Enduring Understandings

- The five components of Health Related Fitness serve as the foundation for this curriculum.
  - The FITT Formula for each component of health related fitness can be used as a useful guide in creating individual exercise programs.
  - The physical activity principles of overload, progression and specificity are important tools to use in developing an exercise and nutrition plan.
  - Cardiovascular health and body composition are influenced by a combination of diet and exercise.
  - Muscle Fitness improves with progressive resistance exercise.
  - Training in the Target Fitness Zone (TFZ) is essential in improving fitness.

Essential Questions

- How would you apply the components of health related fitness to activities of daily living?
- What is the FITT Formula for each component of Health Related Fitness?
- How are the principles of overload progression and specificity used to improve fitness?
- What are some examples of progressive resistance exercises?
- What is the Target Fitness Zone and what does it mean to train in the Target Fitness Zone?
- What is body composition?
- How does diet and exercise influence body composition?
Essential Knowledge

- Realistic goal setting is essential in developing a fitness plan
- The BMI is a practical way to assess health & fitness. It specifically uses an equation based on individual height and weight to determine fitness level
- The FIT Formula is a tool to help guide individuals in planning personal fitness goals
- The physical activity principles of progression, overload and specificity are concepts used to develop all areas of Health and Skill Related Fitness
- The Target Fitness Zone in that area between the Threshold of Training and the Target Ceiling and establishing a working heart rate in the Target Fitness Zone allows for safe, progressive and efficient training
- Exercise should include a gradual progression of intensity and should be specific to training goals. The body will safely adapt to the load if these fitness principles are followed
- Athletic performance and performance in general requires discipline in training, a positive attitude about training, good nutrition and an appropriate level of strength & conditioning. These principals are also useful for achievement outside of sports.

Knowledge Assessment

- Chapter 1, 4, 11, 12, 13, 14
- Nutrition Tests
- Individual goal setting, planning and adjusting
- "Get it in" Worksheet
- Diet assessment
- Health Related Fitness self assessment

Essential Skill

- Students will be able to define and give examples of each component of Health Related Fitness
- Students will be able to calculate their individual BMI
- Students will be able to find their pulse and distinguish their resting, working and recovery heart rates
- Students will be able to calculate their heart rate and determine their TFZ using the Karvonen method of heart rate calculations
Skill Assessment

- “Word Play” – A game in word association to strengthen the memory and recall of the physical fitness component
- BMI assessment
- Heart rate calculation scenario questions

Cardiovascular Fitness

Enduring Understandings

- Cardiovascular Fitness is the most important component of physical fitness
- Activities done to improve cardiovascular fitness will improve health and decrease illness
- CVF, requires fitness of the heart, lungs, muscles, blood and blood vessels

Essential Questions

- What are the components of the cardiovascular system
- What is cholesterol, what are good levels of cholesterol
- What are the benefits of Physical activity on the CV & Respiratory systems
- What does interval training, ultimate Frisbee and water polo improve CVF
- What is the FIT Formula for CV
- What distinguishes Aerobic from anaerobic conditioning
- What key variables are necessary to manually calculate one’s target fitness zone

Essential Knowledge

- Regular physical exercise strengthens the heart and will help control body weight, build muscle, develop good posture, reduce illness, strengthen the heart muscle and make the blood healthier
- The heart sends more blood with less effort as it gets in better shape
- Cholesterol is carried through the body by lipoproteins
- Atherosclerosis differs from Arteriosclerosis
- Regular physical helps to improve CV by reducing LDL and increasing HDL
- Arteries carry blood away from the heart while Veins carry blood to the heart
The Heart Rate Range Method (HRRM) is the most accurate form of calculating target heart rate and the Karvonen Method is a more specific variation of the HRRM.

- 15 minutes is the threshold for aerobic conditioning.
- Interval training, water polo and ultimate Frisbee are all forms of Anaerobic Conditioning.

Knowledge Assessment

- Chapter 7 test on CVF
- Self assessment on fitness principles of overload progression and specificity
- Self assessment based on family history
- Heart Rate calculation

Essential Skill

- Students will distinguish interval training from distance training
- Students will be able to apply the fitness principles of overload, progression and specificity to CV
- Students will be able to swim 75 yards non stop
- Students will be able to tread water
- Students will improve their performance in the 800m, 12 minute and PACER test runs
- Students will be able to manually calculate their heart rates
- Students will be able to find their pulse to calculate heart rate
- Students will be able to swim the front crawl
- Students will be able to dribble a water polo ball
- Students will be able to throw a forehand and backhand Frisbee pass

Skill Assessment

- Ultimate Frisbee competition
- 75 yard Swim test
- Water polo competition
- 15 minute lap swim test
Muscle Fitness

Enduring Understandings

- Muscle Fitness is comprised of muscle strength and muscle endurance
- Using the principles of overload, progression and specificity while using the FIT formula will improve muscle endurance and muscle strength
- Isotonic, Isometric and Callisthenic exercises are effective ways of developing MS & ME
- Muscle movement is created by the coordinated use of Skeletal, Cardiac and smooth muscle
- Genetics determine muscle performance
- Gender influences muscle fitness

Essential Questions

- Define Progressive Resistive Exercise
- What distinguishes MS from ME
- What is the correlation between power & genetics
- What is the key variable in the strength and muscle endurance continuum
- Does MS or ME produce muscular hypertrophy and does the other produce muscular atrophy?
- How many different types of muscle fibers are there and what type of movement do they produce
- What are the major muscles of the body
- What muscles are referred to as the core
- Of the Core, Trunk and Torso, which ones are similar
- What are Ergo-genic Aids and do they differ from Supplements
What are supplements and why do people use them
What are the benefits of protein supplements, specifically
  - Creatine, Glutamine, Whey, Soy, Casein and Food
What food source is highest in protein contribution
Which synthetic protein source appears to be the most efficient in building and replacing protein expended during workouts
Which sports drinks are best consumed before, during and after workouts and what is the timeline of consumption before and after workouts?

Essential Knowledge

- PRE's gradually or progressively increase the amount of overload applied to muscles
- MS & ME are developed through Progressive Resistive Exercises

Essential Knowledge (cont’d)

- Muscle Strength is hard to develop when training intermittently
- Hypertrophy is a result of muscular strength development
- Lighter resistance allows training of more repetitions to develop endurance, while heavier resistance encourages fewer reps and increased strength
- Weight Training, Resistance training, Circuit training Weightlifting, power lifting and body building are resistance exercises that are used for general fitness training as well as training for sport
- General exercise flow begins with training larger muscle groups before smaller ones
- Women have less muscle tissue than men. Muscle size is generally smaller and more tendonous
- The physiological differences in gender reflect that women have 15-18% less muscle tissue in the upper body and therefore influence strength gains in this area. However women tend to outperform men in flexibility and demonstrate similar strength of the lower body

Knowledge Assessment

- Chapter 11 & 12 Test
- Protein supplement test
- Group core workout assignment and demonstration
- Muscle Identification Quiz
- Semester ending fitness program assignment

Essential Skill
Students will be able to identify the major muscles groups of the body

- Students will be able to describe the primary function or action of the major muscles
- Students will be able to describe flexion, extension, abduction and adduction of the major muscle groups
- Students will learn basic articulation of muscles around the major joints

Skill Assessment

- Muscle quizzes
- Range of motion and muscle action pop quizzes

Muscle Strength

Enduring Understandings

- Muscle strength prevents health problems and enables work and play with less fatigue
- Strengthening exercises strengthens bones and reduce osteoporosis
- Muscle strength can help prevent muscle injuries and muscle soreness
- Strong fit muscles maintain fat control

Essential Questions

- What is the difference between Isometric, Isotonic and Callisthenic exercises
- What is strength and how do you build it
- How does power differ from strength
- How does muscular strength differ from muscular endurance
- What is resistance training and how does it differ from weight training
- What distinguishes a strength workout from an endurance workout
- Chapter 11 identifies some common myths and misconceptions related to developing strength, what are they
- What are the fitness principles for developing strength
- What is the FIT Formula for developing strength

Essential Knowledge

- Progressive Resistance Exercises are great tools for developing strength
- Isotonic Exercise are best for developing strength
- One free weight, one manual and one machine exercise for each of the major muscle groups
- Resistance is the variable that separates strength training from resistance training
- Fitness Principles can be applied to Muscular Strength
- FIT Formula suggests 2-3 days per week of training, 2-3 sets at 8-10 reps
- Myths and misconceptions detailed in Chapter 11
- Sound weight room exercise progression suggests training large muscles groups before smaller ones

Knowledge Assessment

- Bi weekly assessment of fitness principles and strength progression
- End of semester written reflection of strength development
- End of semester written strength training program
- Chapter 11 Test

Essential Skill

- Students will be able to spot and transport weight safely
- Students will be able to safely and effectively lift free weight, dumb bells and use machines for workouts that will develop strength
- Students will be able to do at least one free weight, dumb bell and one machine exercise for each of the major muscle groups
- Students will be able to execute the Bench Press, Squat, Bicep Curl, Tricep Extension, Lunge and shoulder press

Skill Assessment

- Bi weekly assessment of strength gains
- Training scenario review
- Physical Fitness Test, specifically Bench and Squat Max
Enduring Understandings

- Muscular Endurance exercises improves appearance, fitness, physical and mental health
- Muscular endurance allows people to train longer without getting tired

Essential Questions

- What is muscle endurance and how do you build it
- How does ME differ from MS and CVF
- How is ME developed in the weight room
- What is the FIT formula for Muscle Endurance
- What are the Fitness Principles for Muscle Endurance
- What is circuit training and how does it affect ME

Essential Knowledge

- People with good muscular endurance have fewer back problems, muscle soreness and muscle injury
- Muscle Endurance training increases lean muscle tissue and decreases body fat
- ME developed through physical activity decreases resting heart rate and osteoporosis
Resistance is the variable that separates strength training from endurance training.

The FIT formula for Muscle Endurance suggest 1-3 sets, 11-25 reps at 20-55% intensity, 3 days per week.

One free weight, one manual and one machine exercise for each of the major muscle groups.

Knowledge Assessment

- Self reflection of changes in muscular endurance and cardiovascular fitness
- Muscle Endurance brain storm bubble on ways to improve ME
- Partner ME class workout
- Chapter 12 Quiz

Essential Skill

- Students will be able to distinguish a strength building program from an endurance building program through analysis or recognition of sets and reps and time.
- Students will be able to safely and effectively lift free weight, dumb bells and use machines for workouts that will develop muscle endurance.
- Students will be able to do at least one free weight, one dumb bell and one machine exercise for each of the major muscle groups.
- Students will be able to execute the Bench Press, Squat, Bicep Curl, Tricep Extension, Lunge and shoulder press.

Skill Assessment

- Muscle endurance and circuit training competition
- Written assessment of muscle endurance progression
- Training scenario review
- Group muscle endurance workout
Flexibility

Enduring Understandings

- Good flexibility improves overall mobility, health & wellness
- Good flexibility improves blood circulation
- Flexibility and proper warm up exercises prepares the heart muscle and muscle tissue for exercise
- Stretching relaxes muscles and reduces stress

Essential Questions

- What is Range of Motion and the benefits of good flexibility
- What are the characteristics of good flexibility
- How do Yoga and Pilates differ
- What is the difference between PNF, Static, Ballistic and dynamic warm-ups
- What is the FIT Formula for flexibility

Essential Knowledge

- Flexibility in throwing and striking sports create a longer backswing which will generate a faster and more explosive forward swing
- Stretching will prevent joint injury, muscle soreness, decrease cramping, improves posture
Flexibility and strength exercises should be done together to reduce muscle-bound areas and increase overall strength to the region.

Balanced exercise program included both strength and flexibility exercises to all muscles so that they can apply equal force.

In general the FIT Formula for flexibility suggest stretching 3 days / week, just past its normal range of motion holding each stretch 15 to 30 seconds 2 – 3 times each session.

**Essential Skill**

- Students will demonstrate an increase in flexibility in the sit and reach test
- Students will lead both Static and dynamic stretches
- Student will demonstrate flexibility exercises for each of the major muscles and joints
- Student will learn the 5 most common Yoga poses

**Skill Assessment**

- Chapter 10 test on flexibility
- Partner lead dynamic warm-up project
- Bi Weekly assessment of flexibility progress
- Flexibility test of PFT
BODY FAT

ENDURING UNDERSTANDINGS

- There are controllable and uncontrollable factors that influence a persona Body Fat
- Although there are several ways to measure Body Fat, the BMI is easy and practical
- People in the healthy range of Body Fat avoid illness, perform better in daily activities and sports and live longer than those outside of the healthy range for body fat
- Body Fat is a component of Health Related Fitness
- Body Fat is defined as a total percentage of body weight compared to their fat tissue.

Essential Questions

- What is Body Composition
- What factors influence Body Composition
- How much body fat is enough
- What is considered to be the normal range of Body Fat? What is your current percentage of body fat?
- Why is body fat important?
What is the FIT Formula for Fat Loss?
What ways have you positively affected your BMI?

Essential Knowledge

- Essential Body Fat is necessary in reducing potential health problems
- Anorexia & Bulimia are eating disorders that lead to dangerously low levels of body fat
- DEXA is the most expensive & accurate tool to measure body fat, Skin fold calipers are also accurate and in most cases really inexpensive
- Other body fat measuring tools include body measuring, Height-Weight charts and underwater weighing,
- There is no “ideal body weight” associated with people of a specific height, weight and age. However, individual self assessment of current weight, exercise levels, diet and goals allow people to determine a body weight that is good for them.
- Calories are units of energy and 3500 calories is the equivalent of 1Lb of body fat
- Food intake and exercise expenditure affect body weight and body fat

Essential Skill

- Students will perform a self assessment of calorie intake
- Students will be able to manually count calorie consumption
- Students will be able to use the web based sites to calculate calories from their daily consumption
- Students will be able to articulate ideal calorie consumption for teens, sedentary and active adults
- Students will be able to interpret information listed on food labels

Skill Assessment

- 7-10 Diet Log Assessment
- Bi-Weekly self-assessment of Fat consumption
- Food label quiz
Nutrition

Enduring Understandings

- The body needs 45 – 50 nutrients each day for the growth & maintenance of cells...
- These nutrients are divided into 6 groups and are the foundation of healthy eating & a balanced diet
- Food labels provide essential nutrition information
- Balancing calorie consumption & calorie expenditure is the key to maintaining healthy body weight
- Dietary Supplements are used to either supplement or replace lost or insufficient nutrients

Essential Questions

- What are the 6 nutrients and distinguish the energy and non energy providing nutrients
- How much energy is provided by the energy providing nutrients
- The text recommends that Americans have “Healthy Goals” related to nutrition, what are they
o How does the current Food Guide requirements differ from the Food Guide Pyramid
o What is the FIT Formula for nutrition
o Do dietary supplements differ from protein supplements
o Why are complex carbohydrates “better” for athletes to consume
o Which protein source is better for athletes
o How much protein is enough
o What is the ideal time to eat before competition
o What type of food consumption should be considered leading up to athletic competitions
o What are some affects of malnutrition
o What are protein supplements and why do athletes use them
o Are protein supplements useful for people other than athletes

Essential Knowledge

o Food labels contain nutritional information related to calories per serving, ingredients, serving size per container
o Carbohydrates, Proteins and Fats are the energy providing nutrients
o Vitamins, minerals and water are the non energy providing nutrients

Essential Knowledge (cont’d)

o Water is the most important nutrient
o Carbohydrates are the most important calorie producing nutrient and are classified as simple, complex or fiber
o Proteins are essential in bundling and repairing muscle & body tissue
  o Proteins are broken down into Amino Acids during digestion
  o Amino Acids are also in 2 categories, those that the body produce and those that need to brought in from other foods
  o Food containing all 9 of the missing AA are called Complete Proteins
  o Distinguish Complete vs. Incomplete Proteins
o Fats are the highest provider of calories of the calorie providing nutrients
  o Fats are either saturated or unsaturated and they dissolve & transports some vitamins
o Suggested Calorie intake
  o 1600 calories: Sedentary Women
  o 2200 calories: Most children, teen girls, active woman, sedentary men
  o 2800 calories: Teen boys, active men and very active women

Knowledge Assessment
Essential Skill

- Students will be able to plan and prepare a healthy meal
- Students will be able to distinguish poor and healthy snacks
- Students will be able to make healthy trail mix and smoothies
- Students will be able to distinguish some high, moderate and low glycemic index foods that are frequently consumed and/or used for meal planning
- Students will be able to plan appropriate pre and post game meals

Skill assessment

- Students will make smoothies and trail mix
- Students will cook two healthy meals (grilled & baked/roasted)

Appendix

Additional Items

- The following items are provided to share as information that will enrich the 715 curriculum
  - PE 715 Course Description
  - A sample lesson plan
  - Fitness Card
  - 715 Fitness Goal Sheet
  - “Word Play” sample
  - Sample Diet Log
  - Sample Diet Assessment
  - What is the BMI assignment
  - Get it in Worksheet: A worksheet that students can use outside of class to support their fitness goals
  - Karvonen Heart Rate Calculation Sheet
  - How to check your pulse article
  - Glycemic Index internet site
  - The Matrix PowerPoint slide