

# **KIN 303: BIOMECHANICS**

#### SPRING 2023

#### LECTURE (In-Person)

Section 01 - Mon/Wed 11-12:15p in AE285 Section 02 - Mon/Wed 2-3:15p in MB1577 LAB (In-Person) 1A (Abdulkhalig) - Mon 8-10:40a in PE152

1A (Abdulkhaliq) - Mon 8-10:40a in PE152 2A (Rowley) - Tues 8-10:40a in PE139 2C (Abdulkhaliq) - Wed 11-1:40p in PE152 1B (Yingling) - Wed 3-5:40p in PE139 1C (Rowley) - Thurs 8-10:40a in PE139 2B (Abdulkhaliq) - Fri 8-10:40a in PE152

#### INSTRUCTORS Michael Rowley, PhD

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(510) 885-3014 Vanessa Yingling, PhD vanessa.yingling@csueastbay.edu

Rana Abdulkhaliq, MS raneen.abdulkhaliq@csueastbay.edu

#### **Contact instructors**

through Slack or Email

#### **EXPECTATIONS:**

- Attendance at lecture and laboratory sessions is required.
- All students are expected to prepare for class by completing the **before class material** in Canvas including the **Prep Guide**. Come to class prepared with questions from the Prep Guide.
- We are here to support your learning so please let us know *early and often* regarding any issues.
- Meaningful and constructive dialogue is encouraged in this course and requires a willingness to listen, a tolerance for different points of view, and mutual respect from all participants.
- You are expected to do your own work. Cheating, plagiarism, and any other form of academic dishonesty will not be tolerated. Please review the <u>University Policy on</u> <u>Academic Dishonesty</u>.
- The time commitment expected for this 4-unit course is 3.33 hours of guided learning and 6.67 hours a week of independent learning, per week. Please plan to reserve these **10 hrs per week** in your schedule.

#### **OFFICE HOURS**

Rowley: Mondays 12:30-1:30p, Wednesdays 10-11a, or by appointment PE114 or https://csueb.zoom.us/my/kmichaelrowley Yingling: Mondays 1-2p in PE119 and Tuesdays 3-4p on Zoom at https://csueb.zoom.us/my/vanessayingling Abdulkhaliq: Mondays 12:30-1:30p in PE152

#### **Prerequisites:**

BIOL 270, BIOL 271, KIN 300, KIN 301

#### **Textbook:**

No textbook is required for this course.

#### **Course Description:**

Kinematics and kinetics applied to the musculoskeletal system of the human body and the mechanical and muscular analysis of movement patterns. Course Topics are listed on <u>Course Schedule</u> found in Canvas



#### **Goals for professionals:**

- 1. Reduce risk of injury
- 2. Maximize performance
- 3. Assess new products and training programs
- 4. Be proficient in movement analysis using equipment

#### **Student Learning Outcomes:**

- 1. Recall and explain planes of motion, range of motion of major joints of the body.
- 2.Recall, identify, compare and contrast structure of bone tendon, ligament, muscle and neural system.
- 3. Explain and discuss mechanical terms relating to kinematics and kinetics.
- 4. Explain and discuss muscle mechanics, contraction type and factors affecting the ability to generate force.
- 5. Explain and discuss tissue mechanics, spine mechanics, postural analysis and injury mechanisms.
- 6.Demonstrate competency in utilizing Dartfish Video Analysis Software.
- 7.Demonstrate the ability to analyze differences and similarities in performance.
- 8. Apply the knowledge of biomechanics to analyze a selected sport skill.

#### **CSUEB** Institutional Learning Outcomes

**Technical Skills:** 

Dartfish Video Analysis Force Plate Vertec EMG



## IMPORTANT DATES:

Last Day to Drop: Jan 30, 2023 Last Day to Withdraw: April 14, 2023

#### Kinesiology BS Program Learning Outcomes

#### **Course Assessments**

### **Quizzes:**

Content quizzes will be available on Canvas throughout the term, **one for each course topic**. They are due end of day Friday each week. Prep Guides will be submitted along with each quiz. An automatic 24-hr grace period is given for submission. (NOTE: Most weeks there will be multiple quizzes.)

## Lab Competencies:

After each lab, you will complete a short **Lab Competency** on Canvas, which will include uploading a lab worksheet completed during lab. These will vary in format but will usually include an analysis and interpretation of data collected in lab.





## **Movement Analysis Projects:**

There will be **five Tool Learning Video Projects** and **three Movement Analysis Video Projects** due throughout the semester. The last of these will be presented live to your classmates during your last lab session. More details for each project on Canvas.

#### **Exams:**

There will be **three exams** through the course. Exams are not cumulative, but concepts build on each other and we revisit concepts throughout the semester. The last exam will be delivered during our last class. NOTE: A calculator is required for exams.

## HOW WILL I BE GRADED?

You Self-Assess your course grade



You are now upper division Kinesiology students, and I trust you to take ownership of your own learning experience.

At the end of the semester, you will submit a Portfolio which includes: Quiz Grades, Exam Grades, Lab Competency Grades, and Movement Analysis Video Projects and Feedback Forms. All late work can be included but will be flagged as 'late'.

You will then self-assess and justify your final course grade by describing how you are weighting each type of assessment, with the goal of showing me that you've learned the material in the course. We will meet during Finals Week at which time you will present your Portfolio and explain the grade you earned in the course and why. NOTE: I reserve the right to revise your grade as appropriate.

If this process causes more anxiety than it alleviates, see me at any point to confer about your progress in the course to date.

# **MORE ABOUT BIOMECHANICS...**

- 1. <u>History of Biomechanics</u>
- 2. American Society of Biomechanics
- 3. International Society of Biomechanics
- 4. European Society of Biomechanics
- 5. Canadian Society for Biomechanics
- 6. International Society of Biomechanics in Sports
- 7. World Council on Biomechanics
- 8. American College of Sports Medicine (ACSM



- National Biomechanics Day
  (We celebrate at Cal State East Bay so volunteer this year!)
- Kinesiology Today

#### **Diversity in Biomechanics**

We aim to highlight the work of biomechanists of color, women biomechanists, queer biomechanists, and biomechanists with intersectional identities throughout this semester, and we invite suggestions from you to expand our reading list.









# **OPEN SCIENCE & KINESIOLOGY**

- <u>STORK Society for Transparency Openness and Replication in</u> <u>Kinesiology</u>
- Center for Open Science
- <u>https://fivethirtyeight.com/features/sports-science-is-finally-talking-about-its-methodology-problems/</u>
- <u>https://ssreplicationcentre.com/about/</u>

## **POLICIES AND UNIVERSITY RESOURCES**

**Student Services:** To access student services offered at Cal State East Bay, click on the <u>MyCompass icon</u> to get you to your one-stop online student support hub for information on academic advising, tutoring, financial aid, the library, the health center, technology support, career counseling, campus life, equity programs, and more.

Land Acknowledgement: As a member of the Cal State East Bay community, I acknowledge that I am a guest on the unceded land of the First People of this region, the present-day Muwekma Ohlone Tribe of the San Francisco Bay Area (formerly Verona Band of Alameda County). I support the sovereignty of this Chochenyo-Ohlone-speaking tribal group and other Indigenous peoples. This acknowledgment was created by the Muwekma Ohlone Tribe with the support of the CSUEB Indigenous Acknowledgment Collective and is a living document. The full version can be found <u>here</u>.

Accessibility Services: For disability and other learning-related needs and accommodations, including if you would need assistance in the event of an emergency evacuation, please communicate with your instructor as soon as possible. Students with disabilities are also encouraged to contact the Accessibility Services office at <a href="https://www.csueastbay.edu/accessibility">https://www.csueastbay.edu/accessibility</a> to meet with a counselor who can advise you on your options, including your rights under Section 504 of the Rehabilitation Act and the Americans with Disabilities Act.

A Note on Discrimination, Harassment, and Retaliation (DHR): Title IX and CSU policy prohibit discrimination, harassment and retaliation, including Sex Discrimination, Sexual Harassment or Sexual Violence. CSUEB encourages anyone experiencing such behavior to report their concerns immediately. CSUEB has both confidential and non-confidential resources and reporting options available to you. Non-confidential resources include faculty and staff, who are required to report all incidents and thus cannot promise confidentiality. Faculty and staff must provide the campus Title IX coordinator and or the DHR Administrator with relevant details such as the names of those involved in an incident. For confidential services, contact the Confidential Advocate at 510-885-3700 or go to the Student Health and Counseling Center. For 24-hour crisis services call the BAWAR hotline at 510-845-7273. For more information about policies and resources or reporting options, please visit the following websites.

https://www.csueastbay.edu/riskmanagement/complaint.html http://www.csueastbay.edu/titleix

**Grade Appeal and Academic Grievances:** If you wish to appeal your course grade at the end of the semester or have other academic concerns related to a course, please visit the Grade Appeals and Academic Grievances (GAAG) website, which explains the process. URL for GAAG: https://www.csueastbay.edu/aps/academicpolicies/grade-appeal.html

**Technical Requirements:** Students must have a laptop or tablet in order to take in-class exams on Canvas, though one can be provided for the exam by request. Students must have a smart phone or tablet in order to use the Dartfish Software (provided) for the Movement Analysis Video Projects in the course. A tablet can be loaned upon request. There are no requirements to use Zoom in the in-person modality of this course.