

San José State University
Department of Kinesiology
KIN 147, Biomechanical Assessment of Movement, Spring 2021

Course and Contact Information

Instructors:	Dr. JJ Hannigan & Mrs. Michelle Ruban
Office Location:	Currently, our respective homes
Telephone:	N/A this term
Email:	jj.hannigan@sjsu.edu; michelle.ruban@sjsu.edu
Office Hours:	By appointment via Zoom
Class Days/Time:	Lecture: Asynchronous, posted Wednesdays at 8:30am on Canvas Lab: Asynchronous, posted Wednesdays at 8:30am on Canvas Live Q&A: Mondays 8:30-9:20am on Zoom
Classroom:	Online via Canvas and Zoom
Prerequisites:	KIN 158 (C- or better)

Course Description

This class is designed to assist the student in becoming familiar and proficient with the biomechanical methods and equipment for assessing human movement performance characteristics with the following goals: improving movement effectiveness, preventing injuries, and assessing rehabilitation progress.

Course Learning Outcomes (CLO)

Upon successful completion of this course, students will be able to:

1. Use professional biomechanical and anatomical terminology appropriately and accurately.
2. Demonstrate practical knowledge of manual muscle testing and ROM techniques for selected motions.
3. Determine the appropriate method and equipment to be used for evaluation of movement.
4. Demonstrate the ability to conduct qualitative and quantitative biomechanical analysis using tools including 2D and 3D motion analysis, force plates, EMG, and accelerometry.
5. Demonstrate practical knowledge of anatomical landmarks and palpation relevant for appropriate use of biomechanical equipment.
6. Accurately measure kinetic and kinematic variables using the available biomechanical equipment.
7. Discuss current trends and appraise peer-reviewed literature of biomechanical concepts.

Required Texts/Readings

Textbook

There is no required textbook for this course.

Other Readings

The current KIN 158 textbook may be helpful for this class, but is not necessary or required:

Biomechanics: A Case Based Approach, Flanagan S (2019), 2nd edition. Burlington MA, Jones and Bartlett Learning (ISBN: 9781284102338).

In addition, an anatomy textbook, atlas, or alternate study aid may be helpful to review relevant anatomy. Other readings that supplement the lecture material may be posted on Canvas.

Other Technology Requirements - IMPORTANT

Access to a computer and internet connection are necessary to be successful in this class, as well as Microsoft Excel. Microsoft Office 365 is available to SJSU students via the [Microsoft site for students](#). Microsoft Office 2013 is also available at a [discounted rate](#). All students must also be able to access Canvas and Zoom online.

Library Liaison

Adriana Poo
(408) 808-2019
adriana.poo@sjsu.edu

Course Requirements and Assignments

1. Exams (50% of final grade)

There will be 2 midterm exams (15% of final grade) and 1 cumulative final exam (20% of final grade). Exams will be open-note and administered via Canvas (no, we will not use Lockdown Browser or a proctoring service).

2. Lab Assignments (40% of final grade)

Most labs for this class cannot be done at home. Therefore, lab tutorial videos will be posted asynchronously on Canvas every Wednesday that demonstrate the lab procedures and provide instructions for data analysis. For most labs, you will be sent data to analyze as if you had completed the lab procedures. These labs be turned in on Canvas by the following Wednesday at 8:30am. These assignments are to be completed individually.

3. Lecture Assignments (10% of final grade)

Lectures will be posted asynchronously on Canvas. For each lecture, there is an associated 10-question lecture quiz. These assignments will assess students' knowledge of the biomechanical principles discussed in lecture. Lecture assignments will be completed on Canvas and will be due by the following Wednesday at 8:30am.

4. Live Zoom Attendance (0% of final grade)

Every week, there will be a live Zoom during the scheduled class time (Mondays 8:30-9:20am), which will either be a Q&A or exam review. During each live Zoom, you will complete a brief password-protected Canvas assignment in breakout groups and then have time to ask the instructor questions. While attending these live Zooms is optional (0% of final grade), if you attend >90% of live Zooms (attendance assessed by turning in the assignment within the hour), I will add 1% to your final course grade AND round it up to the nearest whole percent. If you attend >80% of the live Zooms, I will round up your final course grade to the nearest percent. If you cannot attend the live Zoom for an excused reason, please contact Dr. Hannigan at least 24 hours before the live Zoom with documentation to discuss alternative ways to receive the attendance credit.

Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course related activities, including but not limited to internships, labs, and clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus.

Grading Information

Determination of Grades

A+ = 97 – 100%	B+ = 87 – 89.99%	C+ = 77 – 79.99%	D+ = 67 – 69.99%	F = Below 60%
A = 93 – 96.99%	B = 83 – 86.99%	C = 73 – 76.99%	D = 63 – 66.99%	
A- = 90 – 92.99%	B- = 80 – 82.99%	C- = 70 – 72.99%	D- = 60 – 62.99%	

Late Work

The penalty for a late assignment is a 25% deduction for each day the assignment is late.

Extra Credit

There is no formal extra credit for this class. However, please see ‘Live Zoom Attendance’ for information on the final grade boost.

Final Examination or Evaluation

The final exam for this class will be cumulative and will occur on Wednesday, May 19th from 7:15-9:30am via Canvas. Please let your professor know ASAP if you cannot make that exam time.

University Policies

Per [University Policy S16-9](http://www.sjsu.edu/senate/docs/S16-9.pdf) (<http://www.sjsu.edu/senate/docs/S16-9.pdf>), relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for recording of class, etc. and available student services (e.g. learning assistance, counseling, and other resources) are listed on [Syllabus Information web page](http://www.sjsu.edu/gup/syllabusinfo) (<http://www.sjsu.edu/gup/syllabusinfo>), which is hosted by the Office of Undergraduate Education. Make sure to visit this page to review and be aware of these university policies and resources.

Additional Information

Learning Environment

My aim for this course is to create an inclusive learning environment where all students feel welcome to participate and are free from judgment. To help create this learning environment, all students are asked to bring a positive attitude to class, be respectful and kind to classmates, and keep an open mind. Students can expect the instructor will do the same.

Discussion Board / Email

If you have a question, and you believe other students may have the same question regarding a lecture/lab topic, please feel free to post it to the discussion board so that I can answer it for everyone. If you would prefer your question to be private, please feel free to email me. During the week, I do my best to respond to emails promptly (within a few hours). On weekdays, if you email me before 4pm, I will do my best to respond the same day. If you email after 4pm, you likely will not receive a response until the next day. If you email me after 4pm on Friday, I will likely not be able to respond until Monday morning.

Zoom

During live Zoom Q&A's you are encouraged but not required to turn on your camera. Please know that portions of the Q&A may be recorded and posted to the Canvas page. During live Zooms, please be sure to mute your microphone when not talking, be mindful of background noises around you, utilize an appropriate camera position and setup, and use appropriate virtual backgrounds if you choose to do so.

Plagiarism

Plagiarism is using someone else's words, data, or ideas and passing them off as your own. Consequences range from failing an assignment, receiving a lower course grade, failing a course, or expulsion from the university. Plagiarism in this course will not be tolerated. If you are not sure what constitutes plagiarism, you are encouraged to take this [15-minute training](#). Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. Visit the [Student Conduct and Ethical Development website](#) for more information. Do not hesitate to consult your instructor with further questions.

Counseling and Psychological Services

The SJSU Counseling and Psychological Services is located on the corner of 7th Street and San Carlos in the new Student Wellness Center, Room 300B. Professional psychologists, social workers, and counselors are available to provide confidential consultations on issues of student mental health, campus climate, or psychological and academic issues on an individual, couple, or group basis. They also offer numerous workshops for students every semester. To schedule an appointment or learn more information, visit the Counseling and Psychological Services website at <http://www.sjsu.edu/counseling>.

Religious Holidays

San José State University provides accommodation for students observing religious holidays that require absence from class. It is the responsibility of the student to inform the instructor about such holidays before the add deadline at the start of each semester. If such holidays occur before the add deadline, the student must notify the instructor at least three days before the absence. It is the responsibility of the instructor to make every reasonable effort to honor the request without penalty, and of the student to make up the work missed.

Accessible Education Center

Students with disabilities who need reasonable accommodations are encouraged to contact the instructor. Accessibility Services is available to facilitate the reasonable accommodations process. They can be reached by phone at 408-924-6000 or by email: aec-info@sjsu.edu. For more information about the University's program supporting the rights of our students with disabilities see: <http://www.sjsu.edu/aec/>

Diversity Statement

San Jose State strives to create an affirming climate for all students including underrepresented and marginalized individuals and groups. Diversity encompasses differences in age, color, ethnicity, national origin, gender, physical or mental ability, religion, socioeconomic background, veteran status, sexual orientation, and marginalized groups. We believe diversity is the synergy, connection, acceptance, and mutual learning fostered by the interaction of different human characteristics.

Campus Emergency Information

Your appropriate response in the event of an emergency can help save lives. Emergency procedures will be reviewed the first day of class and may be found at: <http://www.sjsu.edu/emergency/> Please be familiar with these procedures and review the information on a regular basis. The campus emergency phone is 911, and the University Police Department (UPD) can be reach at (408) 924-2222.

KIN 147 Spring 2021 Course Schedule

Module 1 | Goniometry & Dynamometry + Excel Refresher (January 27 – February 3)

	<i>Topic</i>	<i>Mode of Delivery</i>	<i>Date/Time (Posted or Live)</i>
Lecture:	Goniometry / Dynamometry	Asynchronous – Canvas	Wednesday 1/27 at 8:30am
Lab:	Excel Refresher	Asynchronous – Canvas	Wednesday 1/27 at 8:30am
Live Zoom:	Weekly Q&A	Synchronous – Zoom	Monday 2/1 at 8:30am

Lecture and lab assignments due by Wednesday 2/3 at 8:30am on Canvas

Module 2 | 2D Motion Capture & Analysis (February 3 – February 10)

	<i>Topic</i>	<i>Mode of Delivery</i>	<i>Date/Time (Posted or Live)</i>
Lecture:	2D Motion Capture & Analysis	Asynchronous – Canvas	Wednesday 2/3 at 8:30am
Lab:	2D Motion Capture & Analysis	Asynchronous – Canvas	Wednesday 2/3 at 8:30am
Live Zoom:	Weekly Q&A	Synchronous – Zoom	Monday 2/8 at 8:30am

Lecture and lab assignments due by Wednesday 2/10 at 8:30am on Canvas

Module 3 | 3D Motion Capture (February 10 – February 17)

	<i>Topic</i>	<i>Mode of Delivery</i>	<i>Date/Time (Posted or Live)</i>
Lecture:	3D Motion Capture	Asynchronous – Canvas	Wednesday 2/10 at 8:30am
Lab:	3D Motion Capture	Asynchronous – Canvas	Wednesday 2/10 at 8:30am
Live Zoom:	Weekly Q&A	Synchronous – Zoom	Monday 2/15 at 8:30am

Lecture and lab assignments due by Wednesday 2/17 at 8:30am on Canvas

Module 4 | 3D Motion Analysis (February 17 – February 24)

	<i>Topic</i>	<i>Mode of Delivery</i>	<i>Date/Time (Posted or Live)</i>
Lecture:	3D Motion Analysis	Asynchronous – Canvas	Wednesday 2/17 at 8:30am
Lab:	3D Motion Analysis	Asynchronous – Canvas	Wednesday 2/17 at 8:30am
Live Zoom:	Weekly Q&A	Synchronous – Zoom	Monday 2/22 at 8:30am

Lecture and lab assignments due by Wednesday 2/24 at 8:30am on Canvas

Module 5 | Midterm Exam 1 (February 24 – March 3)

	<i>Topic</i>	<i>Mode of Delivery</i>	<i>Date/Time (Posted or Live)</i>
Live Zoom:	Exam Review	Synchronous – Zoom	Monday 3/1 at 8:30am
Exam:	Midterm 1	Canvas	Wednesday 3/3 at 7:30am

Note: Midterm 1 will occur from 7:30am – 8:50am on Wednesday 3/3. This is not scheduled during a normal class time, so please let Dr. Hannigan know ASAP if you cannot make this time. Alternate testing times may be arranged with documentation of a conflict and advanced notice (48 hours or more) to the instructor.

Module 6 | Ground Reaction Forces & Force Plates (March 3 – March 10)

	<i>Topic</i>	<i>Mode of Delivery</i>	<i>Date/Time (Posted or Live)</i>
Lecture:	GRFs and Force Plates	Asynchronous – Canvas	Wednesday 3/3 at 9am
Lab:	GRFs and Force Plates	Asynchronous – Canvas	Wednesday 3/3 at 9am
Live Zoom:	Weekly Q&A	Synchronous – Zoom	Monday 3/8 at 8:30am

Lecture and lab assignments due by Wednesday 3/10 at 8:30am on Canvas

Module 7 | Joint Moments (March 10 – March 17)

	<i>Topic</i>	<i>Mode of Delivery</i>	<i>Date/Time (Posted or Live)</i>
Lecture:	Joint Moments	Asynchronous – Canvas	Wednesday 3/10 at 8:30am
Lab:	Joint Moments	Asynchronous – Canvas	Wednesday 3/10 at 8:30am
Live Zoom:	Weekly Q&A	Synchronous – Zoom	Monday 3/15 at 8:30am

Lecture and lab assignments due by Wednesday 3/17 at 8:30am on Canvas

Module 8 | Electromyography (March 17 – March 24)

	<i>Topic</i>	<i>Mode of Delivery</i>	<i>Date/Time (Posted or Live)</i>
Lecture:	Electromyography	Asynchronous – Canvas	Wednesday 3/17 at 8:30am
Lab:	Electromyography	Asynchronous – Canvas	Wednesday 3/17 at 8:30am
Live Zoom:	Weekly Q&A	Synchronous – Zoom	Monday 3/22 at 8:30am

Lecture and lab assignments due by Wednesday 3/24 at 8:30am on Canvas

Module 9 | Accelerometry (March 24 – April 7) [Spring Break extends this module 1 week]

	<i>Topic</i>	<i>Mode of Delivery</i>	<i>Date/Time (Posted or Live)</i>
Lecture:	Accelerometry	Asynchronous – Canvas	Wednesday 3/24 at 8:30am
Lab:	Accelerometry	Asynchronous – Canvas	Wednesday 3/24 at 8:30am
Live Zoom:	Weekly Q&A	Synchronous – Zoom	Monday 4/5 at 8:30am

Lecture and lab assignments due by Wednesday 4/7 at 8:30am on Canvas

Module 10 | Midterm Exam 2 (April 7 – April 14)

	<i>Topic</i>	<i>Mode of Delivery</i>	<i>Date/Time (Posted or Live)</i>
Live Zoom:	Exam Review	Synchronous – Zoom	Monday 4/12 at 8:30am
Exam:	Midterm 2	Canvas	Wednesday 4/14 at 7:30am

Note: Midterm 2 will occur from 7:30am – 8:50am on Wednesday 4/14. This is not scheduled during a normal class time, so please let Dr. Hannigan know ASAP if you cannot make this time. Alternate testing times may be arranged with documentation of a conflict and advanced notice (48 hours or more) to the instructor.

Module 11 | Current Biomechanics Research (April 14 – April 21)

	<i>Topic</i>	<i>Mode of Delivery</i>	<i>Date/Time (Posted or Live)</i>
Lecture:	Current Biomechanics Research	Asynchronous – Canvas	Wednesday 4/14 at 9am
Lab:	None	N/A	N/A
Live Zoom:	Weekly Q&A	Synchronous – Zoom	Monday 4/19 at 8:30am

Lecture assignment due by Wednesday 4/21 at 8:30am on Canvas

Module 12 | Current Biomechanics Research (April 21 – April 28)

	<i>Topic</i>	<i>Mode of Delivery</i>	<i>Date/Time (Posted or Live)</i>
Lecture:	Current Biomechanics Research	Asynchronous – Canvas	Wednesday 4/21 at 8:30am
Lab:	None	N/A	N/A
Live Zoom:	Weekly Q&A	Synchronous – Zoom	Monday 4/26 at 8:30am

Lecture assignment due by Wednesday 4/28 at 8:30am on Canvas

Module 13 | Current Biomechanics Research (April 28 – May 5)

	<i>Topic</i>	<i>Mode of Delivery</i>	<i>Date/Time (Posted or Live)</i>
Lecture:	Current Biomechanics Research	Asynchronous – Canvas	Wednesday 4/28 at 8:30am
Lab:	None	N/A	N/A
Live Zoom:	Weekly Q&A	Synchronous – Zoom	Monday 5/3 at 8:30am

Lecture assignment due by Wednesday 5/5 at 8:30am on Canvas

Module 14 | Final Exam (May 5 – May 19)

	<i>Topic</i>	<i>Mode of Delivery</i>	<i>Date/Time (Posted or Live)</i>
Live Zoom:	Exam Review #1	Synchronous – Zoom	Monday 5/10 at 8:30am
Live Zoom:	Exam Review #2	Synchronous – Zoom	Monday 5/17 at 8:30am
Exam:	Final Exam	Canvas	Wednesday 5/19 at 7:15am

Note: The final exam will occur from 7:15am – 9:30am on Wednesday 5/19. This scheduled during the assigned final exam time slot. If you have a conflict with this time slot, please let Dr. Hannigan know ASAP. Alternate testing times may be arranged with documentation of a conflict and advanced notice (at least 72 hours, but ideally several weeks) to the instructor.

This schedule is tentative. The instructor reserves the right to make changes at any time. Students will be promptly notified if any changes do occur.