COURSE DESCRIPTION
This course provides an introduction to the various concepts of biomechanics and exercise physiology that interact to influence sport motor performance. Included in this course are theoretical concepts of movement observation, Newton’s Laws and other mechanical factors, human energy systems and muscular activity with special attention to the effects of sport activity on physiological processes.

REQUIRED MATERIALS

2) VCR tape or digital video media (iDVD) and associated camera to record field tasks (homework). Using the same means by which you video games/contests should suffice.

3) Gatorade Sports Science Institute: Sport Science Exchange and Round Table readings as assigned.

COURSE OBJECTIVES
Upon completion of this course, each student will be able to:

1. Describe the scope of scientific inquiry addressed by biomechanics and exercise physiology.  
   **NASPE Sport Coaches Standard 12**
2. Identify concepts for analyzing human movement.  
   **NASPE Sport Coaches Standard 16**
3. Explain and identify upper and lower extremity biomechanics.  
   **NASPE Sport Coaches Standards 12, 16**
4. Identify and discuss linear and angular kinetics of human movement.  
   **NASPE Sport Coaches Standard 16**
5. Discuss equilibrium and human movement.  
   **NASPE Sport Coaches Standards 12, 16**
6. Consider environmental conditions to prevent injury during practice and/or contests.  
   **NASPE Sport Coaches Standards 12, 13**
7. Analyze human performance in terms of developmental information and individual body structure.  
   **NASPE Sport Coaches Standards 12, 16**
8. Demonstrate basic knowledge of physiological systems and their responses to conditioning.  
   **NASPE Sport Coaches Standards 12-16**

SOCIAL JUSTICE:
Western Michigan University is committed to social justice. I concur with that commitment and expect to foster a nurturing learning environment based upon open communication, mutual respect and non-discrimination. Our university does not discriminate based on race, sex, age, disability, veteran status, religion, sexual orientation, color or national origin. I appreciate, and will give serious consideration, to any suggestions for furthering such a positive and open environment in this class.

ACADEMIC REQUIREMENTS:
Unless otherwise stated, assignments are due at the beginning of the class indicated on the block schedule. NO LATE WORK WILL BE ACCEPTED. Assigned readings should be completed before the class for which they are assigned, since topics will be based on readings and therefore require student preparation for participation. If
students are dissatisfied with a grade, any discussion of that grade must occur within one week of receipt to be reconsidered. NO grades will be changed after that one week ‘grace period.’

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<thead>
<tr>
<th>GRADE COMPONENT</th>
<th>% OF GRADE</th>
<th>GRADING SCALE</th>
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</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>25</td>
<td>90-100% = A</td>
</tr>
<tr>
<td>Quizzes (pop)/Tests</td>
<td>25</td>
<td>80- 89% = B</td>
</tr>
<tr>
<td>Participation/Labs</td>
<td>25</td>
<td>70- 79% = C</td>
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<tr>
<td>Final project</td>
<td>25</td>
<td>60- 69% = D</td>
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<td>&lt;60% = E</td>
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ACADEMIC INTEGRITY/DISHONESTY:

Academic honesty is central to WMU’s educational mission. It enables each of us to fulfill our potential, learn effectively with and from one another, acquire specialized knowledge and skills, become informed, responsible and creative thinkers and have pride in our institution’s standing. To these ends I require that students in this class represent their own work accurately and truthfully without cheating, fabrication, falsification or forgery, multiple submission, plagiarism, complicity and computer misuse, according to the policies in WMU’s Student Code that pertain to Academic Integrity (Graduate Catalog (pp. 26-28). If there is reason to believe you have been involved in academic dishonesty you will be referred to the Office of Student Conduct. You will be given an opportunity to review the charge(s). If you believe you are not responsible you will have the opportunity for a hearing.

This particular class includes several take-home and group/partner assignments. Although you may discuss these with others in this class, the final answers that you turn in for grading must be written independently by you, and reflect your own efforts, knowledge, understanding and expression of ideas. If you have questions or are confused about what is or is not appropriate regarding this, or other issues of academic integrity, please consult with me during office hours or after class. I am available at those times to discuss anything pertaining to this course. The WMU Writing Center can give you additional help with paraphrasing and citing sources correctly. If you observe other students in this class engaging in any form of academic dishonesty I invite you to approach me in confidence about it.

ATTENDANCE
Students are expected to attend all course-related sessions to earn available points. In case of an absence, assigned class work will be accepted only if prior arrangements are made with the instructor. Individual circumstances will be given consideration only if the instructor is contacted before the day of the absence. Call or email. All labs and tests must be completed during the course session noted on the syllabus to earn credit.

TENTATIVE COURSE OUTLINE:

| 1/11  | Course enrollment, syllabus, overview |
| 1/18  | Musculoskeletal concepts |
| DUE:  | 1-page outline of planned use of the content of this course |
| 1/25  | Kinematic concepts, Energetic concepts |
| LAB 1 | DUE: 1-2 page summary of application of 1/18 content |
| 2/1   | Exercise metabolism concepts |
| LAB 2 | DUE: 1-2 page summary of application of 1/25 content |
| 2/8   | Motor control concepts |
| DUE:  | 1-2 page summary of application of 2/1 content |

READINGS

| 1/11  | Ch. 2 |
| 1/18  | Ch. 2 |
| 1/25  | Ch. 6 (pp. 68-77), Ch. 7 |
| 2/1   | Ch. 10, SSE #90, 98 |
| 2/8   | Ch. 14 |
| 2/16  | RT#36, 46, 49 |
2/15 Changes across the lifespan  
**DUE:** 1-2 page summary of application of 2/8 content  
Ch. 4, 12, 16

2/22 TEST 1 (ch. 2, 6, 7, 10, 14, assigned readings)

3/1 NO CLASS- SPRING BREAK  NO CLASS- SPRING BREAK  NO CLASS- SPRING BREAK

3/8 Musculoskeletal training adaptations  
Ch. 5

3/15 Biomechanical training adaptations  
**DUE:** 1-2 page summary of application of 3/8 content  
Ch. 9

3/22 Physiological training adaptations 1  
**DUE:** 1-2 page summary of application of 3/15 content  
Ch. 11

3/29 Physiological training adaptations 2  
LAB 3

4/5 Motor control training adaptations  
**DUE:** 1-2 page summary of application of 3/22, 3/29 content  
Ch. 17

4/10 TEST 2 (ch. 4, 12, 16, 5, 9, 11, 17, assigned readings)  
Environmental factors’ influence on performance  
SSE 3, 95, 97 RT# 33-35, 43

4/19 The use and effects of steroids, supplements & dietary factors  
SSE #84, 87, 91, 94, 96  
RT#32, 42, 48

4/26 Final: 7:15-9:15p