

FOLSOM CORDOVA UNIFIED SCHOOL DISTRICT

Sports Medicine

DATE: Nov. 2009 / Rev. 2011

SUBJECT AREA: Elective

PROPOSED GRADE LEVEL(S): 10th – 12th

COURSE LENGTH: One Year or One Term

GRADING: A-F

NUMBER OF CREDITS: 5 per semester

SUBJECT AREA CREDIT: Elective

PREREQUISITES: Fit For Life or Teacher Approval and Algebra 1. Suggested: Anatomy & Physiology

COURSE DESCRIPTION:

Sports medicine is the branch of medicine that addresses the prevention and treatment of injuries occurring to both athletes and the active population. Basic human anatomy and physiology theory provide the framework of study, within which the field of Sports Medicine will be explored. Students will learn how the body systems function and interact through physical activity, and develop a thorough understanding of the musculoskeletal system. Students will include care and prevention of injuries, protective wrapping techniques, stretching methods, and overall wellness. This knowledge will serve as a baseline for understanding the physiological response to injury and improving performance. This course provides a strong academic foundation for students interested in pursuing majors in sports medicine, pre-medical, pre-dental, or a variety of allied health programs at the university level.

GENERAL GOALS/PERFORMANCES:

Students will be required to:

- The Sports Medicine program will carry high expectations for each student's achievement
- Understand orthopedic injuries, especially related to sports.
- Understand and apply the steps of the scientific method, including data analysis.
- Gain knowledge of medical careers and develop motivation to pursue a career in medicine.

STUDENT READING COMPONENT:

Students will be required to:

- Develop Power Point slide programs of health related topics for group presentations.
- Read articles related to sports medicine.
- Read and comprehend test questions and answers.
- Use the Internet to research a variety of topics, including presentation skill and tips and tricks for a variety of computer multimedia.
- Read articles assigned about sports medicine.

STUDENT WRITING COMPONENT:

Students will be required to:

- Write in response to sports medicine.
- Write stories, case studies and /or scenarios of sport injury experiences.
- Complete a notebook, which includes note taking from the class lecture.
- Complete scripts for oral presentations on sports medicine.

STUDENT ORAL COMPONENT:

- Participate as a member of a group presentation of a sports medicine topic.
- Respond to questions and participate in class discussions about homework in sports medicine.
- Present a variety of speaking situations, including descriptive, persuasive and informative.

UNITS OF INSTRUCTION:

Student learning expectancies for each unit:

UNIT 1 Career Planning and Management

- A. Students understanding how to make effective decisions, use career information, and manage personal career plans:**
1. Identify the personal qualifications, interests, aptitudes, knowledge, and skills necessary to succeed in careers.
 2. List opportunities and requirements for educations, training, and licensure.
 3. Develop a career plan that is designed to reflect career interests, pathways, and postsecondary options.
 4. Identify the role and function of professional organizations, industry, associations, labor in a productive society.
 5. Identify past, present, and future career trends.
 6. Identify important strategies for self-promotion in the hiring process, such as job search, applications, cover letter, resume writing, interviewing skills, and preparation of a portfolio.

UNIT II Technology

- A. Students know how to use contemporary and emerging technological resources in diverse and changing personal, community, and workplace environments:**
1. Identify past, present, and future technological advances as they relate to a chosen career pathway.
 2. Use technological resources to gain access to, manipulate, and produce information, products, and services.
 3. Discuss the influence of current and emerging technology on selected segments of the economy.

UNIT III Health & Safety

- A. Students understand health and safety policies, procedures, regulations, and practices, including the use of equipment and handling of hazardous materials:**
1. Identify the policies, procedures, and regulations regarding health and safety in the workplace, including employers' and employees' responsibilities.
 2. Identify critical elements of health and safety practices related to storing, cleaning, and maintaining tools, equipment, and supplies.

UNIT IV Leadership & Teamwork

- A. Students understand effective leadership styles, key concepts of group dynamics, team and individual decision making, the benefits of workforce diversity, and conflict resolution:**
1. Identify the characteristics and benefits of teamwork, leadership, and citizenship in the school, community, and workplace settings.

2. Discuss the ways in which competitive career development activities enhance academic skills, promote career choices, and contribute to employability.
3. Discuss the benefits of teamwork.
4. Demonstrate respect for individual and cultural differences, and for the attitudes and feelings of others.
5. Communicate ideas to justify positions, persuade and convince others, confirm responsibility, and evaluate existing policies and procedures.

UNIT V **Introduction to Sports Medicine**

- A. History of sports medicine:**
1. Men and women in sports medicine.
- B. Related disciplines:**
1. Technical level (Community college)
 - a. Physical therapy Assistant.
 - b. Certified Personal Trainer
 2. Professional level (4-year University Graduate)
 - a. Certified Athletic Trainer
 - b. Exercise Physiologist
 - c. Strength and Conditioning Specialist
 - d. Strength and Conditioning Coach
 - e. Physical Therapist
 - f. Chiropractor
 - g. Physical Education/Health/Science Teacher

UNIT VI **General concepts of Anatomy & Physiology**

- A. Cell structure and function:**
1. Types of cells
 2. Structure of cell and membrane
- B. Tissue structure and function:**
1. Types of tissue
 - a. Connective
 - b. Epithelial
 - c. Muscle
 - d. Nervous
 2. Physical injury and healing response
 - a. Inflammatory response
 - b. Signs of trauma
 - c. Pain-spasm-pain cycle
 - d. Healing and regeneration cycle
- C. Soft tissue injuries:**
1. Common injuries
 2. Signs and symptoms
 3. Treatment
 - a. Explain the molecular structure of a cell membrane
 - b. Describe the structure and function of cellular organelles.

- c. Classify epithelial tissue and list the function of each.
- d. Identify three types of muscle and describe each based on structure and function.
- e. Identify, describe and discuss soft tissue injuries common to athletes.

UNIT VII Cardiovascular & Respiratory Systems

A. Anatomy of the heart:

1. Layers of the heart wall
2. Chambers of the heart
3. Vessels of the heart
4. Valves of the heart

B. Major blood vessels:

1. Veins
2. Arteries
3. Capillaries

C. Circulatory routes:

1. Systemic
2. Coronary
3. Hepatic portal
4. Pulmonary
5. Cerebral
6. Fetal

D. Blood:

1. Function of the blood
2. Formation of the blood cells
3. Bleeding and clotting

E. Blood pressure and pulse:

1. Method
2. Recording data

F. Respiratory system:

1. Nose
2. Pharynx
3. Larynx
4. Trachea
5. Bronchial tree
6. Lungs

G. Respiratory cycle

H. Injuries to the chest area:

1. Common injuries
2. Signs and symptoms
3. Treatment

UNIT VIII Skeletal System

- A. Divisions of the skeletal system:**
 - 1. Axial
 - 2. Appendicular

- B. Structure and function of the skeletal system:**
 - 1. Bones
 - 2. Cartilage
 - 3. Ligaments

- C. Joints:**
 - 1. Classifications of joints
 - a. Synarthroses
 - b. Amphiarthroses
 - c. Diarthroses/Synovial

 - 2. Range of motion
 - a. Normal
 - b. Abnormal

- D. Injuries to the skeletal system:**
 - 1. Common injuries
 - 2. Types of fractures and breaks
 - 3. Arthritis
 - 4. Signs and symptoms
 - 5. Treatments

UNIT XIV The Muscular System

- A. Types of muscles:**
 - 1. Striated muscle/skeletal
 - a. Function
 - 2. Visceral muscle/smooth
 - a. Function
 - 3. Cardiac muscle/heart
 - a. Function
 - 4. Physiology of skeletal muscle contraction
 - 5. Excitability
 - 6. Conductivity
 - 7. Contractility
 - 8. Elasticity
 - a. Neuro-electrical factors
 - b. Chemical interactions
 - c. Energy sources

- B. Muscle tone / Muscle twitch**

- C. Origins and insertions of skeletal muscle**

- D. Injuries to the skeletal muscle system**
 - 1. Common injuries and treatments

- a. Contracture
- b. Cramps
- c. Myalgia
- d. Myostis
- e. Antrophy
- f. Hypertrophy
- g. Tendonitis

UNIT XV The Nervous System

A. The structure and function of the central nervous system:

1. The brain
2. Cranial nerves
3. Special systems
4. Brainstem
5. Diencephalon
6. Cerebrum
7. Cerebellum

B. The structure and function of the peripheral nervous system:

1. Nerve impulse
2. Spinal cord
3. Spinal nerves

C. Injuries to the nervous system:

1. Signs and symptoms of injury
2. Common injuries and treatment
3. Concussions / second impact syndrome

UNIT XVI The Lymphatic System

A. Function and structure of the lymphatic system:

1. Lymphatic vessels
2. Lymph nodes

B. Organs of the lymphatic system

C. Antigens / antibodies

UNIT XVII Nutrition, Weight Management, Physical Assessment & Conditioning

A. Nutrition and diet:

1. Calories / energy
2. Nutritional value
3. Food groups
4. Vitamins and supplements

B. Weight control and energy balance:

1. Body composition
2. Digestive system
3. Metabolic rate
4. Exercise

- C. **Physical conditioning:**
 - 1. Rules of conditioning
 - 2. Weight training
 - 3. Isometric exercises
 - 4. Isotonic exercises
 - 5. Isokinetic exercises

- D. **Physical assessment:**
 - 1. Fitness evaluation
 - 2. Muscular evaluation
 - 3. Flexibility evaluation
 - 4. Body composition

- E. **Designing a conditioning program:**
 - 1. The client
 - 2. The goals
 - 3. The program
 - 4. Special populations

UNIT XVIII Peak Performance

- A. **Periodization:**
 - 1. Macrocycle
 - a. Preparation
 - b. Competitive
 - c. Transition
 - 2. Mesocycle
 - 3. Microcycle

- B. **Nutrition:**
 - 1. Hydration
 - 2. Carbohydrate loading
 - 3. Pre-event meal
 - 4. Nutrition during event
 - 5. Post-event meal

- C. **Altitude training:**
 - 1. Hypoxia
 - 2. Benefits
 - 3. Methods
 - 4. Physiological adaptations

UNIT XIX Decompression Sickness

- A. **Caisson Disease:**
 - 1. Definition
 - 2. Symptoms
 - 3. Treatment

- B. **Altitude Sickness:**
 - 1. Definition
 - 2. Symptoms

3. Treatment

C. Dysbarism:

1. Definition
2. Symptoms
3. Treatment

D. The Bends:

1. Definition
2. Symptoms
3. Treatment

UNIT XX Field Experience

A. Injury prevention:

1. Prophylactic taping
2. Splinting
3. Bracing

B. Assessment of injuries / documentation of data:

1. Evaluation of auricular injuries
2. Evaluation of muscle injuries
3. Assessment of head and neck injuries

C. Field treatment of injuries:

1. Assessment of patient
2. Recording of data
3. Treatment of patient
4. Hand-off of patient

SUBJECT AREA CONTENT STANDARDS TO BE ADDRESSED:

Standard 1

- Students demonstrate knowledge of and competency of motor skills, movement, patterns, and strategies needed to perform a variety of physical activities.

Standard 2

- Students demonstrate knowledge of fitness concepts, principles, and strategies.

Standard 3

- Students demonstrate knowledge of psychological and sociological concepts, principles, and strategies that apply to the learning and performance of physical activity.

Standard 1 (Health)

- Students will understand ways in which they can enhance and maintain their own health and well-being.

Standard 4 (Health)

- Students will play a positive, active role in promoting the health of their families.

Standard 9 (Health)

- Students will know how to identify products, services, and information that may be helpful or harmful to their health.

THIS COURSE WILL PREPARE STUDENTS FOR THE CAHSEE AND/OR THE CSTs:

Writing, Reading, Language Arts, Math, Social Science and Science

LAB FEE IF, REQUIRED:

None

DISTRICT ESLRs TO BE ADDRESSED:

- **Self Directed Learners:** who will be able to utilize their knowledge of anatomy and physiology to understand its relation to health and fitness and be able to integrate knowledge of physiology and anatomy in lifestyle choices.
- **Effective Communicators:** who will demonstrate responsible social behavior including respect for others. This requires the ability to communicate effectively with peers and teachers in all components of class.
- **Quality Producers/Performers:** who will take pride in the quality of their work and who will use time management and organizational skills to produce a quality product.
- **Constructive Thinkers:** who are able to take learned information and integrate it into a construct, holistic, perspective , that allows for free and independent thought processes when dealing with health/fitness, and physiology.
- **Collaborative Workers:** who are able to work cooperatively and collaboratively with a wide diversity of fellow students to facilitate an understanding of the coursework.
- **Responsible Citizens:** who practice democratic values with integrity and responsibility within the classroom to help foster a positive learning environment for all sports medicine students.