

# Biomechanics

## Course Instructor and Communications

**Instructor:**  
Justin Wager

**E-mails:**  
E-mails are welcomed and will usually be responded to within 24 hours or less. Please include Biomechanics Question in the subject line, particularly for a problem. My e-mail will be provided after enrollment.

**Office Hours:**  
Virtual Office Hours: I am available from 7:30 – 8:30 am Monday - Thursday and at other times by prior arrangement. During this time, I will be available to email.

**Teacher Contact Time:**  
I will generally provide a biweekly progress report to students via JMC. In short weeks, this may vary. In addition to my online office hours, students should feel free to contact me via email/phone and expect a response within 24 hours or less during the week, likely longer during the weekend. Assignments will typically be graded and returned within 72 hours of submission.

**Student to Teacher Communications:**  
Students are expected to log in daily, submit assignments promptly, respond to any online correspondence, and participate in discussion posts. If at any time you need assistance, contact me immediately - it will save you time!

**Student Attendance Expectations:**  
I determine online student attendance by tracking their engagement and progress in the course. This is considered performance-based attendance. Your attendance in the online class is a requirement to complete the course successfully, and makes the class engaging and exciting for everyone who is enrolled in this class!

You will be counted as in attendance if you log in daily, participate in the required discussions each week and reply to others as directed, complete all reading/course activities by the completion date, take all assessments and quizzes, submit assignments and papers by the required date, and complete exams as directed.

Your attendance will also be measured by a timely response to my communications as follows: 24 hours response to a voicemail or email and response within the time period expected as requested by me for resubmission of work and/or other requests. This means you need to check your course, email, and voicemail daily and reply to messages promptly. I expect to hear from you, and likewise, welcome your calls and emails.

Moodle has features that allow instructors to see when the last time students logged in, which pages they visited, their activity in the course, and other details. Generally, students who have not logged in will be reminded after two days of inactivity. After one reminder with no response, the student's parents and the counselor from their home district will be notified. The district contact, the OLL course instructor, and the student will develop a plan that will help the student get back on track. If you will be absent for any period of time, please notify me as soon as possible. Should you begin to fall behind, please contact me immediately so we can work together to get you back on track!

**Withdrawal due to Non Attendance:**

We are required by law to drop students if they have not been “attending” for 15 school days. For online programs, this generally means 15 school days without any activity. In online learning “attendance” is defined by engagement with course materials and assignments, and interaction with the teacher and other students in the course. Examples include: logging on, submitting assignments, verbal or written contact with the instructor, or other activities as defined by the online learning program.

**Academic Support:**

Academic support is available from a variety of sources. If you feel you are struggling, you can always ask me for additional support. I will initiate communication with you, and your parent/guardian, if I detect you may be struggling and will work to address any issues while they are small and easier to deal with. The next step will be to communicate my concerns to your MRVED Online Learning Site Facilitator. If you feel you need academic support beyond what I provide, contact the MRVED Online Learning Site Facilitator at your school.

**Communication with Enrolling (Home) District:**

**Progress Reports:**

Instructors will provide adequate feedback throughout the course so the student, parent, and school are kept abreast on progress. Official grades are required to be reported at mid-quarter, quarter, and semester based on our course schedule. Please note: Your grading period in your home district may not be the same as this course. Your school is aware of this and you will not be penalized if grading periods do not line up.

**Final Grades and Submissions:**

Final grades are reported to your local school as a letter grade. Grades will be based on the online teacher’s assessment of your work and the degree to which you have met course requirements.

**Course Outline**

<b>Title:</b> Biomechanics	<b>Iseek Course Number:</b>
<b>Pre-requisites:</b> Biomechanics is best suited for students in 11 <sup>th</sup> or 12 <sup>th</sup> grade.  Computer skills, email skills, familiarity with PowerPoint, Word Processing and Excel and Video Editing Software are very helpful.	<b>Credits:</b> .5

**Course Description:**

The biomechanics class is for students interested in learning about how the human body is able to move and generate force. Students will learn about how muscles and bones in the human body work together to perform everyday tasks. The class will also be able to demonstrate ways athletic performance can be enhanced using the information covered during the class. Students will learn about the physics concepts and equations used to calculate velocity, acceleration, force and power. Students will show their knowledge of the topics by completing various assignments, taking quizzes, and creating demonstration videos that will be posted online.

**Course Goals and Objectives:**

*Course Level Outcome 1: Student will demonstrate knowledge of bones in the human body.*

*Course Level Outcome 2: Students will demonstrate knowledge of muscles in the human body.*

*Course Level Outcome 3: Students will demonstrate knowledge of Newton's Laws.*

*Course Level Outcome 4: Students will be able to calculate velocity, acceleration, force, work and power.*

**Topical Outline:**

Muscles, Bones, Newton's Laws, Velocity, Acceleration, Force, Work and Power

**Required books and/or educational materials:**

Computer  
Camera or iPad

**Graduation Requirement:**

.5 Elective Credits

**Standards Addressed in Course:**

Learning Area:

- 9P.2.2.1.1 Use vectors and free-body diagrams to describe force, position, velocity and acceleration of objects in two-dimensional space.
- 9P.2.2.1.2 Apply Newton's three laws of motion to calculate and analyze the effect of forces and momentum on motion.
- 9P.2.2.1.3 Use gravitational force to explain the motion of objects near Earth and in the universe.
- 9P.2.2.2.1 Explain and calculate work, power, potential energy and kinetic energy involved in objects moving under the influence of gravity and other mechanical forces.
- 9P.2.2.2.2 Describe and calculate the change in velocity for objects when forces are applied perpendicular to the direction of motion.

**Minimum Technical Requirements:**

Moodle, the course management system in use by the MRVED Online Program, seems to work best in the Firefox or Chrome browser. You can download the current version of Firefox or Chrome from the links below. Apple's Safari browser is not recommended because it has compatibility issues with Moodle.

[Google Chrome](#)  
[Mozilla Firefox](#)

**Technical Capability Expectations:**

You are expected to be competent at using the Internet, including downloading and uploading files. A valid email address is necessary for student/teacher communication, and you are expected to be able to access your e-mail account, and send/receive e-mail attachments. In addition, some courses may require that students be able to use word processing, spreadsheet, and presentation software.

Students registering for online classes should have **daily access to a computer** and a reliable Internet

connection. This class will have homework, just as other classes, as not all work required for this class will likely be able to be done during one class period per day all the time. I would also suggest you have a flash drive to enable you to work on assignments in the event you are unable to access the Internet for any reason.

**Hardware:**

You can access MRVED Online courses from any computer that is able to run a modern browser, but at a minimum you'll want:

**Operating System:** Windows: 2000, XP, Vista, 10; Macintosh: OS 9.1 or OS X

**Processor:** Windows: Pentium 233 or higher; Macintosh: Power PC G3 or higher

**Memory:** 128 MB minimum; 256 MB or greater recommended

**Internet connection:** 56 Kbps modem minimum; broadband -- DSL or cable -- recommended

**A sound card and speakers:** Up-to-date sound card and speakers are recommended. Using a headset with microphone is the best way of attending a class session that requires sound if you are in public. Individual instructors may have additional requirements, depending on the content of the course. If you are unsure if your computer setup is adequate, contact the instructor of the course you wish you take before registering.

**Final Exam:**

The final grade for this class will be to create a video that demonstrates how physics concepts can be used to measure and increase athletic performance in a specific sport.

**Assessment of Student Work: Your work in this course will be graded as follows:**

Letter	Percentage		Letter	Percentage
A	98 - 100		C	82 - 84
A-	94 - 97		C-	80 - 81
B+	92 - 93		D+	78 - 79
B	89 - 91		D	75 - 77
B-	87 - 88		F	74 and below
C+	85 - 86			

**Description of Assignment Types & Weights (If applicable):**

- View Weekly Reading Assignments, Notes & Video Clips
- Complete a 1 Minute Introduction Video – 100 Points
- Complete 7,10 Question Assignments – 25 Points
- Complete 6, Create 2 Minute Videos – 100 Points
- Complete Final Video Project – 100 Points

**Policy for Missed Exams and Late Assignments:**

Your work should be completed to the best of your ability and turned in on time. Please be sure to read the assignment directions carefully. When an assignment is due, but not submitted, it will automatically be scored as a "0". Assignments are due at 8:30 am on Friday mornings. You have until 8:30 am on the following Tuesday morning submit your work for a maximum of half credit. I will not accept work after the following Tuesday morning.

Given that the course is web-based, you can access it from most anywhere. You should make sure you have a **back-up plan** [i.e., going to the library/using a friend's computer] to ensure submission of your work in a timely manner. "My computer crashed" and other similar excuses won't be accepted. This is a good reason not to wait until the last minute to do your work. Procrastination can create stress and frustration that you can do without.

### **Academic Dishonesty:**

Student honesty is expected in completing homework, tests, research or other performance assessments. Therefore:

- *Students shall not knowingly cheat on assignments or tests. Students shall not allow other students to use their original work.*
- *Students shall not tamper with grade books or computer files. Students shall not falsify records, or falsify signatures.*
- *Students shall not plagiarize—the definition of plagiarism is copying or using another's ideas, concepts, facts, and/or words as though they are your own. For example, copying information in reports without giving proper credit.*
- *Consequences: Cases involving academic dishonesty may be handled by the classroom teacher or may be referred to the administration.*
  - *At the very least, you will receive no credit for an assignment if dishonesty is involved.*

*Consequences may include no credit for the assignment, suspension, removal from the class with no credit, and/or possible criminal charges, depending on the severity of the violation of this rule.*

### **Netiquette - Behavioral Expectations in Online Courses**

Polite and respectful discourse in the classroom is expected and virtually everyone respects and observes it. During this class, we may sometimes be discussing matters about which some people hold strong opinions. It will be crucial to the success of the course that everyone is able to question and closely examine the matters we will be discussing in an atmosphere of friendliness, mutual respect, and emotional safety.

Messages which are disrespectful, rude, impolite, combative, unfriendly, or sexually/racially inappropriate will not be tolerated, whether in our classroom, or private postings between classmates. Any messages which, in the instructor's judgment, violate this policy will be immediately deleted. If anyone in class sends inappropriate or unpleasant posts, please notify me immediately so that the matter can be dealt with directly. You have every right to not respond to such posts. We should all be aware that all email messages (including those posted to the classroom and those posted privately) are, essentially public communications. Only those in our class will likely read them, but other people theoretically could read them. You may want to keep this in mind whenever you send email messages to anyone.

*Anyone who posts such a message risks consequences as deemed appropriate by the instructor which, at minimum, includes: deleting the post, no credit for the assignment, suspension, removal from the class with no credit, and/or possible criminal charges, depending on the severity of the violation.*

### ***The Ten Commandments for Classroom Communications***

1. Read the messages you receive carefully to make sure you understand what is being said.
2. Read your responses after you finish typing them. Look for typos, but also read with your reader's eyes. Is there any way your words could be misunderstood? If so, rewrite.
3. Humor and sarcasm are easily misunderstood. Use an emoticon to let your reader know you are smiling. 😊
4. It may be helpful to point out mistakes others make, but be gentle. You might make a mistake

someday, too.

5. Limit each message to one subject only. Readers often miss the second subject in a long message.
6. DON'T TYPE A WHOLE MESSAGE IN UPPER CASE LETTERS. NOT ONLY IS UPPER CASE HARDER TO READ, BUT UPPER CASE IS THE ELECTRONIC FORM OF SHOUTING! Would you shout at your instructor or classmates in a physical classroom?
7. Avoid assuming everyone was born in the United States and has English as his/her first language. Make allowances for possible misunderstandings and unintended discourtesies.
8. Different colors and fonts can be fun and can help organize a message, but be sure your choices work for your message. **Very light colors**, very small type and very busy fonts are hard to read.
9. Avoid using a lot of arrows, stars, exclamation points, and the like. These can distract from your message.
10. Remember you are writing to communicate your ideas. If your readers don't understand your ideas as you intend them to be understood, you need to rewrite.