Kinesiology II

PEIMS Code: N1302124
Abbreviation: KINES2
Grade Level(s): 11-12
Award of Credit: 1.0

Approved Innovative Course

- Districts must have local board approval to implement innovative courses.
- In accordance with Texas Administrative Code (TAC) §74.27, school districts must provide instruction in all essential knowledge and skills identified in this innovative course.
- Innovative courses may only satisfy elective credit toward graduation requirements.
- Please refer to TAC §74.13 for guidance on endorsements.

Course Description:

The Kinesiology II course is designed to provide students an advanced level of knowledge, skills, and understanding of body composition and the effect on health, nutritional needs of physically active individuals, qualitative biomechanics, application of therapeutic modalities, appropriate rehabilitation services, and aerobic training intensity programs. The course is designed to allow students to advance their understanding of professional standards, employability skills, and ethical and legal standards.

Throughout this course, students explore the healthcare/exercise business model and gain an understanding of therapeutic sports psychology. Students develop proper aerobic fitness programs and rehabilitation programs. Kinesiology II prepares students for an industry certification exam such as Certified Personal Trainer.

Essential Knowledge and Skills:

(a) General Requirements. This course is recommended for students in 11-12 grade. Recommended prerequisite: Kinesiology I. Students shall be awarded one credit for successful completion of this course.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.

(2) The Health Science Career Cluster focuses on planning, managing, and providing therapeutic services, diagnostic services, health informatics, support services, and biotechnology research and development.

(3) The Kinesiology II course is designed to provide students an advanced level of knowledge, skills, and understanding of body composition and the effect on health, nutritional needs of physically active individuals, qualitative biomechanics, application of therapeutic

modalities, appropriate rehabilitation services, and aerobic training intensity programs. The course is designed to allow students to advance their understanding of professional standards, employability skills, and ethical and legal standards. Throughout this course, students explore the healthcare/exercise business model and gain an understanding of therapeutic sports psychology. Students develop proper aerobic fitness programs and rehabilitation programs. Kinesiology II prepares students for an industry certification exam such as Certified Personal Trainer.

(4) To pursue a career in the health science industry, students should learn to reason, think critically, make decisions, solve problems, and communicate effectively. Students should recognize that quality health care depends on the ability to work well with others.

(5) The health science industry comprises diagnostic, therapeutic, health informatics, support services, and biotechnology research and development systems that function individually and collaboratively to provide comprehensive health care. Students should identify the employment opportunities, technology, and safety requirements of each research and development system. Students are expected to apply the knowledge and skills necessary to pursue a health science career through further education and employment.

(6) Professional integrity in the health science industry is dependent on acceptance of ethical and legal responsibilities. Students are expected to employ their ethical and legal responsibilities, recognize limitations, and understand the implications of their actions.

(7) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.

(8) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and skills.

(1) The student demonstrates professional standards and employability skills as required by business and industry. The student is expected to:

(A) express ideas in a clear, concise, and effective manner;

(B) cooperate, contribute, and collaborate as a member of a team; and

(C) exhibit the ability to meet employer expectations such as punctuality, attendance, time management, communication, organizational skills, and productive work habits.

(2) The student demonstrates communication skills using the terminology applicable to the health science industry. The student is expected to:

(A) demonstrate appropriate verbal and written strategies such as the correct pronunciation and spelling of medical terms in a variety of health science scenarios;

(B) employ increasingly precise language to communicate effectively in the health science workplace; and

(C) adapt technical material related to the health science industry for diverse clients and audiences.

(3) The student uses effective communication skills. The student is expected to:

(A) demonstrate and evaluate components of effective and non-effective communication;

(B) demonstrate effective communication skills for responding to the needs of individuals in a diverse society;

(C) evaluate the effectiveness of conflict-resolution techniques in various situations; and

(D) accurately interpret, transcribe, and communicate medical vocabulary using appropriate technology.

(4) The student implements the leadership skills necessary to function in the health science industry. The student is expected to:

(A) demonstrate leadership skills, characteristics, and responsibilities of leaders such as goal setting and team building; and

(B) conduct and participate in effective meetings within a simulated workplace setting.

(5) The student implements the knowledge and skills of a health science professional in the classroom setting. The student is expected to:

(A) demonstrate proper first aid, cardiopulmonary resuscitation, and automated external defibrillator skills in a laboratory setting; and

(B) demonstrate and supervise proper use of equipment while complying with specific industry standards related to safety.

(6) The student demonstrates an understanding of body composition and the effect on health. The student is expected to:

(A) evaluate body fat distribution and its effect on health;

(B) calculate waist-to-hip ratios and explain the ratios as an indicator of health; and

(C) assess body composition using different methods such as body mass index (BMI) and bioimpedance analysis (BIA).

(7) The student demonstrates an understanding of aerobic training intensity and how it is assessed. The student is expected to:

(A) describe the structures and functions of a healthy heart;

(B) analyze the effects of exercise on blood pressure;

(C) demonstrate proper usage of sphygmomanometer and stethoscope to measure blood pressure;

(D) perform proper carotid and radial pulse to determine resting heart rate and exercise heart rate;

(E) differentiate between rated perceived exertion (RPE) and heart rate (HR) response to assess aerobic training intensity;

(F) assess aerobic capacity utilizing various methods such as Rockport 1-mile walking test, 1.5 mile run test, and 3-minute step test; and

(G) calculate maximum heart rate using the Karvonen and Tanaka equations.

(8) The student understands the nutritional needs of physically active individuals. The student is expected to:

(A) analyze and determine the unique nutritional needs of individuals participating in resistance training such as a high protein diet and increased carbohydrates;

(B) discuss possible nutritional needs for individuals participating in endurance training such as an increase in carbohydrates;

(C) explain the importance of hydration during exercise and provide recommendations to individuals based on their specific needs; and

(D) create a basic nutritional plan for an individual based on identified goals.

(9) The student understands qualitative biomechanics and its importance in joint assessment. The student is expected to:

(A) explain the roles that muscle groups play during simple single-joint activities and complex multi-joint motor performances;

(B) analyze the reasons for different joint actions and ranges of motion using knowledge of joint structure, stability, and mobility; and

(C) demonstrate ranges of motion assessments for the major joints of the body such as Thomas test, passive straight leg raise (SLR), and Apley's scratch test.

(10) The student investigates various training needs to identify performance requirements. The student is expected to:

(A) describe the methodology and intended results of training for strength, power, and endurance;

(B) describe how specific tissues of the body are adapted for strength, power, and endurance training;

(C) compare and contrast muscular strength, power, and endurance;

(D) analyze the effectiveness of training program elements which create specific muscular adaptations for strength, power, and endurance training such as FITT (frequency, intensity, type, and time) formula;

(E) explain and model the differences between aerobic and anaerobic exercise;

(F) perform and evaluate anaerobic capacity assessments such as the agility T-Test, pro-agility test, 50-yard dash, and the 200-yard shuttle test;

(G) compare and contrast static and dynamic balance;

(H) evaluate exercise considerations for special populations such as diabetes, hypertension, obesity, and diagnosed coronary artery disease (CAD); and

(I) conduct fitness and performance assessments to compare results for muscular power, endurance, and core strength such as vertical jump test (VJT), standing long jump, push up test, body weight squat test, McGill's core endurance test, stork balance stand, and Romberg test.

(11) The student demonstrates proper use of therapeutic modalities. The student is expected to:

(A) describe and justify the appropriate modality based on individual needs;

(B) identify the education and licensing requirements necessary to use therapeutic modalities;

(C) compare and contrast different therapeutic modalities, including cryotherapy, dry heat therapy, moist heat therapy, and cold therapy;

(D) demonstrate the proper use of various therapy delivery systems, including ice massage, ice bags, rice packs, gel packs, and dry heating pads; and

(E) compare different electrical stimulation waves used in various clinical settings.

(12) The student demonstrates the ability to assess and develop a specific fitness program based on individual needs. The student is expected to:

(A) compare and contrast prehabilitation and rehabilitation services;

(B) assess physiological and fitness parameters of individuals using appropriate standardized tests such as skinfold body composition, goniometers for joint range of motion, and manual muscle strength tests to; and

(C) create an individualized fitness program.

(13) The student understands the importance of building client rapport and establishing fitness goals. The student is expected to:

(A) demonstrate how to establish and maintain good rapport with clients;

(B) create individualized SMART (specific, measurable, attainable, relevant, time-based) goals; and

(C) create and incorporate product and process goals that align with the developed SMART goal.

(14) The student demonstrates an understanding of behavioral change strategies implemented to reach performance goals for both the athlete and non-athlete. The student is expected to:

(A) apply cognitive behavioral strategies such as activity pacing or time constraints to promote a positive experience; and

(B) assess barriers to physical activity and adapt the individual's fitness program accordingly.

(15) The student evaluates ethical and behavioral standards and legal responsibilities of a professional in the exercise and wellness industry. The student is expected to:

(A) roleplay and analyze behaviors using the Health Insurance Portability and Accountability Act (HIPAA) guidelines for confidentiality, privacy, and security of a participant’s information;

(B) isolate and evaluate negligent behavior within a specific scenario; and

(C) compare and contrast ethical elements of different certification entities in the fitness and wellness industry.

Recommended Resources and Materials:

Kenney, W. Larry, Jack H. Wilmore, and David L. Costill. *Physiology of Sport and Exercise*. Champaign, IL: Human Kinetics, 2015.

Klavora, Peter. *Foundations of Kinesiology: Studying Human Movement and Health*. Toronto, ON, Canada: Kinesiology Books Publisher, 2018.

Klavora, Peter. *Introduction to Kinesiology: A Biophysical Perspective* 2nd ed. Toronto, ON, Canada: Kinesiology Books Publisher, 2019.

Murray, Tinker Dan. *Foundations of Kinesiology: A Modern Integrated Approach*. Australia: Cengage, 2019.

Recommended Course Activities:

- Body Composition:
  - Proper use of cloth measuring tapes (Gulick tapes preferred) will be completed. Students will measure the anatomical sites of the waist, hip, and abdomen. Waist to hip ratios will be calculated and interpreted for increased health risk associations.
  - Students will describe the three anatomical sites used on men and women for body fat estimations then measure body composition using bioimpedance analysis.
  - Students will analyze case studies and discuss the effect of body fat in regard to health and performance.
  - The technique of skin fold caliper use will be demonstrated by faculty (this is an advanced method of measurement but understanding the concept and basic technique would be of benefit).

- Aerobic Capacity:
  - Students will work in pairs and conduct at least one aerobic capacity assessment such as the Rockport 1-mile, 1.5-mile run, or the 3-minute step test.
  - Results of the chosen assessment will be categorized, interpreted, and explained to the subject by the student tester.
  - Pairs will present results of the assessment to the class for collaborative learning and discussion focused on the physiological components of the human body that contribute to aerobic capacity (models of a heart and lungs can be incorporated in this discussion).

- Flexibility/Range of Motion:
  - Students will work in pairs and complete the following flexibility assessments: Thomas test, passive straight leg test, and Apley's scratch test.
  - Using an anatomical model, the class will identify what structures and/or muscles could be causing flexibility/range of motion limitations of the hip and shoulder joints.
  - Pairs will distinguish between active range of motion or passive range of motion exercises and determine which flexibility exercises could benefit specific joints with limited range of motion (ROM).

- Balance/Core Strength:
  - The terms “static” and “dynamic” balance will be defined by the student.
  - Static balance such as the stork balance stand and the Romberg test will be completed in groups of two.
  - Students will analyze the limitations of acceptable balance (i.e., lack of core strength and poor kinesthetic awareness).
  - Methods of improving static balance will be demonstrated.
  - Students will conduct proprioception exercises used for advanced groups.

- Muscular Power Assessments:
  - Lower body power will be assessed using the vertical jump test (VJT) or standing long jump. Results of the assessments will be categorized, interpreted, and explained to the subject by the student tester.
  - Pairs will present results to the class for collaborative learning and discussion of the results. This will allow comparison of results within the class and identification of adaptations which contribute to muscular power.

- Muscular Endurance Assessments:
  - Students will work in pairs to conduct upper body muscular endurance assessments such as the Push up Test.
  - Students will work in pairs to conduct lower body muscular endurance assessments such as the Body Weight Squat Test.
  - Students will use the McGill's trunk flexor/trunk extensor test and discuss the importance of muscular core endurance.
  - Results of the chosen assessments will be categorized, interpreted, and explained to the subject by the student tester.
  - Pairs will present results to the class for collaborative learning and discussion of muscular endurance compared to muscular strength and power.

- Agility/Speed/Anaerobic Capacity Assessments:
  - Students will work in pairs to complete the assessments specific to agility, speed, and anaerobic capacity such as the T-test, Pro-agility Test, 50-yard dash, and 200-yard shuttle. Results will be shared in a group setting allowing students to compare and contrast between performance and individual sport history of the subject.
  - Students will create a chart identifying sports and activities that require agility, speed, and anaerobic capacity.

Suggested methods for evaluating student outcomes:

- Exit tickets
- Projects
- Quizzes
- Tests
- Oral and virtual presentations
- Interviews with professionals in the field
- Mentor/internship evaluations

Teacher qualifications:

An assignment for Kinesiology II is allowed with one of the following certificates.

- Health Science: Grades 6-12.
- Health Science Technology Education Certification 8-12 with previous and/or current work experience in the field.
- Vocational Health Occupations.
- Vocational Health Science Technology.

Additional information: