SPRING GROVE AREA SCHOOL DISTRICT

PLANNED COURSE OVERVIEW

Course Title: Strength Training for Sports Level 1 Spring	**Length of Course:** 15 cycles
Grade Level(s): 10-12	**Periods Per Cycle:** 6
Units of Credit: .50	**Length of Period:** 43 minutes
Classification: Elective	**Total Instructional Time:** 64 hours

Course Description

During this course, students develop and expand on personal fitness program development. An essential part of all physical education is monitoring cardiovascular fitness. This class emphasizes sport specific training and requires that students perform various cardiovascular and strength training techniques during class meetings. Students develop anatomy and physiology principles of the human body through classroom lab experiences. Students develop skills to safely and effectively use the cardio-fitness center and weight room of the high school.

Instructional Strategies, Learning Practices, Activities, and Experiences

Development of Personalized Program	Internet	Demonstration/Evaluation of Performance
Prescription of Exercise Technique	Weight and Cardio Equipment	Application of Scientific Research
Summary of Data		

Assessments

Journals	Physical Testing	Video and Audio Documentation
Test/Quiz	Article Reviewed Summary	Fitness Technology

Materials/Resources

Books	Videos	Internet
Weight and Cardio Equipment	Quiz	Article Review and Summary

Adopted: 6/20/2011; 5/16/16
Revised: 10/2020
Departmental Review: 10/2017; 10/2018

Understanding Health-Related Fitness and Wellness	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Understand the five components of fitness Use performance test to develop baseline data of present levels of fitness Develop basic protocols to improve overall fitness levels and examine sport specific skills of fitness Naval Academy Fitness Level Evaluation <u>Related Vocabulary</u> cardiovascular endurance flexibility muscular strength muscular endurance agility speed balance coordination spotting goal setting overtraining periodization	10.3.12.D - Evaluate the benefits, risks and safety factors associated with self-selected life-long physical activities. 10.4.12.A - Evaluate and engage in an individualized physical activity plan that supports achievement of personal fitness and activity goals and promotes life-long participation. 10.4.12.B - Analyze the effects of regular participation in a self-selected program of moderate to vigorous physical activities. 10.4.12.C - Evaluate how changes in adult health status may affect the responses of the body systems during moderate to vigorous physical activity. 10.4.12.D - Evaluate factors that affect physical activity and exercise preferences of adults. 10.4.12.E - Analyze the interrelationships among regular participation in physical activity, motor skill improvement and the selection and engagement in lifetime physical activities. 10.4.12.F - Assess and use strategies for enhancing adult group interaction in physical activities. 10.5.12.A - Apply knowledge of movement skills, skill-related fitness and movement concepts to identify and evaluate physical activities that promote personal lifelong participation. 10.5.12.B - Incorporate and synthesize knowledge of motor skill development concepts to improve the quality of motor skills. 10.5.12.C - Evaluate the impact of practice strategies on skill development and improvement. 10.5.12.D - Incorporate and synthesize knowledge of exercise principles, training principles and health and skill-related fitness components to create a fitness program for personal use. 10.5.12.E - Evaluate movement forms for appropriate application of scientific and biomechanical principles.

Personalized Program Design	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Overload principle Principle of progression Principle of reversibility Components of the exercise prescription Develop an exercise program tailored to meet the objectives of the individual while considering the individuals age, health, fitness status, musculoskeletal condition and body composition Establish the minimum levels of physical activity required to achieve some of the health benefits of exercise <u>Related Vocabulary</u> overload progression reversibility warm-up cool down exercise goals modes of exercise fitness status musculoskeletal condition body composition exercise threshold exercise prescription individualized recuperation	10.3.12.B - Analyze and apply strategies for the management of injuries. 10.3.12.D - Evaluate the benefits, risks and safety factors associated with self-selected life-long physical activities. 10.4.12.A - Evaluate and engage in an individualized physical activity plan that supports achievement of personal fitness and activity goals and promotes life-long participation. 10.4.12.B - Analyze the effects of regular participation in a self-selected program of moderate to vigorous physical activities. 10.4.12.C - Evaluate how changes in adult health status may affect the responses of the body systems during moderate to vigorous physical activity. 10.4.12.D - Evaluate factors that affect physical activity and exercise preferences of adults. 10.4.12.E - Analyze the interrelationships among regular participation in physical activity, motor skill improvement and the selection and engagement in lifetime physical activities. 10.4.12.F - Assess and use strategies for enhancing adult group interaction in physical activities. 10.5.12.A - Apply knowledge of movement skills, skill-related fitness and movement concepts to identify and evaluate physical activities that promote personal lifelong participation. 10.5.12.B - Incorporate and synthesize knowledge of motor skill development concepts to improve the quality of motor skills. 10.5.12.C - Evaluate the impact of practice strategies on skill development and improvement. 10.5.12.D - Incorporate and synthesize knowledge of exercise principles, training principles and health and skill-related fitness components to create a fitness program for personal use. 10.5.12.E - Evaluate movement forms for appropriate application of scientific and biomechanical principles.

Cardiorespiratory Fitness	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Understand the benefits of cardiorespiratory fitness • Lower risk of disease • Reduce risk of type II diabetes • Lower blood pressure • Increased bone density • Increased energy • Increased feeling of well-being • Improved self-esteem • Increased muscle tone and endurance • Easier weight control • Improved sleep Adenosine triphosphate (ATP) – Required for muscular contraction, can be produced by two systems • Anaerobic • Aerobic Define cardiorespiratory system Understand cardiac output, systolic blood pressure, and heart rate increase as a function of exercise intensity Understand initial health status for improving present levels of fitness Understanding three phases of cardiorespiratory fitness • Starter phase • Low progression phase • Maintenance phase	10.3.12.D - Evaluate the benefits, risks and safety factors associated with self-selected life-long physical activities. 10.4.12.A - Evaluate and engage in an individualized physical activity plan that supports achievement of personal fitness and activity goals and promotes life-long participation. 10.4.12.B - Analyze the effects of regular participation in a self-selected program of moderate to vigorous physical activities. 10.4.12.C - Evaluate how changes in adult health status may affect the responses of the body systems during moderate to vigorous physical activity. 10.4.12.D - Evaluate factors that affect physical activity and exercise preferences of adults. 10.4.12.E ~ Analyze the interrelationships among regular participation in physical activity, motor skill improvement and the selection and engagement in lifetime physical activities. 10.4.12.F ~ Assess and use strategies for enhancing adult group interaction in physical activities. 10.5.12.A ~ Apply knowledge of movement skills, skill-related fitness and movement concepts to identify and evaluate physical activities that promote personal lifelong participation. 10.5.12.B ~ Incorporate and synthesize knowledge of motor skill development concepts to improve the quality of motor skills. 10.5.12.C ~ Evaluate the impact of practice strategies on skill development and improvement. 10.5.12.D ~ Incorporate and synthesize knowledge of exercise principles, training principles and health and skill-related fitness components to create a fitness program for personal use. 10.5.12.E ~ Evaluate movement forms for appropriate application of scientific and biomechanical principles. 10.5.12.F ~ Analyze the application of game strategies for different categories of physical activities.

Cardiorespiratory Fitness (continued)	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Understand that aerobic exercise results in improvement of cardiorespiratory fitness and muscular endurance that can result in reduction in percent of body fat <u>Related Vocabulary</u> aerobic anaerobic cardiorespiratory fitness cardiovascular fitness blood pressure Adenosine triphosphate (ATP) diabetes systolic blood pressure heart rate circulatory system VO_2 max (maximal oxygen consumption) muscular contraction muscular endurance muscular strength	

Strength Training	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Strength training can • Reduce low back pain • Reduce the incidence of exercise-related injuries • Decrease the incidence of osteoporosis • Aid in the maintenance of functional capacity Muscular Strength – the amount of weight that an individual can lift during one maximal effort Skeletal Muscles • Composed of a collection of fibers and are attached by bones by tendons • Muscular contraction results in the tendons pulling on the bone, causing movement Two primary physiological factors determine the amount of force that can be generated by a muscle • Size of muscle • Number of muscle fibers recruited Muscle Size – increased primarily because of an increase in fiber size (hypertrophy) Research has shown that strength training can also promote the formation of new muscle fibers (hyperplasia). Overload Principal – a muscle will increase in strength and/or endurance only when it works against a workload such as free weights or weight machines	10.3.12.D - Evaluate the benefits, risks and safety factors associated with self-selected life-long physical activities. 10.4.12.A - Evaluate and engage in an individualized physical activity plan that supports achievement of personal fitness and activity goals and promotes life-long participation. 10.4.12.B - Analyze the effects of regular participation in a self-selected program of moderate to vigorous physical activities. 10.4.12.C - Evaluate how changes in adult health status may affect the responses of the body systems during moderate to vigorous physical activity. 10.4.12.D - Evaluate factors that affect physical activity and exercise preferences of adults. 10.4.12.E - Analyze the interrelationships among regular participation in physical activity, motor skill improvement and the selection and engagement in lifetime physical activities. 10.4.12.F – Assess and use strategies for enhancing adult group interaction in physical activities. 10.5.12.A - Apply knowledge of movement skills, skill-related fitness and movement concepts to identify and evaluate physical activities that promote personal lifelong participation. 10.5.12.B – Incorporate and synthesize knowledge of motor skill development concepts to improve the quality of motor skills. 10.5.12.C – Evaluate the impact of practice strategies on skill development and improvement. 10.5.12.D – Incorporate and synthesize knowledge of exercise principles, training principles and health and skill-related fitness components to create a fitness program for personal use. 10.5.12.E – Evaluate movement forms for appropriate application of scientific and biomechanical principles. 10.5.12.F – Analyze the application of game strategies for different categories of physical activities.

Strength Training (continued)	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Isokinetic Exercises – require use of machines that govern the speed of movement during the muscle contraction throughout the range of motion Strength training programs • Starter phase • Slow progression phase • Maintenance phase <u>Related Vocabulary</u> muscular strength muscular endurance muscle fiber contraction tendon bone muscles of the human body isometric isokinetic isotonic hypertrophy hyperplasia free weight	

Flexibility	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Flexibility – the range of motion of a joint Improved flexibility results in • Increased joint mobility • Prevention of low back pain problems • Efficient body movement • Improved posture • Personal appearance Five structural and physiological limits to flexibility • Bone • Muscle structures within the joint capsule • Tendons that connect muscle to bones • Connective tissue that surrounds joints and skin If muscle spindles are suddenly stretched, they respond by initiating a stretch reflex that causes the muscle to contract. However, if muscles and tendons are stretched slowly, the stretch reflex can be avoided. Static vs. Dynamic Proprioceptive neuromuscular facilitation (PNF) combines stretching with alternative contraction and relaxation of muscles to improve flexibility. Functional movement screening	10.3.12. D - Evaluate the benefits, risks and safety factors associated with self-selected life-long physical activities. 10.4.12. A - Evaluate and engage in an individualized physical activity plan that supports achievement of personal fitness and activity goals and promotes life-long participation. 10.4.12. B - Analyze the effects of regular participation in a self-selected program of moderate to vigorous physical activities. 10.4.12. C - Evaluate how changes in adult health status may affect the responses of the body systems during moderate to vigorous physical activity. 10.4.12. D - Evaluate factors that affect physical activity and exercise preferences of adults. 10.4.12. E - Analyze the interrelationships among regular participation in physical activity, motor skill improvement and the selection and engagement in lifetime physical activities. 10.4.12. F - Assess and use strategies for enhancing adult group interaction in physical activities. 10.5.12. A - Apply knowledge of movement skills, skill-related fitness and movement concepts to identify and evaluate physical activities that promote personal lifelong participation. 10.5.12. B - Incorporate and synthesize knowledge of motor skill development concepts to improve the quality of motor skills. 10.5.12. C - Evaluate the impact of practice strategies on skill development and improvement. 10.5.12. D - Incorporate and synthesize knowledge of exercise principles, training principles and health and skill-related fitness components to create a fitness program for personal use. 10.5.12. E - Evaluate movement forms for appropriate application of scientific and biomechanical principles. 10.5.12. F - Analyze the application of game strategies for different categories of physical activities.

Flexibility (continued)	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Related Vocabulary flexibility joint posture static dynamic ballistic proprioceptive neuromuscular facilitation (PNF) mobility reflex functional movement systems (FMS)	

Nutrition and Fitness	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Nutrition - The study of food and its relationship to health and disease A well-balanced diet - composed of a variety of nutrients The basic goals of developing good nutritional habits are to maintain ideal body weight. Intensity of exercise dictates the relative proportions of fat and carbohydrates that are consumed as fuel during exercise. The lower the intensity of the exercises, the more fat is used as fuel; the greater the intensity, the more carbohydrates are used as fuel. <u>Related Vocabulary</u> nutrient carbohydrate fat water protein supplement calorie vitamin diet	10.1.12.A - Evaluate factors that impact growth and development during adulthood and late adulthood. 10.1.12.B - Evaluate factors that impact the body systems and apply protective/preventive strategies. 10.1.12.C - Analyze factors that impact nutritional choices of adults. 10.1.12.E - Identify and analyze factors that influence the prevention and control of health problems. 10.2.12.A - Evaluate health care products and services that impact adult health practices. 10.2.12.B - Assess factors that impact adult health consumer choices. 10.2.12.D - Examine and apply a decision-making process to the development of short and long-term health goals. 10.2.12.E - Analyze the interrelationship between environmental factors and community health. 10.3.12.D - Evaluate the benefits, risks and safety factors associated with self-selected life-long physical activities. 10.4.12.A - Evaluate and engage in an individualized physical activity plan that supports achievement of personal fitness and activity goals and promotes life-long participation. 10.4.12.B - Analyze the effects of regular participation in a self-selected program of moderate to vigorous physical activities. 10.4.12.C - Evaluate how changes in adult health status may affect the responses of the body systems during moderate to vigorous physical activity

Fitness Activities	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Specific exercises that build cardiorespiratory endurance Specific exercises/workouts that build muscular strength and endurance Specific exercises that increase flexibility How to combine exercise to develop a cross-training program working on all forms of health related fitness <u>Related Vocabulary</u> free weight movement exercises • bench press • squat • clean • curl • military press weight loaded matching exercises • chest press • overhead press • leg extension • leg curl body weight exercises • pull up • sit-up • knee raise	10.3.12.D - Evaluate the benefits, risks and safety factors associated with self-selected life-long physical activities. 10.4.12.A - Evaluate and engage in an individualized physical activity plan that supports achievement of personal fitness and activity goals and promotes life-long participation. 10.4.12.B - Analyze the effects of regular participation in a self-selected program of moderate to vigorous physical activities. 10.4.12.C - Evaluate how changes in adult health status may affect the responses of the body systems during moderate to vigorous physical activity. 10.4.12.D - Evaluate factors that affect physical activity and exercise preferences of adults. 10.4.12.E - Analyze the interrelationships among regular participation in physical activity, motor skill improvement and the selection and engagement in lifetime physical activities. 10.4.12.F - Assess and use strategies for enhancing adult group interaction in physical activities. 10.5.12.A - Apply knowledge of movement skills, skill-related fitness and movement concepts to identify and evaluate physical activities that promote personal lifelong participation. 10.5.12.B - Incorporate and synthesize knowledge of motor skill development concepts to improve the quality of motor skills. 10.5.12.C - Evaluate the impact of practice strategies on skill development and improvement. 10.5.12.D - Incorporate and synthesize knowledge of exercise principles, training principles and health and skill-related fitness components to create a fitness program for personal use. 10.5.12.E - Evaluate movement forms for appropriate application of scientific and biomechanical principles. 10.5.12.F - Analyze the application of game strategies for different categories of physical activities.

Fitness Activities (continued)	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
cardiorespiratory endurance machines • treadmill • stationary bike • rower • arc trainer • elliptical plyometric exercises dumb bell barbell target heart rate	

Using Pre-Established Programs For Sport Training Needs	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Specific programs presently advertised through popular media Examining cost vs. effectiveness Explore data support of specific popular programs <u>Related Vocabulary</u> Power 90 Extreme (P90X) cost effectiveness interval training medicine ball kettle bell stability ball resistance bands yoga pilates insanity training TRX training aids	10.2.12.A - Evaluate health care products and services that impact adult health practices. 10.2.12.B - Assess factors that impact adult health consumer choices. 10.4.12.A - Evaluate and engage in an individualized physical activity plan that supports achievement of personal fitness and activity goals and promotes life-long participation. 10.4.12.B - Analyze the effects of regular participation in a self-selected program of moderate to vigorous physical activities. 10.4.12.C - Evaluate how changes in adult health status may affect the responses of the body systems during moderate to vigorous physical activity. 10.4.12.D - Evaluate factors that affect physical activity and exercise preferences of adults. 10.4.12.E - Analyze the interrelationships among regular participation in physical activity, motor skill improvement and the selection and engagement in lifetime physical activities. 10.4.12.F - Assess and use strategies for enhancing adult group interaction in physical activities. 10.5.12.A - Apply knowledge of movement skills, skill-related fitness and movement concepts to identify and evaluate physical activities that promote personal lifelong participation. 10.5.12.B - Incorporate and synthesize knowledge of motor skill development concepts to improve the quality of motor skills. 10.5.12.C - Evaluate the impact of practice strategies on skill development and improvement. 10.5.12.D - Incorporate and synthesize knowledge of exercise principles, training principles and health and skill-related fitness components to create a fitness program for personal use. 10.5.12.E - Evaluate movement forms for appropriate application of scientific and biomechanical principles. 10.5.12.F - Analyze the application of game strategies for different categories of physical activities.

Sport Specific Training Programming and Practice	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Sport specific exercises and movements should be incorporated into fitness programming. Adapt programming to meet the needs of in-season competitions Cycling to prevent plateauing - how to best modify a program over time Develop bench marks for improvement. Goal setting with sport specific testing protocols <u>Related Vocabulary</u> sport or activity choice speed agility coordination strength endurance body composition overload progression plateau reps sets movement type frequency intensity time volume pacing overtraining	10.4.12.A - Evaluate and engage in an individualized physical activity plan that supports achievement of personal fitness and activity goals and promotes life-long participation. 10.4.12.B - Analyze the effects of regular participation in a self-selected program of moderate to vigorous physical activities. 10.4.12.C - Evaluate how changes in adult health status may affect the responses of the body systems during moderate to vigorous physical activity. 10.4.12.D - Evaluate factors that affect physical activity and exercise preferences of adults. 10.4.12.E - Analyze the interrelationships among regular participation in physical activity, motor skill improvement and the selection and engagement in lifetime physical activities. 10.4.12.F - Assess and use strategies for enhancing adult group interaction in physical activities. 10.5.12.A - Apply knowledge of movement skills, skill-related fitness and movement concepts to identify and evaluate physical activities that promote personal lifelong participation. 10.5.12.B - Incorporate and synthesize knowledge of motor skill development concepts to improve the quality of motor skills. 10.5.12.C - Evaluate the impact of practice strategies on skill development and improvement. 10.5.12.D - Incorporate and synthesize knowledge of exercise principles, training principles and health and skill-related fitness components to create a fitness program for personal use. 10.5.12.E - Evaluate movement forms for appropriate application of scientific and biomechanical principles. 10.5.12.F - Analyze the application of game strategies for different categories of physical activities.