

**GRANDE PRAIRIE REGIONAL COLLEGE**  
**DEPARTMENT OF PHYSICAL EDUCATION, ATHLETICS & KINESIOLOGY**  
**PE 2060 - BIOMECHANICS**  
**COURSE OUTLINE - WINTER 2008**

**INSTRUCTOR:** Leigh Goldie  
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**CLASS TIMES:** Monday, 8:30 – 9:50  
Tuesday, 12:00 – 12:50  
Wednesday, 8:30 – 9:50

**COURSE DESCRIPTION:** This course is concerned with establishing the role biomechanics can play in the teaching and analysis of sport techniques. Emphasis is placed on those basic biomechanical concepts which are of the greatest importance in the qualitative analysis of sports performance.

**TRANSFERABILITY:** PEDS 206(3) - U. of Alberta  
Jr. KNES(3) - U. of Calgary  
KNES 3650(3) - U. of Lethbridge

**COURSE OBJECTIVES:**

The objective of this course is to provide students with the knowledge to:

1. Identify mechanical principles governing human motion.
2. Identify the critical features of selected sport skills.
3. Design and carry out an observation plan.
4. Determine faults in observed performance.

**COURSE TEXT:** McGinnis, P. 2005. *Biomechanics of sport and exercise, 2nd ed.* Windsor: Human Kinetics.

**COURSE EVALUATION:**

|                           |            |
|---------------------------|------------|
| Skill analysis projects   | 30%        |
| Test #1 – Wed. Jan. 30    | 15%        |
| Test #2 – Wed. Mar. 5     | 15%        |
| Test #3 - Wed. Apr. 2     | 15%        |
| Test #4 - Final Exam Week | <u>25%</u> |
|                           | 100%       |

**GRADING SYSTEM:**

The following system will be used for converting percentage grades to alpha grades.

| <b>Alpha Grade</b> | <b>4 – Point</b> | <b>Percentage</b> | <b>Descriptor</b>    |
|--------------------|------------------|-------------------|----------------------|
| A+                 | 4.0              | 90 – 100          | Excellent            |
| A                  | 4.0              | 85 – 89           | Excellent            |
| A-                 | 3.7              | 80 – 84           | First Class Standing |
| B+                 | 3.3              | 76 – 79           | First Class Standing |
| B                  | 3.0              | 73 – 75           | Good                 |
| B-                 | 2.7              | 70 – 72           | Good                 |
| C+                 | 2.3              | 67 – 69           | Satisfactory         |
| C                  | 2.0              | 64 – 66           | Satisfactory         |
| C-                 | 1.7              | 60 – 63           | Satisfactory         |
| D+                 | 1.3              | 55 – 59           | Poor                 |
| D                  | 1.0              | 50 – 54           | Minimal Pass         |
| F                  | 0.0              | 0 – 49            | Fail                 |

\*\*\*There might be slight deviations from this system in the conversion of percentage grades to alpha grades depending on the grouping of marks within the class.

**COURSE CONTENT:**

Introduction – Why Study Biomechanics?

Chapter One – Forces: Maintaining Equilibrium or Changing Motion

Chapter Two – Linear Kinematics – Describing Objects in Linear Motion

Chapter Three – Linear Kinetics – Explaining the Causes of Linear Motion

Chapter Four – Work, Power & Energy: Explaining the Causes of Motion Without Newton

Chapter Five – Torques & Moments of Force: Maintaining Equilibrium or Changing Angular Motion

Chapter Six – Angular Kinematics: Describing Objects in Angular Motion

Chapter Seven – Angular Kinetics: Explaining the Causes of Angular Motion

Chapter Eight – Fluid Mechanics: The Effects of Water and Air

Chapter Thirteen – Qualitative Biomechanical Analysis to Improve Technique

Chapter Fourteen – Qualitative Biomechanical Analysis to Improve Training