

KIN151 : Applied Exercise Science

General Information

Author:	<ul style="list-style-type: none">Erin Calderone
Attachments:	Advisory Committee Minutes 10_21_22.pdf
Course Code (CB01) :	KIN151
Course Title (CB02) :	Applied Exercise Science
Department:	KIN
Proposal Start:	Winter 2025
TOP Code (CB03) :	(0835.20) Fitness Trainer
CIP Code:	(31.0507) Physical Fitness Technician.
SAM Code (CB09) :	Clearly Occupational
Distance Education Approved:	Yes
Will this course be taught asynchronously?:	No
Course Control Number (CB00) :	CCC000506843
Curriculum Committee Approval Date:	04/10/2024
Board of Trustees Approval Date:	06/18/2024
Last Cyclical Review Date:	09/27/2023
Course Description and Course Note:	KIN 151 introduces the student to the fundamental scientific concepts applicable to exercise and physical fitness. Areas of study include: functional anatomy, kinesiology, biomechanics and exercise physiology, and the course addresses acute and chronic effects of exercise with practical applications to fitness programming and instruction. This course also prepares students for the scientific content requirements that are common to the certified personal trainer (CPT) and group fitness instructor (GFI) exams offered by several national certification agencies.
Justification:	Transferability/C-ID Change
Academic Career:	<ul style="list-style-type: none">Credit
Author:	No value

Academic Senate Discipline

Primary Discipline:	<ul style="list-style-type: none">Kinesiology
Alternate Discipline:	<ul style="list-style-type: none">Physical Education
Alternate Discipline:	No value

Course Development

Basic Skill Status (CB08)

Course is not a basic skills course.

Allow Students to Gain Credit by Exam/Challenge

Course Special Class Status (CB13)

Course is not a special class.

Pre-Collegiate Level (CB21)

Not applicable.

Grading Basis

- Grade with Pass / No-Pass Option

Course Support Course Status (CB26)

Course is not a support course

Transferability & Gen. Ed. Options

General Education Status (CB25)

Not Applicable

Transferability

Transferable to both UC and CSU

Transferability Status

Approved

Cal-GETC

Area 5B: Biological Science

Area

Biological Science

Status

Pending

Approval Date

No value

Comparable Course

No Comparable Course defined.

Cal-GETC

Area 5C: Laboratory

Area

Laboratory

Status

Pending

Approval Date

No value

Comparable Course

No Comparable Course defined.

Units and Hours

Summary

Minimum Credit Units (CB07)

4

Maximum Credit Units (CB06)

4

Total Course In-Class (Contact) Hours

108

Total Course Out-of-Class Hours

108

Total Student Learning Hours

216

Credit / Non-Credit Options

Course Type (CB04)

Credit - Degree Applicable

Noncredit Course Category (CB22)

Credit Course.

Noncredit Special Characteristics

No Value

Course Classification Code (CB11)

Credit Course.

Variable Credit Course

Funding Agency Category (CB23)

Not Applicable.

Cooperative Work Experience

Education Status (CB10)

Weekly Student Hours

	In Class	Out of Class
Lecture Hours	3	6
Laboratory Hours	3	0
Studio Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	0
Course In-Class (Contact) Hours	
Lecture	54
Laboratory	54
Studio	0
Total	108

Course Out-of-Class Hours

Lecture	108
Laboratory	0
Studio	0
Total	108

Time Commitment Notes for Students

No value

Units and Hours - Weekly Specialty Hours

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

Pre-requisites, Co-requisites, Anti-requisites and Advisories

Advisory

ESL151 - Reading And Composition V

Objectives

- Read and critically analyze various academic readings.
- Employ basic library research techniques.

OR

Advisory

ABSE186 - Essentials in Reading and Paragraph Writing (in-development)

Outcomes

- Use reading comprehension strategies in order to respond with critical analysis.
- Analyze and use evidence from given texts to support claims.

OR

Advisory

ABSE187 - Preparation for College Reading and Composition (in-development)

Outcomes

- Read, analyze, and evaluate concepts within literary and nonfiction texts.

AND

Advisory

BIOL115 - Human Biology

Objectives

- Identify the body systems, their organs and functions.
 - Describe the structure and functions of the cell and its organelles.
 - Describe the cause and effect of selected major diseases and conditions of the human body.
 - Correctly use basic body directional terminology.
-

Entry Standards

Entry Standards

Perform moderate physical activity.

Course Limitations

Cross Listed or Equivalent Course

Specifications

Methods of Instruction

Methods of Instruction

Lecture

Methods of Instruction

Laboratory

Methods of Instruction

Discussion

Methods of Instruction

Multimedia

Methods of Instruction

Demonstrations

Methods of Instruction

Field Activites (Trips)

Methods of Instruction

Guest Speakers

Methods of Instruction

Presentations

Out of Class Assignments

- Case studies (e.g. written analysis of energy systems used in sprinting)
- Self-reflections (e.g. written analysis of exercise testing results)
- Research assignments (e.g. review of research on the effects of altitude on exercise performance)
- Research projects (e.g. individual or group experiments utilizing lab measurement techniques)

Methods of Evaluation**Rationale**

Exam/Quiz/Test

Quizzes

Activity (answering journal prompt, group activity)

Laboratory data collection

Writing Assignment

Laboratory data analysis write-ups

Exam/Quiz/Test

Written exams

Textbook Rationale

No Value

Textbooks**Author****Title****Publisher****Date****ISBN**

Robert Murray

Practical Guide to Exercise Physiology

Human Kinetics
2021

9781492599050

Cedric X. Bryant et. al.

The exercise professional's
guide to personal training : a
client-centered approach to
inspire active lifestylesAmerican Council
on Exercise, San
Diego, California

2020

9781890720766

Other Instructional Materials (i.e. OER, handouts)

No Value

Materials Fee

No value

Learning Outcomes and Objectives**Course Objectives**

Describe the functional anatomy of the human body.

Explain the principles of basic biomechanics pertaining to exercise.

Describe the basic concepts of kinesiology pertaining to exercise.

Explain the fundamental concepts of exercise physiology.

Analyze the acute and chronic effects of Different exercise stimuli on the physiological response of the human body.

Apply scientific principles to exercise and fitness protocols.

SLOs

Describe fundamental principles of human movement science as they relate to acute exercise and chronic adaptations to fitness training.

Expected Outcome Performance: 70.0

<i>ILOs</i> Core ILOs	Communicate clearly, ethically, and creatively; listen actively and engage respectfully with others; consider situational, cultural, and personal contexts within or across multiple modes of communication.
	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.
<i>KIN</i> Sports Coaching - A.S. Degree Major	Evaluate, compare and examine skill development, different types of tactics and strategies, coaching philosophies, leadership styles, and practice organization to enhance the growth of student-athletes.
<i>KIN</i> Sports Coaching-- Certificate	Evaluate, compare and examine skill development, different types of tactics and strategies, coaching philosophies, leadership styles, and practice organization to enhance the growth of student-athletes.
<i>KIN</i> Fitness Specialist - Certificate	apply fundamental science of kinesiology to assess, design, implement and lead fitness programs for individuals and groups in a diverse population demonstrate knowledge, skills and abilities required for the NASM-CPT and AFAA-GFI exams
<i>KIN</i> Fitness Specialist - A.S. Degree Major	apply fundamental science of kinesiology to assess, design, implement and lead fitness programs for individuals and groups in a diverse population apply knowledge, skills and abilities required for the NASM-CPT and AFAA-GFI exams

Apply the principles of biomechanics and kinesiology to exercise movements.

Expected Outcome Performance: 70.0

<i>ILOs</i> Core ILOs	Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.
	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.
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KIN
Fitness Specialist -
Certificate

apply fundamental science of kinesiology to assess, design, implement and lead fitness programs for individuals and groups in a diverse population

demonstrate knowledge, skills and abilities required for the NASM-CPT and AFAA-GFI exams

KIN
Fitness Specialist - A.S.
Degree Major

apply fundamental science of kinesiology to assess, design, implement and lead fitness programs for individuals and groups in a diverse population

apply knowledge, skills and abilities required for the NASM-CPT and AFAA-GFI exams

Analyze exercise training methods using scientific principles.

Expected Outcome Performance: 70.0

ILOs
Core ILOs

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Additional SLO Information

Does this proposal include revisions that might improve student attainment of course learning outcomes?

No

Is this proposal submitted in response to learning outcomes assessment data?

No

If yes was selected in either of the above questions for learning outcomes, explain and attach evidence of discussions about learning outcomes.

No Value

SLO Evidence

No Value

Course Content

Lecture Content

Introduction to Functional Anatomy (12 hours)

- Nervous system
- Musculoskeletal system
- Basic skeletal anatomy
- Joint anatomy

- Skeletal muscles from major muscle groups
- Origin/insertion
- Action
- Application to posture and exercise movements
- Cardiorespiratory system

Introduction to Basic Biomechanics (5 hours)

- Planes of motion
- Levers
- Force and power

Introduction to Kinesiology (6 hours)

- The kinetic chain
- Types of muscle actions
- Length-tension relationships
- Force-velocity curve

Motor Development (2 hours)

- Motor learning of exercise
- Changes in motor control across the lifespan

Neuromuscular System (6 hours)

- Nervous system
- Functional anatomy
- Autonomic nervous system
- Neuromuscular integration
- Proprioceptors
- Muscular contraction
- Muscle fiber types
- Sliding filament theory

Energy Production (9 hours)

- Bioenergetics
- Anaerobic metabolism
- Aerobic metabolism
- Metabolic integration during exercise
- Endocrine system
- Hormonal response to exercise
- Metabolic regulation during exercise

Effects of Exercise (14 hours)

- Cardiorespiratory system effects
- Anatomy and physiology
- Blood pressure regulation
- Ventilatory threshold
- Acute effects of exercise
- Endurance exercise
- Resistance exercise
- Sources of fatigue
- Training protocols
- Chronic effects of exercise
- Endurance exercise
- Resistance exercise
- Specificity of training programs
- Mechanical specificity
- Neuromuscular specificity
- Metabolic specificity
- Periodization and preventing overtraining syndrome
- Evaluating efficacy of training programs
- Exercise guidelines for special populations and chronic conditions (e.g. youth, older adults, pregnancy/postpartum, weight management, diabetes, hypertension, cancer, musculoskeletal issues, disabilities, etc.)
 - Scientific rationale
 - Adaptations to training protocols

Total hours: 54

Laboratory/Studio Content

Functional Anatomy Lab (10 hours)

- Skeletal anatomy
- Joint actions
- Major muscle groups

- Origin/insertion of skeletal muscles
- Muscle actions and common exercises

Biomechanics Lab (6 hours)

- Measuring Force
- 1-rep max testing
- Multiple-rep max testing
- Muscular endurance tests
- Measuring Power
- Vertical jump test
- Long jump test

Kinesiology Lab (9 hours)

- Static Posture
- Range of motion assessments
- Functional movement assessments

Physiology Lab - Resting measurements (9 hours)

- Anthropometric measures
- Height
- Weight
- Circumference measurements
- Body Mass Index
- Body composition
- Skinfolds
- Bioelectrical impedance
- Resting blood pressure and postural effects

Exercise Physiology Lab (20 hours)

- Exercise blood pressure
- Blood pressure during aerobic exercise
- Blood pressure during resistance training
- Energy expenditure calculations
- Using metabolic equivalent (METs)
- Estimating caloric expenditure
- Field tests to estimate VO2max
 - 1.5 mile run
 - Rockport walk test
 - Step-test
- Lactate and ventilatory threshold

Total hours: 54

Additional Information

Is this course proposed for GCC Major or General Education Graduation requirement? If yes, indicate which requirement in the two areas provided below.

No

GCC Major Requirements

No Value

GCC General Education Graduation Requirements

No Value

Repeatability

Not Repeatable

Justification (if repeatable was chosen above)

No Value

Resources

Did you contact your departmental library liaison?

Yes

If yes, who is your departmental library liaison?

No Value

Did you contact the DEIA liaison?

Yes

Were there any DEIA changes made to this outline?

Yes

If yes, in what areas were these changes made:

- Course Content

Will any additional resources be needed for this course? (Click all that apply)

- No

If additional resources are needed, add a brief description and cost in the box provided.

No Value