

**San José State University
CHHS/Department of Kinesiology**

**KIN 154B – ECG Interpretations & Graded Exercise Testing
Sections 3 & 4 – Spring 2021**

Course and Contact Information

Instructor:	Peggy Plato, Ph.D.
Office Location:	Online
Email:	Peggy.Plato@sjsu.edu
Office Hours:	Wednesdays: 11:30 am – 12:30 pm https://sjsu.zoom.us/j/85303882707?pwd=T0U3OG9VV1hrWVZyMnUxUmlFR1JHZz09 Thursdays: 12:30-1:30 pm https://sjsu.zoom.us/j/81454592468?pwd=RlZlanJERDY4QzJqQih6TzJvQTIXUT09 Drop in via Zoom; other times available by appointment
Class Days/Time:	MW 9:30 -11:20 am
Classroom:	Online
Prerequisites:	KIN 70 & KIN 155 with grades of C- or better, Human Physiology, Introductory Chemistry, GE Math Current CPR certification – waived for spring 2021

Course Format

This is a lecture-laboratory course; however, because of COVID-19, we are not currently planning any in-person labs. Students are expected to read the assigned material and listen to the lectures before the online class meetings. Students are **STRONGLY ENCOURAGED** to attend the synchronous online meetings. Although lectures are recorded and posted on Canvas, you will gain more and feel a stronger connection with the class if you attend the synchronous online classes.

Course Description

Theoretical background and practical proficiency in the methods and instruments of electrocardiogram (ECG) interpretation and graded exercise testing (GXT).

Learning Outcomes

Kinesiology Undergraduate Major Program Learning Outcomes (KIN PLOs)

At the end of a Bachelor of Science degree program in the Department of Kinesiology, students will be able to:

- PLO 1 explain, identify, and/or demonstrate the theoretical and/or scientific principles that can be used to address issues or problems in the sub-disciplines in kinesiology.
- PLO 2 effectively communicate in writing (clear, concise and coherent) on topics in kinesiology.
- PLO 3 effectively communicate through an oral presentation (clear, concise and coherent) on topics in kinesiology.

- PLO 4 utilize their experiences across a variety of health-related and skill-based activities to inform their scholarship and practice in the sub-disciplines in kinesiology.
- PLO 5 identify and analyze social justice and equity issues related to kinesiology for diverse populations.

Course-Specific Learning Outcomes (CLOs)

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

- CLO 1 demonstrate knowledge of cardiac anatomy and physiology.
- CLO 2 demonstrate knowledge and proficiency in ECG interpretation, including identification of dysrhythmias, and AV and bundle branch blocks.
- CLO 3 demonstrate understanding of the effects that axis changes, cardiac enlargement, and myocardial ischemia and infarctions have on the ECG.
- CLO 4 understand and apply guidelines for evaluation of health status prior to GXT and exercise programming, including identifying abnormalities and conditions that are contraindications for GXT and/or exercise.
- CLO 5 demonstrate understanding of the benefits and risks associated with exercise, and legal issues related to exercise testing and programming.
- CLO 6 identify and describe safe endpoints for GXTs.
- CLO 7 understand and identify normal and abnormal GXTs, as well as false positive and false negative tests.
- CLO 8 demonstrate knowledge of graded exercise testing methods, instrumentation, and protocols.
- CLO 9 demonstrate the ability to explain and interpret ECG and GXT results.
- CLO 10 demonstrate an understanding of how data from a GXT reflect current physiological functioning and may be used in exercise programming for healthy individuals.
- CLO 11 demonstrate knowledge and application of behavior change theories and strategies that may be used when programming exercise.
- CLO 12 demonstrate an understanding of emergency medical procedures that may be necessary during a GXT or exercise session.
- CLO 13 compare/contrast clinical exercise testing with GXT procedures learned in class.
- CLO 14 demonstrate sensitivity to age, gender, cultural, and other individual differences that may affect the ECG, GXT, and exercise programming.

Required Materials

Textbooks:

Riebe, D. (Ed.). (2018). *ACSM's guidelines for exercise testing and prescription* (10th ed.). Philadelphia: Wolters Kluwer. ISBN: 9781496339072

Note: The 11th ed. of the ACSM guidelines has an expected publication date of Feb. 2021.

Wesley, K. (2017). *Huszar's ECG and 12-lead interpretation*. (5th ed.). St. Louis: Elsevier. ISBN: 9780323355759

Other Materials:

Calculator
Metric ruler
ECG calipers (optional)

Class Format

Most lectures will be recorded and posted on Canvas for asynchronous viewing. When this is done, students should view the lecture BEFORE the scheduled class meeting. Other lecture material will be presented during class time, recorded and later posted on Canvas. Class time will also be used to practice ECG interpretation as well as discuss and review the course content; this is part of the participation grade. Students are strongly encouraged to attend online at the scheduled time; you will gain more and feel a greater connection with the class if you attend synchronously. However, for students who need to miss a synchronous lecture, a recording will be posted. Quizzes are scheduled on Wednesdays. They will open at 10:45 am on the scheduled class day and close 24 hours later (at 10:45 am the following day).

Course Requirements

[Academic Policy S12-3](http://www.sjsu.edu/senate/S12-3.htm) at <http://www.sjsu.edu/senate/S12-3.htm> has defined expected student workload, applied to this course, as follows:

“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 . . . for instruction or preparation/studying or course-related activities.” For a 3-unit class, this is equivalent to 9 hours per week.

NOTE that [University Policy F69-24](http://www.sjsu.edu/senate/docs/F69-24.pdf) at <http://www.sjsu.edu/senate/docs/F69-24.pdf> states, “Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading.”

This is a professional preparation course. Students are expected to be fully prepared; actively and enthusiastically participate in all online class activities, as well as complete assignments at home and upload to Canvas before the due date and time.

The most effective class results when EACH class member makes an INDIVIDUAL COMMITMENT to be an active participant in the teaching/learning process. Individual contributions and differing viewpoints will be appreciated and respected. Students are responsible for material presented and announcements made in each class.

Grading Policy

Evaluation - Example

	CLO	KIN PLO	Points Possible	X	% Earned	=	Points Earned	
Resting & Submaximal Exercise	8, 9	1, 2	8	X	88%	=	7.04	
Competencies (Blood Pressure & Electrode Placement)	8	1	4	X	95%	=	3.80	
ECG Interpretation	2	1	5	X	84%	=	4.20	
Exercise Programming Case Study	10, 14	1, 2	6	X	89%	=	5.34	
Behavior Change Presentation	11	1, 3	6	X	94%	=	5.64	
GXT Interpretation & Exercise Programming	9, 10, 14	1, 2	12	X	88%	=	10.56	
Clinical Assignment	13, 14	1, 2	6	X	94%	=	5.64	
Participation & Other Assignments			8	X	90%	=	7.20	
Quizzes (average %)	1-10	1	15	X	79%	=	11.85	
Midterm Exam – Mon., Mar. 22	1-10	1	15	X	84%	=	12.60	
Final Exam (comprehensive) Fri., May 21, 7:15-9:30 am	1-13	1	15	X	86%	=	12.90	
0.5 and above rounded up; below 0.5 rounded down								86.77
								Grade: B+

Note: "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](http://www.sjsu.edu/senate/docs/F13-1.pdf) at <http://www.sjsu.edu/senate/docs/F13-1.pdf> for more details.

Assignments

- Because we cannot collect data during labs, it will be provided for the following assignments: **Resting & Submaximal Exercise, ECG Interpretation, Exercise Programming Case Study**, and **GXT Interpretation & Exercise Programming**. Data sheets and guidelines for these assignments are posted on Canvas.
- **Competencies:** Students will demonstrate proficiency in how to measure blood pressure and where to place electrodes for a 12-lead exercise ECG. A sign-up sheet to schedule competency attempts is posted on Canvas.
 - Grading on competency tests:
 - A (95%) = excellent technique
 - B (85%) = good technique, minor corrections needed
 - F (50%) = poor or weak technique, significant errors, questionable data
 - 0 pts = did not attempt competency
 - Students receiving less than an A grade will receive feedback about errors and may, after further practice, re-attempt the competency on another day. If a student does not attempt a competency by the first deadline date, the grade may be lowered one letter grade for each week, or part of a week, that the deadline is missed.

- For the **Behavior Change Presentation**, you will be working in a small group to briefly present a behavior change theory or strategy. Additional information is posted on Canvas.
- For the **Clinical Assignment**, you will be summarizing short videos on clinical and pharmaceutical exercise tests and procedures. Guidelines are posted on Canvas.
- **Participation & Other Assignments:** This will include synchronous, in-class activities including interpreting ECGs. It may also include some out-of-class short assignments.
- Written work must be typed, double spaced, and proofread. (Check for grammar, spelling, and syntax -- if in doubt, look it up!) Assignments should be submitted on Canvas by 11:59 pm on the due date. Grades may be lowered for late assignments as follows:

Due Date	Received	Grade Lowered
Monday	Tuesday & Wednesday	1 grade step (e.g., A minus to B plus)
	Thursday & Friday	2 grade steps (e.g., A minus to B)
	Sat. through the following Monday	1 full grade (e.g., A minus to B minus)
Wednesday	Thursday & Friday	1 grade step
	Saturday & Sunday	2 grade steps
	Mon. through the following Wednesday	1 full grade
Students must speak with the instructor regarding assignments that are more than 1 week late.		

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

Quizzes & Exams

- All quizzes and exams will be completed on Canvas. Quizzes will open on Canvas at 10:45 am on scheduled Wednesdays and close at 10:45 am on Thursdays (24-hour window to complete the quiz). The midterm and final exam will be completed during the scheduled class time. Make-up quizzes and exams are permitted only for illness and emergency (TRULY EXTRAORDINARY CIRCUMSTANCES). The student is responsible for notifying the instructor and making arrangements at the earliest possible time. All requests for make-up exams will be evaluated on an individual basis.
- Questions may include true-false, multiple choice, matching, short answer, problems, and calculations.
- There are 12 quizzes; the lowest quiz score will be dropped.
- You should be able to complete all questions without referring to your textbooks, personal notes or material uploaded on the KIN 154B Canvas site. However, you MAY refer to these materials. It is recommended that you complete as many questions as possible before referring to these materials, and then you may look up answers you're unsure of within the time limit.
 - **These are materials you MAY access during quizzes and exams:** Your textbooks, materials uploaded to the KIN 154B Canvas site, and your personal notes. A list of topics will be provided by Dr. Plato for the midterm and final exams.

- **These are materials you may NOT access during quizzes and exams:** Notes or study guides developed by others (e.g., other students) or developed in combination with others and shared, other people, or other web sites. You may not text, email, phone, or consult with others or access other web sites. Doing so is a violation of the University Academic Integrity Policy. Faculty are expected to report infractions to the office of Student Conduct and Ethical Development, and appropriate sanctions will be taken. If you are unsure of which materials are permitted and which are not, ask Dr. Plato before starting the quiz or exam.
- The grade you **EARN** should reflect **YOUR** knowledge and skills, **NOT** the knowledge and skills of others. **Carefully read the [University Academic Integrity Policy S07-2](http://www.sjsu.edu/senate/docs/S07-2.pdf) at <http://www.sjsu.edu/senate/docs/S07-2.pdf> Earning your college degree is important -- think carefully before jeopardizing your degree!**

Grading is based on percentage of total points earned as follows:

97-100%	A plus	93-96%	A	90-92%	A minus
87-89%	B plus	83-86%	B	80-82%	B minus
77-79%	C plus	73-76%	C	70-72%	C minus
67-69%	D plus	63-66%	D	60-62%	D minus
Below 60%			F		
Values used when converting letter grades to percentages:					
98%	A plus	95%	A	91%	A minus
88%	B plus	85%	B	81%	B minus
78%	C plus	75%	C	71%	C minus
68%	D plus	65%	D	61%	D minus
50% or below			F		

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 information to all courses, such as academic integrity, accommodations, dropping and adding, consent for recording of class, etc. is available on Office of Graduate and Undergraduate Programs' [Syllabus Information web page](http://www.sjsu.edu/gup/syllabusinfo/) at <http://www.sjsu.edu/gup/syllabusinfo/>. Make sure to visit this page, review and be familiar with these university policies and resources. Some of this information is excerpted below.
- According to University policy, Feb. 8 is the last day to drop this course without a "W" being assigned. Dropping after Feb. 8 is permissible for serious and compelling reasons beyond the student's control and requires written documentation. Unsatisfactory performance in course work is not a serious and compelling reason. Additional information is available at: <http://www.sjsu.edu/aars/policies/latedrops/policy/>. The last day to add is Feb. 15; however, students who receive add codes should use them within 24 hours or the class space and add code may be given to another student.

- **Recording in Class**

“Common courtesy and professional behavior dictate that you notify individuals when you are recording them. You must obtain the instructor’s permission to make audio or video recordings in this class. Such permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material.” You may not publicly share or upload instructor-generated material for this course without instructor consent. You may not download, copy, or take photos or screen shots of any exam or quiz question. Doing so is a violation of the Academic Integrity Policy.

Recording any students during class activities requires permission of those individuals as well as permission from the instructor. Most Zoom classes will be recorded by the instructor and posted on Canvas.

- **Academic Integrity**

As a student, your commitment to learning is evidenced by your enrollment at San Jose State University. The [University Academic Integrity Policy F15-7](#) requires you to be honest in all your academic course work. 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.

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person’s ideas without giving proper credit) will result in a failing grade and sanctions by the University. All assignments are to be completed by the individual student unless otherwise specified. You are encouraged to discuss material with other students to enhance your understanding. However, assignments that are submitted **MUST** be your own work. Do **NOT** send part or all of your assignment to others. By doing this, you lose control over your work and leave yourself open to cheating and violations of the academic integrity policy.

“The University emphasizes responsible citizenship and an awareness of ethical choices inherent in human development. Academic honesty and fairness foster ethical standards for all those who depend upon the integrity of the university, its courses, and its degrees. University degrees are compromised and the public is defrauded if faculty members or students knowingly or unwittingly allow dishonest acts to be rewarded academically.” (Academic Senate Policy S15-7)

- **Campus Policy in Compliance with the Americans with Disabilities Act:** Students who need course adaptations or accommodations because of a disability should notify the instructor as soon as possible.

KIN 154B – ECG & GXT, Spring 2021 PROPOSED SCHEDULE

(Subject to change with fair notice – changes will be announced in class.)

Date	Topic	Reading Assignments
Wed., Jan. 27	Introduction & course overview, cardiac anatomy & physiology	
Mon., Feb. 1	Cardiac anatomy & physiology	Wesley - Chap. 1
Wed., Feb. 3	Benefits and risks of exercise, health screening & risk stratification Quiz #1 (Cardiac anatomy & physiology)	ACSM- Preface, Chaps. 1,2 (delete risk stratification for patients in cardiac rehab)
Mon., Feb. 8	Measuring blood pressure	ACSM - pp. 53-55 Posted on Canvas
Wed, Feb. 10	Submaximal exercise testing, contraindications, informed consent, pretest instructions Quiz #2 (Benefits & risks of exercise, health screening & risk stratification)	ACSM – pp. 44-50, 61-62, 66-69, 79-94 Canvas – Sartor et al., 2013
Mon., Feb. 15	Treadmill & bicycle calibration	Posted on Canvas
Wed., Feb. 17	Electrode placement, ECG leads Quiz #3 (Measuring blood pressure, submaximal exercise testing, contraindications, informed consent, pretest instructions)	Wesley – Chap. 2 (skip modified chest leads) & pp. 174-183 (skip right-sided chest leads) ACSM – Tables C.1 & C.2
Mon., Feb. 22	Components of the ECG	Wesley – Chap. 3 ACSM – Table C.4
Wed., Feb. 24	ECG interpretation Quiz #4 (Electrode placement, ECG leads) Deadline for 1st attempt at BP competency	Wesley - Chap. 4 ACSM – Table C.3
Mon., Mar. 1	Mean QRS Axis DUE: Resting & Submaximal Exercise	Wesley - pp. 183-196, Appendix A (Method D, 6-lead method)

Date	Topic	Reading Assignments
Wed., Mar. 3	Sinus rhythms Quiz #5 (ECG components & interpretation)	Wesley - Chap. 5
Mon., Mar. 8	Atrial rhythms Deadline for 1st attempt at electrode placement competency	Wesley - Chap. 6
Wed., Mar. 10	Junctional rhythms Quiz #6 (Sinus rhythms & mean QRS axis) DUE: ECG Interpretation	Wesley - Chap. 7
Mon., Mar. 15	Catch-up & review	
Wed., Mar. 17	MIDTERM EXAM	
Mon., Mar. 22	Measuring VO ₂ , metabolic cart, emergency management, GXT data interpretation	ACSM –pp. 81-82, 111-134, Appendix B Canvas - Skinner & McLellan, 1980
Wed., Mar. 24	Data interpretation & exercise programming	ACSM – pp. 143-162, 172-173 Canvas - Blair
Mon., Apr. 5	Exercise programming	
Wed., Apr. 7	Ventricular rhythms Quiz #7 (Measuring VO ₂ , metabolic cart, emergency management) Data interpretation & exercise programming)	Wesley - Chap. 8 & ACSM Table C.7
Mon., Apr. 12	Behavior Change Presentations	ACSM – Chap. 12
Wed., Apr. 14	TBA Quiz #8 (Ventricular rhythms) DUE: Exercise Programming Case Study	
Mon., Apr. 19	Coronary heart disease & the ECG	Wesley - Chaps. 15 & 16 ACSM – Table C.6
Wed., Apr. 21	Coronary heart disease & the ECG Quiz #9 (Behavior change)	
Mon., Apr. 26	AV blocks	Wesley - Chap. 9 ACSM – Tables C.8 & C.9
Wed., Apr. 28	Bundle branch blocks Quiz #10 (Coronary heart disease & the ECG)	Wesley – Chap. 13 (skip hemiblocks & fascicular blocks)

Date	Topic	Reading Assignments
Mon., May 3	Cardiac enlargement DUE: GXT Interpretation & Exercise Programming	Wesley – pp. 212-217 ACSM – Table C.5 Canvas – deJong, 2011
Wed., May 5	TBA Quiz #11 (AV blocks) DUE: Clinical Assignment	
Mon., May 10	Clinical exercise testing, exercise testing with imaging, sensitivity & specificity	ACSM - pp. 135-139 Canvas – Ashley & Myers, 2003, nuclear imaging
Wed., May 12	Legal issues Quiz #12 (Bundle branch blocks & cardiac enlargement) Last Day for Competency Testing	Canvas – Eickhoff-Shemek, 2013
Mon., May 17	Catch-up & summary Review	
Fri., May 21 7:15 - 9:30 am	FINAL EXAM	