

**San José State University**  
**CHHS/Department of Kinesiology**  
**KIN 287 Advanced Clinical Exercise Physiology**  
**Spring 2021**  
**(ONLINE COURSE)**

**Course and Contact Information**

<b>Instructor:</b>	Areum Jensen, Ph.D.
<b>Office Location:</b>	SPX 175
<b>Telephone:</b>	(408) 924-8153 (Office)
<b>Email:</b>	<a href="mailto:areum.jensen@sjsu.edu">areum.jensen@sjsu.edu</a>
<b>Office Hours:</b>	Tuesday and Thursday 12pm-1pm via Zoom or by appointment (Check Canvas Module for Zoom link)
<b>Class Days/Time:</b>	Thursday/4pm-6:45pm
<b>Classroom:</b>	ONLINE (Synchronized)
<b>Prerequisites:</b>	KIN 187 (or equivalent course or instructor permission); intended for graduate students who have completed KIN 187 (or equivalent) and plan to work with clinical populations. This course is open to undergraduate students who have completed KIN 187.

**Course Description**

Pathophysiology and recent advances in the diagnosis and treatment of cardiovascular, metabolic, neurologic, and musculoskeletal diseases and disorders, including innovative biotechnological approaches and the physiological and clinical conditions that affect acute responses and chronic adaptations to exercise

**Course Credit**

KIN 287 is a 3-credit course. For each unit of credit, a minimum of 45 hours over the length of the course for instruction or preparation/studying, or course related activities will be expected. The expectation of work for a 3-credit course is 150 minutes of direct faculty instruction and **6 hours of out of class student work each week.**

**Graduate Program Learning Outcomes (GPOs)**

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

1. conduct and critique research using theoretical and applied knowledge.
2. interpret and apply research findings to a variety of disciplines within kinesiology.
3. effectively communicate essential theories, scientific applications and ethical considerations in kinesiology.
4. acquire skills to become agents of change to address issues in kinesiology through the application of knowledge and research.

**Course-Specific Learning Outcomes (CLOs)**

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

1. identify and describe pathophysiological factors underlying various diseases/disorders. (GPO 2,3)
2. effectively utilize clinical, scientific, and professional library resources to obtain information on clinical exercise physiology topics. (GPO 2,3)

3. demonstrate skills in critical reading, thinking, and evaluation of scientific literature on clinical exercise physiology topics. (GPLO 1,2,3)
4. identify, describe, and perform assessment techniques used for evaluating specific diseases and their progression. (GPLO 3)
5. identify and explain differences that may exist in physiological responses to acute exercise and chronic exercise training in various clinical populations. (GPLO 2,3)
6. demonstrate oral and written communication skills by participating in the exchange of new ideas and concepts related to clinical exercise physiology topics. (GPLO 2,3)

\*Note that GPLO 4 will be met via KIN 250 and 251.

## Required Texts/Readings

### Textbook

1. Ehrman, J. K., Gordon, P. M., Visich, P. S., & Keteyian, S. J. (2013). Clinical exercise physiology (3rd ed). Champaign, IL: Human Kinetics.
2. Canvas: Students can access course-related materials including syllabus, lecture notes, announcement, assignments, and research articles, etc. From the SJSU home page you can easily find the Canvas entry page. Announcement will be posted on Canvas and should be checked on a regular basis.
3. Zoom: Live classes are met throughout the semester (see course schedule). All live Zoom sessions will be recorded and posted to the Canvas. During live Zoom sessions, you are required to turn on your camera for a better communication and interaction.

### Other Readings

Additional articles are posted on Canvas.

### Library Liaison

The KIN library liaison is Adriana Poo (Adriana.poo@sjsu.edu), (408) 808-2019.

### Class Structure

This course will be conducted using a combined lecture, seminar, and laboratory format. Lecture material will be integrated with class discussion and journal club research article presentations by students. All students should be prepared to discuss and exchange information during each class session. Students will have assigned articles to present individually and in groups.

Consistent with University policy, SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of 45 hours for each unit of credit (normally 3 hours per unit per week), including preparing for class, participating in course activities, completing assignments, and so on. More details about student workload can be found in University Policy S12-3 at <http://www.sjsu.edu/senate/docs/S12-3.pdf>.

## Course Requirements and Assignments

1. **Oral presentation (20%): GPLO 1, 2, 3, 4; CLO 1, 2, 3, 4, 5, 6**  
Students will present one lecture presentation (10%) on a topic related to the Journal Club research article, and one JC presentation (10%) per semester with using PowerPoint. This assignment provides an opportunity to present a background for the study, explain the experimental methods, present the results, discuss important findings, and evaluate the study.
2. **Journal club article critiques (20% - 10 critiques, 2% each) GPLO 1, 2, 3; CLO 1, 2, 3, 4, 5, 6**  
Students will read, critique, and present one research article per each journal club in class. This assignment provides an opportunity to develop written and oral communication skills, including presenting concepts and ideas as well as developing critical thinking skills.

**3. Written examinations (55%) GPLO 3; CLO 1, 4, 5, 6**

Exams may include short answer and essay questions that require integration and synthesis of knowledge. The final exam will be given following University policy on the scheduled date. Exams are to be taken as scheduled. Make-up exams are permitted only for illness and emergency, and with documentation. The student is responsible for notifying the instructor and making arrangements at the earliest possible time. If a midterm make-up is permitted, it must be completed before the next class meeting.

According to Academic Senate policy S06-4 a time period is set aside at the end of each semester for a formal examination period. All classes are expected to meet during the final examination period whether an examination is given or not. The final examination schedule is published each semester in the Class Schedule. <https://www.sjsu.edu/classes/final-exam-schedule/spring-2021.php>

**4. Participation (5%)**

This course uses a lecture/seminar/laboratory format. All students are expected to actively participate in, and contribute to, each class. This requires that students are prepared to discuss and present assigned articles, respond to presentations, and contribute their thoughts and knowledge.

Rubric for participation grade

Scale	Description
9 to 10	Often acted as a team leader; considered a major player in developing ideas and in presenting in group discussion; made significant and meaningful contributions to teamwork, laboratory, and the class; showed creativity and critical thinking
7 to 8	Participated in all aspects of the development and presentation of team activities; followed the will of the group and the class
5 to 6	Participated in the development and presentation of critical analysis as necessary; was often not available for teamwork; presented but was not really integrated into the whole
Less than 5	Meager participation in the teamwork and the class

**Late assignments**

All written assignments are due on the scheduled date. Late work may be graded down 1 grade step (e.g., A to A-) per day. After 1 week, a late assignment will be considered as “no submission”.

Missing a presentation during journal club will result in 0 points. Extenuating circumstances should be discussed with the instructor at the earliest possible time.

**Assignment of Grades**

A plus: 97 to 100%	A: 93 to 96%	A minus: 90 to 92%
B plus: 87 to 89%	B: 83 to 86%	B minus: 80 to 82%
C plus: 77 to 79%	C: 73 to 76%	C minus: 70 to 72%
D plus: 67 to 69%	D: 63 to 66%	D minus: 60 to 62%
		F: less than 60%

Note that “All students have the right, within a reasonable time, to know their academic scores, to review their grade-dependent work, and to be provided with explanations for the determination of their course grades.” See University Policy F13-1 at <http://www.sjsu.edu/senate/docs/F13-1.pdf> for more details.

**University Policies**

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on the Office of Graduate and Undergraduate Programs’ [Syllabus Information web page](http://www.sjsu.edu/gup/syllabusinfo/) at <http://www.sjsu.edu/gup/syllabusinfo/>

**Course Schedule (This schedule is subject to change with advance notice. The instructor reserves the right to make changes at any time. Students will be promptly notified if any changes occur.)**

Week	Date	Topics	Assignments
1	1/28 (TH)	Course introduction & overview <b>Lec 1. Metabolism</b>	
2	2/4 (TH)	<b>Lec 1. Metabolism</b> Metabolic syndrome and metabolic diseases	
3	2/11 (TH)	<b>Lec 1-2. Metabolic function</b> Acute: Hypoglycemia in T1D (Example of JC presentation and discussion led by Dr. Jensen (JC#1. Wiegers et al., Lactate, hypoglycemia, T1D)	
4	2/18 (TH)	<b>Journal club 1: student presentation and discussion (JC#2-3)</b> Acute: Skeletal muscle contraction-insulin like effect and acute signaling pathway in T2D (student lec w/ JC#2) JC#2. Kjobsted et al., Exercise induced AMPK activity in T2D Chronic: Insulin sensitivity and exercise effect in T2D (student lec w/ JC#3) JC#3. Gregory et al., Glucose uptake during exercise in T2D	
5	2/25 (TH)	<b>Lec 2. Nervous system</b> Autonomic nervous system and arterial baroreflex system in individuals with health complications (e.g., obesity, hypertension, aging, and cardiovascular disease)	DUE: JC article critique (#1-3)
6	3/4 (TH)	<b>Lec 2-2. Autonomic and baroreflex function</b> Arterial baroreflex control of HR, BP, and SNA with aging (student lec w/ JC#4) Exercise pressor reflex and hypertension (student lec w/ JC#5)	
7	3/11 (TH)	<b>Journal club 2: student presentation and discussion (JC#4-5)</b> JC#4. Fisher et al., Cardiac BRS sensitivity and aging JC#5. Sidhu et al., Exercise pressor reflex and hypertension	
8	3/18 (TH)	<b>Midterm Exam (individual &amp; group tests)</b>	
9	3/25 (TH)	<b>Lec 3. Cardiovascular system</b> Cardiovascular function in individuals with metabolic and cardiovascular diseases	DUE: JC article critique (#4-5)
10	4/1 (TH)	<b>SPRING BREAK (NO CLASS)</b>	
11	4/8 (TH)	<b>Lec 3-2. Cardiovascular function</b> Acute: Functional sympatholysis and HTN (student lec w JC#6) Acute: Metaboreflex and sympathetic activation and HF (student lec w/ JC#7) Chronic: Cardiovascular function and HF (student lec w/ JC#8)	
12	4/15 (TH)	<b>Journal club 3: student presentation and discussion (JC#6-7)</b> JC#6. Vongpatanasin et al., Functional sympatholysis and hypertension JC#7. Crisafulli et al., Metaboreflex and HF JC#8. Wisloff_HIIT and CHF	
13	4/22 (TH)	<b>Lec 4-1. Musculoskeletal system</b> Muscular strength, bone density, and mobility in individuals with neurological disorder	DUE: JC article critique (#6-7)
14	4/29 (TH)	<b>Lec 4-2. Musculoskeletal health</b> Multiple sclerosis (student lecture with JC#9) Cerebral palsy (student lecture with JC#10)	
15	5/6 (TH)	<b>Journal club 4: student presentation and discussion (JC#8-9)</b> JC#9. Kent-Braun et al., skeletal muscle and MS JC#10. Gusso et al., BMD, exercise and CP	
16	5/13 (TH)	Catch-up and Review	DUE: JC article critique (#8-9)
Final Exam	5/19 Wed	<b>FINAL EXAM scheduled per the University Academic Calendar</b> <b>5/19 Wednesday 2:45pm-5pm</b>	