oxygen delivery
3. oxygen extraction

### C. Physiological adaptations to acute and chronic cardiovascular exercise

### D. Environmental considerations when exercising

1. in the heat
2. in the cold
3. in high altitude

### E. General guidelines for cardiorespiratory exercise for health and fitness

1. frequency, intensity, time and type principle (FITT)
2. heart rate
3. rate of perceived exertion (RPE)
4. volume or amount of oxygen your body consumes ( $VO_2$ )
5. caloric expenditure
6. ventilatory threshold
7. steady state and interval-based exercise

## III. Components of a Cardiorespiratory Workout Session

### A. Warm-up

### B. Conditioning phase

### C. Cool-down

## IV. American Council on Exercise Integrated Fitness Training Model- Cardiorespiratory Training

### A. Base training

### B. Fitness and performance training

### C. Program design

## V. Foundations and Benefits of Muscular Training

### A. Anatomical system

1. Muscular contraction
2. Muscle-fiber type
3. Muscle-fiber microanatomy

- 4. Connective tissue
- B. Benefits of Muscular Training
  - 1. Physiological adaptations to muscular training
    - a. acute
    - b. long-term
  - 2. Factors that influence muscular strength and hypertrophy
  - 3. Muscular training principles
    - a. progression
    - b. specificity
    - c. overload
    - d. reversibility
    - e. diminishing returns
    - f. training frequency
    - g. exercise selection and order
    - h. training volume
    - i. training intensity
    - j. training tempo
    - k. rest intervals
- VI. Muscular Training Assssments
  - A. Functional assessments
    - 1. load and speed
    - 2. power
    - 3. speed, agility and quickness
- VII. Integrated Exercise Programming: From Evidence to Practice
  - A. Evidence based practice - interpreting scientific research
  - B. American Council on Exercise Integrated Fitness Training Model Cardiorespiratory Training Programming
  - C. Base training
  - D. Fitness training
  - E. Performance training
- VIII. American Council on Exercise Integrated Fitness Model Muscular Training Performance
  - A. Functional training
  - B. Movement training
  - C. Load/speed training
  - D. Periodization
  - E. Program maintenance
  - F. Recover
  - G. Case studies

All topics are covered in the lecture and lab portions of the course.

### **Assignment:**

#### Lecture-Related Assignments:

1. Read an average of 20-30 pages per week of text and laboratory material
2. Development of individualized exercise programs
3. Research article summaries
4. Client project - Case studies assessment and program design written reports
5. Exercise goals and journal/log
6. Quizzes and exams

### Lab-Related Assignments:

1. Perform labs, assess and tabulate data collected
2. Attendance and participation
3. Field test administration

### Methods of Evaluation/Basis of Grade:

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Individualized Exercise Programs, Research Article Summaries, Exercise goals and journal/ log

Writing  
10 - 50%

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

None

Problem solving  
0 - 0%

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Field test administration, client projects, perform labs, assess and tabulate data collected

Skill Demonstrations  
5 - 25%

**Exams:** All forms of formal testing, other than skill performance exams.

Quizzes and exams

Exams  
40 - 70%

**Other:** Includes any assessment tools that do not logically fit into the above categories.

Participation and Attendance

Other Category  
5 - 15%

### Representative Textbooks and Materials:

The Exercise Professional's Guide to Personal Training. American Council on Exercise. 2020  
Instructor Prepared materials