# School of Nursing and Health Professions Syllabus

HUDSON COUNTY COMMUNITY COLLEGE

HUDSON is HOME!

**Term:** **Credits: 3**

**Course Code: EXS-201**

**Title of Course: Biomechanics**

**Days & Times:**

**Location:**

**Instructor:**

**Office Hours:**

**Office Location:**

**Email:**

**Phone:**

**Prerequisites: EXS 110, MAT 100 and BIO 111**

## COURSE DESCRIPTION:

This course will examine human motion, including the structure and function of the various systems that contribute to the movement from a mathematical and physics perspective. The incorporation of these two disciplines provides specific and concrete methods of measurement and evaluation of movement. Special emphasis is place on the movement analysis and how technique can be examined using theories within biomechanics. This course emphasizes the analysis of the principles of movement through anatomical design. Major joints of the body, their actions, and muscles that perform those actions are stressed. Application to physical exercise will be stressed in lab work on strength, endurance and potential motion of major joints. The introduction of biomechanical analysis of motion using technological tools available in the discipline will be discussed.

## COURSE OBJECTIVES:

1. Describe human movement using the technical language of biomechanics including specific special references, bones, joint actions, and muscles used in various forms of exercise.

2. Identify the limitations and stresses placed on musculoskeletal system as it engages in physical activities.

3. Explain faults in an individual's movement performance and provide appropriate corrective suggestions to improve the performance and safety of the individual.

4. Examine individual differences and needs in relation to biomechanical principles.

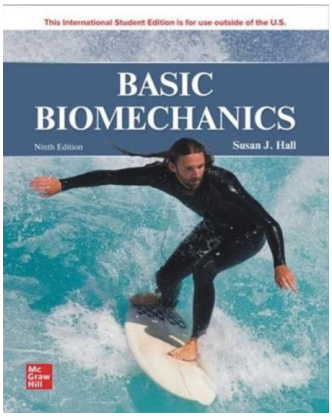
5. Correctly demonstrate various exercises in selected sport movements.

6. Select appropriate solutions for qualitative and quantitative problems.

7. Assess a specific sport's skill from beginning to end, using all of the components of biomechanics.

**TEXTBOOK REQUIRED:**

**Hall, S. (2022). *Basic Biomechanics 9th Ed.* New York: McGraw Hill ISBN: 9781260836981**




**EVALUATION METHODS:**

- **3 Exams** **30%**
- **Participation** **15%**
- **Lab Reports/Assignments** **15%**
- **Quizzes** **10%**
- **Project** **30%**

**WEEKLY OUTLINE:**

| Week | Topic | Learning Outcomes (L.O) |
|---|---|---|
| 1 | Syllabus Overview and Class Expectations | |
| 2 | Kinematic Concepts for Analyzing Human Motion | SLO 1 |
| 3 | Kinematic Concepts for Analyzing Human Motion | SLO 1 |
| 4 | Equilibrium and Human Movement | |
| 5 | Biomechanics of Human Bone Growth and Development | SLO 2 |
| 6 | Biomechanics of Human | SLO 2 |

| | | |
|---|---|---|
| | **Skeletal Articulations** | |
| **7** | **Biomechanics of the Human Upper Extremity** | **SLO 3** |
| **8** | **Biomechanics of the Human Lower Extremity** | **SLO 3** |
| **9** | **Biomechanics of the Human Spine** | **SLO 4** |
| **10** | **Biomechanics of Human Skeletal Muscle** | **SLO 5** |
| **11** | **Linear Kinematics of Human Movement** | **SLO 6** |
| **12** | **Linear Kinematics of Human Movement** | |
| **13** | **EXAM** | **FINAL EXAM** |

**HCCC POLICIES, STATEMENTS, AND SERVICES:**

https://www.hccc.edu/administration/academic-affairs/syllabus-addendum.html