

# Course Syllabus: Biomechanics & Analysis of Human Movement

# EXPH 2993-101

# Fall 2020, MWF 11-11:50am, Ligon 223/Remote

##  **Department of Athletic Training & Exercise Physiology**

## **Contact Information**

**Instructor:** Michael W. Olson, Ph.D.

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**Telephone:** 940-397-4053

**Office:** Ligon Hall 215

**Office Hours:** M/W: 1:00-2:00 pm; T/TH 11:00 am -1:00pm

**Day and Time:** Monday/Wednesday/Friday: 11:00 - 11:50 am

## **Location:** Ligon 223/Remote

**TAs:** Sydney Ellis

 Ishita Kamat

 Natalie Delgdillo

**Important Dates:**

|  |  |
| --- | --- |
| First Day of ClassLast day to AddLast day for “W”Labor dayExam I | Monday, August 24thWednesday August 26thFriday December 4th (4pm)Monday September 7 (no class)Wednesday, September 23rd (online)  |
| Exam II | Wednesday, October 28th (online) |
| Final Exam | Monday, December 7th (online) |

**Textbook:** *Biomechanics of Sport and Exercise 3rd Edition:* by Peter McGinnis, Springer, 2013, ISBN: 9780736079662

**Course objectives:**

* Introduction to biomechanical concepts of movement
* Be able to define the system being evaluated
* Provide tools necessary for biomechanical analysis of movement
* Provide the applicability of physics based concepts to real world situations
* Increase your cognitive awareness of biomechanical factors in daily activities
* Introduce qualitative and quantitative analyses of human movement
* Be able to integrate biomechanical information to other areas of the discipline (exercise physiology, athletic training, clinical settings, sport settings)

## **Attendance**

Attendance at class is **compulsory** if you intend on performing well in this course. Attendance will be taken for both face to face and virtual meetings.

This class will be delivered in a hybrid format. The first week of class will be completely remote. The hybrid delivery will begin the second week of class. During hybrid delivery, half the class will meet face to face in the assigned classroom, while the other half of class will join in a virtual classroom (Zoom or the Virtual classroom, both in D2L). On Wednesdays, students will “flip” their attendance – those who were in the face to face classroom will be joining class virtually, while those who were in the virtual classroom on Monday will be joining face to face on Wednesdays. If you do not feel comfortable joining face to face you have the option of joining virtually for each class session. The instructor will assign students to the respective Monday-Wednesday assignments. On most Fridays students will have assigned chapter questions or problems that will be due before the next class period (i.e., the following Monday). These will be posted in D2L for the hour that the class meets (11-11:50 am – you will be able to download the questions) and students will need to upload their answers to an assignment dropbox before the next class period. Either a graduate assistant or I will be available during that time to answer questions regarding the lab.

While in the classroom, social distancing will be practiced as assigned seating will be in place. The classroom will have stickers denoting where students will be able to sit. Wearing masks is mandatory while in the classroom and the building. If a student does not follow these safety precautions then he/she will be asked to leave the face to face classroom.

## **Study Hours and Tutoring Assistance**

There will be few study hall sessions prior to each EXAM by GA.

\*\*If you attend the study hall, you will get one point from the scheduled EXAM.

## **Student Handbook**

### Refer to: [Student Handbook-2018-19](https://mwsu.edu/student-life/conduct/_assets/files/student-handbook-2017-18.pdf)

## **Academic Misconduct Policy & Procedures**

Academic Dishonesty: Cheating, collusion, and plagiarism (the act of using source material of other persons, either published or unpublished, without following the accepted techniques of crediting, or the submission for credit of work not the individual’s to whom credit is given). Additional guidelines on procedures in these matters may be found in the Office of Student Conduct.

## **Grading**

Course Grade - Grades will be based on your performance in the following areas:

Table 1: Percentages allocated to each assignment.

| **Assignments** | **%** |
| --- | --- |
| Exams 1-3 3\*20% | 60 |
| Quizzes 10\*2% | 20 |
| Weekly assignments 10% | 10 |
| Outside Labs 10% | 10 |
| Total  | 100 |

Table 2: Total percentages for final grade.

| **Grade** | **%** |
| --- | --- |
| A | 90-100 |
| B | 79-89.99 |
| C | 68-78.99 |
| D | 58-67.99 |
| F | < 57.99 |

**Class preparation:** Review questions and problems will be assigned for each chapter to facilitate discussion. ***It is your responsibility to come prepared for class and ready to engage in the topic matter.*** Reading the materials from the textbook will assist you in your preparation for the following class period. Material from these assignments may be used for quizzes or exams! As such, you will need to bring a scientific calculator during each class session. ***Cell phones will NOT be adequate!*** **DO NOT use cellular phones in this class.** The notes presented in class serve as an *outline* for the topics during that class period.

**Course Evaluation:** Each student will be evaluated on the following criteria:

1. **Online Quizzes 20%**

There will be *at least* one quiz per topic area given during the semester on Desire2Learn. You will be provided a 24-48 hour window to complete each quiz. Quizzes will not be given the first day of class or the first class after each exam. **No quizzes will be dropped** from the calculation of the final grade. If you fail to complete the quiz before the time period has expired you will not be able to receive credit for that quiz. The instructor will not accept emailed quizzes. ALL quizzes will be performed on the Desire 2 Learn (D2L) platform. Quiz notifications will be sent to your account calendars for EXPH 2993 once the quiz is available. Once you begin the quiz you will have two (2) hours in which to complete AND submit the quiz. When the 2 hour window is over you will not be allowed to access the quiz. You will have at least 24 hour notice before a quiz ends. Failing to complete and submit a quiz will result is a zero (0) for that quiz with no potential for a make-up quiz. Any computer issues, or software issues you may have with D2L regarding the notification of a quiz will not excuse you from this assessment or the grade which you may incur. It is your responsibility to check your accounts on a regular basis (at least 2 times per day).

2. **Exam I 20%**

3. **Exam II 20%**

4. **Exam III 20%** (Final exam is NOT cumulative)

All exams will be online. Students need to have access to Respondus and Lockdown Browser (this will not work with an iPad/tablet, or phone). Online exams given during the semester will be provided for 4 hours during the day of the scheduled exam (usually 8am – 12pm). The Final exam will be provided for an 8-hour window, which will be determined at a later date. The format of the exams will be discussed prior to each exam.

5. **Lab Activities 10%**

Laboratory activities will be assigned throughout the semester. The instructor will provide the labs on D2L. Students will have notification a week prior to the due date for completion of the lab. ALL laboratories are to be completed outside of the allotted class period. Students will upload their completed laboratory activities into an Assignment Box in D2L by the due date and time. You may work with others from the class on these labs, HOWEVER, EACH student will upload his/her OWN lab report. Please indicate who your lab partners were at the top of your lab report. No late laboratories will be accepted.

6. **Online Questions/Problems 10%**

At the end of each week, on Fridays, students will be provided questions or problems regarding that week’s lecture material. These questions/problems are intended to supplement the lecture, and have students look further at the reading material and provided power point slides to enhance their studies. These questions/problems will be posted in D2L on Friday during the regularly scheduled lecture period. Students will be able to download these questions/problems. Once completed, the answers to these questions/problems can be uploaded into an assignment dropbox in D2L. These assignments will be due before 11 am on the following Monday.

## **Extra Credit**

There will be several impromptu activities related to our class or department throughout the semester. If you participate in those activities, you will receive extra credits to the EXAM point total from participating of research project, conference/thesis presentation, or/and study halls, etc.

## **Late Work**

**Late assignments will not be accepted.**

## **Make Up Work/Tests**

**No make-up exams/assignments** will be given for any personal reasons, except under medical/ religious/family emergency situations/ authorized participation in official school functions.

**Classroom Policies:** It is assumed that everyone enrolled in this course is here to pursue further knowledge in the area of human movement. The following list provides what will be expected by the instructor and should also be expected by the students:

1. Attendance in class is expected. If you will not be able to participate in a class session please notify the instructor PRIOR to your absence in a timely manner. Only those with excuses that are related to University events (academic, athletic, etc.) or religious purposes may make-up work. If you have an excused absence and will not be available for an exam (EXCLUDING the FINAL EXAM) you must take the exam PRIOR to your absence (NO EXCUSES!!). Those individuals who do not have an excuse for an absence will receive a zero score for that day’s evaluation.
2. Turn off all cell phones, pagers, and any other electronic devices before class begins. It is disrupting to other students, and disturbing to the instructor if these electronic devises are active during the class period.
3. Food is not permitted in the classroom. Bottled beverages (with caps/resalable tops) will be the ONLY beverage allowed in the classrooms.
4. If you have a question that was not answered during the class period please feel free to stop by my office or email me your question (see front page).
5. Neither academic dishonesty nor plagiarism will be tolerated and as such, disciplinary action will be issued in accordance with university guidelines ([Student Handbook-2018-19](https://mwsu.edu/student-life/conduct/_assets/files/student-handbook-2017-18.pdf)).

## **Services for Students With Disabilities**

In accordance with Section 504 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, Midwestern State University endeavors to make reasonable accommodations to ensure equal opportunity for qualified persons with disabilities to participate in all educational, social, and recreational programs and activities. After notification of acceptance, students requiring accommodations should make application for such assistance through Disability Support Services, located in the Clark Student Center, Room 168, (940) 397-4140. Current documentation of a disability will be required in order to provide appropriate services, and each request will be individually reviewed. For more details, please go to <http://www.mwsu.edu/student-life/disability>.

## **College Policies**

### Campus Carry Rules/Policies

Refer to: [Campus Carry Rules and Policies](https://mwsu.edu/campus-carry/rules-policies)

### Smoking/Tobacco Policy

College policy strictly prohibits the use of tobacco products in any building owned or operated by WATC. Adult students may smoke only in the outside designated-smoking areas at each location.

### Alcohol and Drug Policy

To comply with the Drug Free Schools and Communities Act of 1989 and subsequent amendments, students and employees of Midwestern State are informed that strictly enforced policies are in place which prohibits the unlawful possession, use or distribution of any illicit drugs, including alcohol, on university property or as part of any university-sponsored activity. Students and employees are also subject to all applicable legal sanctions under local, state and federal law for any offenses involving illicit drugs on University property or at University-sponsored activities.

## **Tentative Course Schedule:**

Week Dates Content Reading

1 Aug 24-26 Welcome, Introduction, What is Biomechanics? pp. 2-16

 **Laboratory Activity #1 (Research)**

Aug 28 Online questions/problems (Introduction)

2 Aug 31- Math Review (textbook and handout) pp. 31-37

Sept 2

Sept 4 Online math review problems

3 Sep 9-11 The body as a Machine

 Sep 11 Online questions (Levers)

4 Sep 14-16 Anatomical descriptions pp. 179-189

Sept 18 Online questions(Anatomy review)

**Laboratory Activity #2 (Anatomy Description)**

5 Sep 21-25 Mechanics of Biological Materials, Exam I pp. 239-262

**Exam I: Wednesday Sep 23**

6 Sep 28-30 Mechanics of Biological Materials (continued)

Oct 2 Online questions (Deformable body mechanics)

7 Oct 5- 7 The Muscular System pp. 277-298

 Oct 9 Online questions (Muscles)

8 Oct 12-14 Nervous System/Control pp. 299-308

 Oct 16 Online questions (Motor Control)

9 Oct 19-21 External Forces pp. 19-50

 Oct 23 Online questions/problems (Forces)

10 Oct 26-30 Linear Kinematics, Exam II pp. 51-86

**Exam II: Wednesday Oct 28**

11 Nov 2-4 Linear Kinematics continued pp.51-86

Nov 6 Online problems/questions (Linear Kinematics)

**Laboratory Activity #3 (Kinematics Lab)**

12 Nov 9-11 Linear Kinetics pp. 87-113

 Nov 13 Online questions/problems (Linear Kinetics)

 **Laboratory Activity #4 (Kinetics Lab)**

13 Nov 16-18 Work, Energy, & Power pp. 115-132

 Nov 20 Online problems/questions (Work, Energy, Power)

14 Nov 23 Angular Kinematics; Angular Kinetics pp. 133-178

15 Nov 30- Angular Kinetics (cont’d) pp. 195-215

Dec 4 Online questions/problems (Angular Kinetics)

16 **Final Exam Monday December 7th (online)**