

# Bemidji State University

## PHED 3200: Introduction to Sport Biomechanics

### A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: \*.\*

Lab Hours/Week: \*.\*

OJT Hours/Week: \*.\*

Prerequisites: None

Corequisites: None

MnTC Goals: None

Introduction to biomechanical concepts and principles. Application of these principles to evaluating and improving performance in physical activities. Introduction to methods for qualitative movement analysis. Prerequisite: BIOL 2110 and PHED 3100 or consent of instructor.

### B. COURSE EFFECTIVE DATES: 05/18/2001 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

1. Friction
2. Anatomical System for Describing Limb Motion
3. Angular Kinematics
4. Basic Mathematics: Solution of Equations, Trigonometric Functions
5. Buoyancy, Flotation & Swimming Techniques
6. Center of gravity
7. Classifying forces. Vectors & Scalars, Vector Addition, Vector Resolution, & Equilibrium
8. Direct Impact & Oblique Impact
9. Fluid Mechanics
10. Forms of Motion
11. Fundamental Concepts & Principles of Mechanics
12. Linear Kinematics: Position, Distance & Displacement, Speed & Velocity, Acceleration
13. Linear Kinetics: Inertia. Mass. Newton's 1st law of motion. Newton's law of gravitation. Momentum
14. Projectile Motion
15. Torque & Moment : Eccentric Force, Couple. Moment, Resultant Moment, & Equilibrium
16. Work, Power, & Energy

### D. LEARNING OUTCOMES (General)

1. acquire an appreciation on how these mechanical principles apply to improving performance in selected physical activities.
2. acquire an understanding of the basic mechanical principles involved in sports.
3. develop the ability to transfer the knowledge to other physical activities not discussed.

**E. Minnesota Transfer Curriculum Goal Area(s) and Competencies**

None

**F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

**G. SPECIAL INFORMATION**

None noted