IB Sports, Exercise, and Health Science (SEHS) at Harrison Trimble High School

IB Sports, Exercise, and Health Science (SEHS) - Standard Level

Teacher: Dylan Roach
Course Duration: September 2025 – May 2026

Welcome to IB SEHS

IB SEHS is an interdisciplinary science course that blends concepts from biology, physics, and psychology to explore the science of human movement. This course will deepen your understanding of how the human body functions in sports, exercise, and health contexts. Through practical labs, theoretical analysis, and interdisciplinary collaborative projects, you will connect scientific principles to real-world applications while developing skills in inquiry, critical thinking, and collaboration.

Why Study IB SEHS?

This course is ideal for students passionate about health sciences, sports performance, and human biology. It prepares students for careers in sports medicine, coaching, physiotherapy, and related fields by combining rigorous academics with real-world applications.

Core Areas of Study

Unit 1: The Essentials of Human Movement

Duration: 11 Weeks

- **Focus:**
  Understanding how body systems (nervous, muscular, skeletal) interact to produce and regulate movement.
  Exploring biomechanical principles and homeostasis during exercise.
- **Key Topics:**
  - Inter-system communication: nervous, endocrine, and immune systems.
  - Anatomical planes, joint actions, and muscle function.
  - Biomechanics of motion: Newton's Laws, lever systems.
  - Feedback systems for thermoregulation and hormonal responses.
- **Skill Focus:**
  Scientific inquiry, experimental design, and precision in data collection.
  Application of biomechanical principles to movement analysis.

Unit 2: Energy Dynamics and Physical Performance

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Duration: 10 Weeks

- **Focus:**
  Investigating how the body generates and utilizes energy during exercise.
  Analyzing the role of nutrition and hydration in optimizing performance.
- **Key Topics:**
  - Energy systems: ATP-PC, glycolytic, oxidative.
  - Macronutrient metabolism: carbohydrates, proteins, and fats.
  - Cardiovascular and respiratory responses to exercise.
  - Nutrition strategies: hydration, carbohydrate loading, recovery.
- **Skill Focus:**
  Designing and conducting experiments on energy systems and nutrition.
  Data analysis and critical evaluation of performance metrics.

Unit 3: Biomechanics and Movement Efficiency

Duration: 6 Weeks

- **Focus:**
  Using biomechanical principles to enhance athletic performance and reduce injury risk.
  Developing skills in data collection and movement analysis.
- **Key Topics:**
  - Newton's Laws of Motion and their application to sports.
  - Lever systems and force application in movement.
  - Biomechanical tools: video analysis, force plates.
  - Training variables and adaptations for optimal performance.
- **Skill Focus:**
  Application of physics concepts to human movement.
  Designing and analyzing experiments for biomechanical efficiency.

Unit 4: Psychological Factors in Performance

Duration: 7 Weeks

- **Focus:**
  Exploring the mental aspects of athletic performance, including personality, motivation, and arousal.
  Developing strategies for optimizing mental readiness and resilience.

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- **Key Topics:**
    - Personality traits and their influence on performance.
    - Mental toughness: resilience, focus, confidence.
    - Motivation and arousal: achievement motivation, Inverted-U Hypothesis.
    - Coping strategies and stages of motor learning.
- **Skill Focus:**
  Psychological assessments and hypothesis testing.
  Reflective analysis of mental strategies in sports contexts.

Assessment Components

1. **Formative Assessments:**
    - Quizzes, concept maps, and peer-reviewed experimental designs.
    - Reflection journals connecting theoretical knowledge with practical experiences.
2. **Summative Assessments:**
    - Lab reports integrating data analysis and theoretical application.
    - Comprehensive unit tests on key concepts.
3. **Internal Assessment (IA):**
    - Independent research project applying SEHS concepts through experimental design.
    - Includes a literature review, hypothesis, and analysis of collected data.
4. **Collaborative Sciences Project (CSP):**
    - Group 4 interdisciplinary project integrating knowledge from multiple science disciplines.
    - Involves experiment design, data analysis, and presentation of findings.

Resources

- **Primary Tools:** SEHS textbooks, Kognity, ThinkIB, research articles.
- **Lab Equipment:** Reaction time rulers, fitness trackers, video analysis tools.
- **Digital Platforms:** D2L (Brightspace) for quizzes, assignments, and interactive content.