# Sports Medicine I Course No. 14072 Credit: 1.0

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| **Student name:** |  | **Graduation Date:** |  |

Pathways and CIP Codes:Health Science (51.9999)

Course Description: **Technical Level:** This course is designed to teach students components of exercise science/sports medicine; including exploration of therapeutic careers, medical terminology, anatomy and physiology, first aid, injury prevention principles, the healing process, rehabilitation techniques, therapeutic modalities, sport nutrition, sport psychology, and performance enhancement philosophies.

Directions:The following competencies are required for full approval of this course. Check the appropriate number to indicate the level of competency reached for learner evaluation.

**RATING SCALE:**

4. Exemplary Achievement: Student possesses outstanding knowledge, skills or professional attitude.

3. Proficient Achievement:Student demonstrates good knowledge, skills or professional attitude. Requires limited supervision.

2. Limited Achievement:Student demonstrates fragmented knowledge, skills or professional attitude. Requires close supervision.

1. Inadequate Achievement:Student lacks knowledge, skills or professional attitude.

0. No Instruction/Training:Student has not received instruction or training in this area.

## Benchmark 1: Identify members of the Sports Medicine team.

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Recognize the primary members of the sports medicine team to include: Coach, Athlete, Parents, Team Physician, Certified Athletic Trainer, and Allied Health professionals. |  |
| 1.2 | Understand that other careers provide support to the sports medicine team. |  |
| 1.3 | Compare and contrast the roles of each member of the sports medicine team. |  |

## Benchmark 2: Explore a variety of therapeutic careers and describe the job duties and skills, education required, job settings, and potential salary.

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Describe the job duties, skills, education required, job setting and potential salary for careers such as: Certified Athletic Trainer Physical Therapist, Physical Therapy Assistant, Physical Therapy Aide, Occupational Therapist, Occupational Therapy Assistant, Occupational Therapy Aide, Exercise Physiologist, Orthopedic Surgeon, Physician, Physician Assistant, Massage Therapist, Chiropractor, Sports Psychologist, Certified Strength & Conditioning Specialist/Personal Trainer, Dietician, Podiatrist. |  |

## Benchmark 3: Explain legal issues and legal terminology.

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 3.1 | Review preventative measures to reduce potential risks of litigation. |  |
| 3.2 | Medical History & Preparticipation Physical Examination (PPE). |  |
| 3.3 | Have an emergency action plan. |  |
| 3.4 | Continuing education. |  |
| 3.5 | Maintain adequate supervision. |  |
| 3.6 | Maintain good rapport with the Sports Medicine Team. |  |

## Benchmark 4: Identify bones and soft tissues.

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 4.1 | Explain the difference between the axial and appendicular skeleton. |  |
| 4.2 | Define the functions of the skeletal system. |  |
| 4.3 | Explain the difference between skeletal, smooth, and cardiac muscle. |  |
| 4.4 | Explain the physiology of a muscle strain. |  |
| 4.5 | Describe the function of a nerve cell. |  |
| 4.6 | Explain nerve injuries and their treatment. |  |
| 4.7 | List the different types of soft tissue injuries and their treatment. |  |
| 4.8 | Explain how the body responds to injuries. |  |

## Benchmark 5: Identify and utilize anatomical positions, planes, and directional terms.

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 5.1 | Demonstrate what anatomical position is and how it is used to reference the body. |  |
| 5.2 | Distinguish between the commonly used anatomical planes and recognize their individual views • Sagittal/Midsagittal Plane • Frontal/Coronal Plane • Transverse/Horizontal Plane |  |
| 5.3 | Apply directional terms to their location on the human body • Superior/Inferior • Anterior/Posterior • Medial/Lateral • Distal/Proximal • Superficial/Deep • Ventral/Dorsal • Prone/Supine • Unilateral/Bilateral |  |

## Benchmark 6: Demonstrate body movements.

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 6.1 | Compare and contrast the various movements of the body and their counter-movement • Flexion/Extension/Hyperextension • Adduction/Abduction • Pronation/Supination • Retraction/Protraction • Elevation/Depression • Rotation/Circumduction • External Rotation/Internal Rotation • Lateral Flexion (side-bending left or right |  |
| 6.2 | Compare and contrast the various movements of the foot/ankle and their counter-movements Inversion/Eversion, Dorsiflexion/Plantarflexion, Pronation/Supination. |  |
| 6.3 | Compare and contrast the lateral movements of the wrist/hand and their counter-movements Radial Deviation/Ulnar Deviation, Opposition. |  |

## Benchmark 7: Define terms associated with Exercise Science.

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 7.1 | Define the terminology that describes common sports injuries. |  |
| 7.2 | Define the concepts related to the injury process. |  |

## Benchmark 8: Demonstrate fundamental terms associated with performance enhancement.

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 8.1 | Define and interpret cardiovascular endurance. |  |
| 8.2 | Define and interpret muscular endurance. |  |
| 8.3 | Define and interpret power. |  |
| 8.4 | Define and interpret speed. |  |
| 8.5 | Define and interpret strength. |  |

## Benchmark 9: Develop an understanding of general conditional principles.

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 9.1 | Understand adaption. |  |
| 9.2 | Understand overload. |  |
| 9.3 | Understand specificity. |  |
| 9.4 | Understand reversibility. |  |
| 9.5 | Understand periodization. |  |

## Benchmark 10: Examine the role the cardiovascular/respiratory systems have on fitness/athletic performance.

### Competencies

| **#** | **Description** | **rating** |
| --- | --- | --- |
| 10.1 | Describe the anatomy of the cardiovascular/respiratory systems • Heart-4 chambers, 4 valves, 4 blood vessels • Lungs-oxygen exchange from alveoli to capillaries |  |
| 10.2 | Identify vital signs related to the cardiovascular/respiratory system • Describe and accurately measure blood pressure (systolic/diastolic) • Describe and accurately measure respiratory rate • Describe and accurately measure pulse rate • Describe lung volume • Describe the importance of cardiac output, stroke volume, and heart rate during exercise |  |
| 10.3 | Examine different types of tests used to quantify cardiovascular fitness o VO2max • Harvard step test • 12 minute run test |  |
| 10.4 | Describe the effects exercise has on the cardiovascular/respiratory systems • Immediate effects of exercise (heart rate, ventilation) • Long term effects of exercise (heart rate, stroke volume, cardiac output) |  |
| 10.5 | Compare and contrast aerobic/anaerobic training. |  |
| 10.6 | Examine the importance of a warm up/cool down in a training program. |  |
| 10.7 | Examine different cardiovascular training methods  • Interval • Fartlek • Circuit • Continuous |  |
| 10.8 | Apply general conditioning principles to improve cardiovascular fitness • Rate of perceived exertion (BORG scale) • Target heart rate |  |

## Benchmark 11: Examine the effects of the environment on training and performance.

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 11.1 | Discuss the effect of high and low altitude. |  |
| 11.2 | Describe the effects of acclimatization. |  |
| 11.3 | Recognize the effects of travel on the body. |  |

## Benchmark 12: Examine the role strength training has on fitness/athletic performance.

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 12.1 | Compare and contrast the difference between slow twitch and fast twitch muscle fibers and the type of athletic performance each influence. |  |
| 12.2 | Compare and contrast different types of movements related to strength training  • Isometric/isotonic/isokinetic • Eccentric/concentric • Closed chain/open chain • Plyometrics |  |
| 12.3 | Identify methods of resistance. |  |
| 12.4 | Apply general conditioning principles to improve strength  • Speed  • Muscular endurance • Power |  |

## Benchmark 13: Examine the importance of flexibility in fitness/athletic performance.

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 13.1 | Explain the general guidelines of flexibility. |  |
| 13.2 | Define ROM and how it relates to fitness/athletic performance. |  |
| 13.3 | Identify the benefits of flexibility • Decrease risk of injury • Reduce muscle soreness • Improve muscular balance and postural awareness |  |
| 13.4 | Demonstrate proper timing of flexibility techniques (before/after activity). |  |
| 13.5 | Identify the different methods to increase flexibility (static stretching, ballistic stretching, dynamic stretching, proprioceptive neuromuscular facilitation stretching). |  |
| 13.6 | Explain the safety/effectiveness of each method of increasing flexibility (static stretching, ballistic stretching, dynamic stretching, proprioceptive neuromuscular facilitation stretching PNF). |  |
| 13.7 | Demonstrate the proper techniques of static stretching for all major muscle groups. |  |

## Benchmark 14: Describe the basic components of nutrition and sources of nutrients.

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 14.1 | Utilize the Choose My Plate at www.choosemyplate.gov to recognize the components of a sound diet. |  |
| 14.2 | Recognize the basic human needs and the sources of the following nutrients (Carbohydrates, Proteins, Fats, Vitamins, Minerals, Water). |  |

## Benchmark 15: Describe basic body composition.

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 15.1 | Compare and contrast the most common methods for analyzing body composition (Hydrostatic, Bod Pod, Calipers, BIA, Infrared). |  |
| 15.2 | Describe the parameters of safe weight loss and weight gain. |  |

## Benchmark 16: Examine the importance of fluid replacement and hydration.

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 16.1 | Examine the importance of water and its role in the body. |  |
| 16.2 | Explain the correct process of hydration during athletic activity. |  |
| 16.3 | Identify the dangers of inappropriate hydration techniques. |  |
| 16.4 | Identify the dangers of dehydration. |  |
| 16.5 | Compare and contrast advantages and disadvantages of sports drinks. |  |
| 16.6 | Identify the role of sports drinks in hydration. |  |
| 16.7 | Discuss the correct chemical make-up of sports drinks. |  |
| 16.8 | Discuss the dangers of energy drinks and their effects on the body. |  |

## Benchmark 17: Identify the components of a pre and post event meal and explain the value of each.

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 17.1 | Describe recommended nutrient percentages of pre and post event meals. |  |
| 17.2 | Identify foods that are easily digested. |  |
| 17.3 | Identify food that should be avoided. |  |
| 17.4 | Identify when pre and post event meals should be eaten. |  |
| 17.5 | Explain the process of carbohydrate loading and discuss when it is most effective. |  |

## Benchmark 18: Recognize disorders associated with nutrition.

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 18.1 | Identify signs, symptoms, and effects of Anorexia Nervosa. |  |
| 18.2 | Identify signs, symptoms, and effects of Bulimia Nervosa. |  |
| 18.3 | Identify signs, symptoms, and effects of the Female Athlete Triad. |  |

## Benchmark 19: Compare and contrast the physiological and psychological effects of ergogenic aids.

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 19.1 | Define ergogenic aid. |  |
| 19.2 | Recognize the effects and possible dangers of common ergogenic aides (Stimulants, Narcotics, Anabolic steroids, Beta blockers, Diuretics, Human growth hormone, Blood doping products, Erythropoietin, Anesthetics, Corticosteroids, Creatine). |  |

## Benchmark 20: Click or tap here to enter text.

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 20.1 | Compare and contrast acute and chronic injuries. |  |
| 20.2 | Discuss the purpose of inflammation. |  |
| 20.3 | Categorize the stages of acute injury healing (Acute-Inflammation Phase, Subacute-Repair & Regeneration Phase, & Remodeling-Maturation Phase). |  |
| 20.4 | Explain the process involved in the Acute (Inflammation) Phase of injury healing. |  |
| 20.5 | Describe the signs and symptoms of inflammation (heat, redness, swelling, pain, loss of function). |  |
| 20.6 | Understand the time frame of the Acute (Inflammation) Phase. |  |
| 20.7 | Define vasodilation and explain why it occurs. |  |
| 20.8 | Define hypoxia and explain its role in secondary injury. |  |
| 20.9 | Explain the process involved in the Subacute (Repair and Regeneration) Phase of injury healing. |  |
| 20.10 | Understand the time frame of the Subacute (Repair and Regeneration) Phase. |  |
| 20.11 | Explain what is a fibroblast. |  |
| 20.12 | Explain what collagen is and its role in scar tissue formation. |  |
| 20.13 | Explain the process involved in the Remodeling (Maturation) Phase of injury healing. |  |
| 20.14 | Understand the time frame of the Remodeling (Maturation) Phase. |  |
| 20.15 | Define adhesions as they relate to the Remodeling (Maturation) Phase. |  |
| 20.16 | Explain Wolff’s Law as it relates to the Remodeling (Maturation) Phase. |  |

## Benchmark 21: Compare and contrast injury classifications.

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 21.1 | Describe first degree injuries. |  |
| 21.2 | Describe second degree injuries. |  |
| 21.3 | Describe third degree injuries. |  |

## Benchmark 22: Explore therapeutic modalities.

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 22.1 | Identify the purpose of therapeutic modalities. |  |
| 22.2 | Explain how to properly select the use of therapeutic modalities. |  |
| 22.3 | Identify the Gate Control Theory as a principle of pain management and describe the physiological process of the theory. |  |

## Benchmark 23: Demonstrate an understanding of the physiologic effects, indications, contraindications, and application of therapeutic modalities and rehabilitation techniques.

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 23.1 | Describe the physiologic effects, indications, contraindications, and application of Cryotherapy (Ice packs /Prepare an ice bag/pack, Ice massage, Ice immersion, Cold whirlpool, Chemical coolant, Describe the R.I.C.E. method for acute injuries /Apply a compression wrap to an ankle/Apply a compression wrap to a knee). |  |
| 23.2 | Describe the physiologic effects, indications, contraindications, and application of Thermotherapy (Heat packs, Ultrasound, Hot whirlpool, Contrast baths, Electrotherapy, Massage). |  |

## Benchmark 24: Discuss the components and goals of a rehabilitation program.

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 24.1 | Identify the general guidelines of a rehabilitation program (Individualize each program, Be as aggressive as possible without causing harm, Use a variety of equipment, Common mistakes, Appropriate goal setting, Components of a rehabilitation program). |  |
| 24.2 | Identify Phase I of a rehabilitation program • Body conditioning/maintain cardiovascular fitness throughout all phases • Control swelling • Control pain • Increase range of motion |  |
| 24.3 | Identify Phase II of a rehabilitation program • Restore full range of motion • Strength, endurance, speed, power in all muscle groups • Begin skill patterns and proprioception |  |
| 24.4 | Identify Phase III of a rehabilitation program • Functional and sport specific skills • Restore balance and proprioception • Return to sport |  |
| 24.5 | Relate the different exercise principles to rehabilitation (SAID, Overload). |  |

## Benchmark 25: Identify the psychological implications of an injury to an athlete.

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 25.1 | Describe the five psychological phases an athlete experiences following an injury (Denial, Anger, Bargaining, Depression, Acceptance). |  |
| 25.2 | Compare and contrast athletes that deny pain and loss of function or view injury as a source of relief. |  |

## Benchmark 26: Identify effective psychological intervention skills.

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 26.1 | Describe the importance of goal setting (Performance goals, Outcome goals, SMART goals). |  |
| 26.2 | Examine different relaxation techniques and how they can help performance (Focused breathing, Progressive muscle relaxation). |  |
| 26.3 | Analyze the use of visual imagery in sport (Aid in rehabilitation and healing, reduce anxiety, Improve performance). |  |

## Benchmark 27: Identify potential problems associated with overtraining.

### Competencies

| **#** | **Description** | **Rating** |
| --- | --- | --- |
| 27.1 | Compare and contrast staleness and burnout. |  |
| 27.2 | Identify interventions to prevent or treat staleness or burnout • Remove from activity • Time off • Allow athlete to have more control • Decreasing emotional and stressful demands • Avoid repetition • Sufficient attention to complaints and small injuries • Supportive and caring environment |  |

I certify that the student has received training in the areas indicated.

Instructor Signature:

For more information, contact:

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