San José State University
CHHS/Department of Kinesiology

KIN 154B – ECG Interpretation & Graded Exercise Testing
Sections 1, 2 – Fall 2025

Course and Contact Information

Instructor:	Peggy Plato, Ph.D.
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Office Location:	SPX 174
Email:	Peggy.Plato@sjsu.edu
Office Hours:	MW 12:00-1:00 pm in person, SPX 174 Other times available by appointment
Class Days/Time:	MW 9:30-11:20 am
Classroom:	YUH 233
Prerequisites:	KIN 70 & KIN 155 with grades of C- or better, Human Physiology, Introductory Chemistry, GE Math

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.

SJSU Department of Kinesiology DEI Statement

The Department of Kinesiology is committed to developing and implementing equitable curricula and teaching practices that reflect the diversity of our student body and departmental core values. The faculty strives to foster an inclusive learning environment where all students feel valued, supported, welcomed, and empowered to succeed in *ALL* classes. All students, inclusive of all, but not limited to ethnicities, socioeconomic and cultural backgrounds, gender identities and expressions, castes, religions, ages, sexual orientations, abilities, bodies, political affiliations, statuses, and nationalities, are encouraged to share their rich array of perspectives and experiences. KIN department faculty, staff, and students all have something of value to contribute. Everyone is expected to respect differences and demonstrate diligence in understanding how others' perspectives, behaviors, and views may be different from theirs.

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 an 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 graded exercise testing (GXT) and exercise programming, including identifying abnormalities and conditions that are contraindications for GXT and/or exercise.
CLO 5 demonstrate an 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 demonstrate an understanding of clinical exercise testing, as well as compare/contrast clinical tests 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.

CPR certification is strongly recommended.

Required Materials

Textbooks:

Liguori, G. (Ed.). (2022). *ACSM's guidelines for exercise testing and prescription* (11th ed.). Philadelphia: Wolters Kluwer. ISBN: 978-1-975150-18-1 (An earlier edition of the Guidelines will not work well. However, the 12th edition, which was recently published, is fine.)

Wesley, K. (2022). *Huszar's ECG and 12-lead interpretation*. (6th ed.). St. Louis: Elsevier. ISBN: 9780323711951 ((An earlier edition of this book is fine. Earlier editions may be titled Basic Dysrhythmias, author is Huszar.)

Course Reader: Maple Press will bring the course reader to class for purchase on Aug. 27, or it may be purchased at Maple Press (330 S. 10th St.) AFTER Aug. 27.

Other Materials:

- Calculator
- 13 Scantron 815E answer sheets & #2 pencil for quizzes
- 2 Scantron 882E answer sheets & #2 pencil for the midterm and final exams
- ECG calipers (optional)

Class Format

This is a lecture-laboratory class with a partially flipped format. Students are expected to read the assigned material and listen to the prerecorded lectures posted on Canvas BEFORE the class meeting in which that material will be discussed. Class time will be used to discuss, reinforce, practice, and apply the content, practice ECG interpretation, and perform the laboratory activities. In-class quizzes are scheduled on Wednesdays.

Professionalism

This is a professional preparation course. Students are expected to:

- Be prepared, arrive on time, and actively and enthusiastically participate in all lecture and laboratory activities, including demonstrations and data collection.
  - Read the assigned material and view the prerecorded lectures before the class in which the topic is scheduled. Students are directed to this course syllabus and materials posted on Canvas for many of their procedural questions.
  - Bring required materials to class.
  - Dress appropriately for scheduled laboratory activities.
- Enthusiastically serve as a client for others.
- Use lab time effectively! Ask for guidance from instructor or TA if having difficulty mastering a technique.
- Complete assignments on time and submit as instructed (e.g., uploaded to Canvas or a hard copy submitted in class).
- Use equipment properly. Clean and put away all equipment before leaving lab area.
- Keep lab clean. No food or drinks are allowed in the lab except covered beverages. If your beverage container sweats and leaves water on tables, you must clean it up.
- Adhere to the current SJSU health guidelines, including use of masks, if required. If masks are not required, some individuals may choose to continue wearing masks for personal reasons (e.g., health concerns or contact with individuals who are not eligible for vaccination).

If you are not feeling well, stay home! Notify your instructor who will make every effort to provide reasonable accommodations. However, reasonable accommodations do not include offering the course in multiple formats, such as online and in-person. A prolonged illness or family emergency may require dropping the class.

Students who consistently demonstrate professionalism, as described above, WILL be able to complete all lab assignments in a timely manner. Students who choose not to use laboratory time effectively may not complete all assignments and should not expect the instructor to ensure that they do.

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.

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 at http://www.sjsu.edu/senate/docs/S07-2.pdf Earning your college degree is important -- think carefully before jeopardizing your degree!**

Evaluation - Example

	CLO	KIN PLO	Points Possible	X	% Earned	=	Points Earned
Competencies	8	1	10	X	95%	=	9.50
Submaximal Exercise Assignment	8, 9	1, 2, 4	10	X	88%	=	8.80
Resting ECG Interpretation	2, 4	1	6	X	84%	=	5.04
Exercise Programming Case Study	10, 14	1, 2	6	X	86%	=	5.16
Behavior Change Presentation	11	1, 3	6	X	94%	=	5.64
Maximal GXT Assignment	4, 8, 9, 10, 14	1, 2	12	X	88%	=	10.56
Clinical Videos Quiz	13, 14	1, 2	5	X	90%	=	4.50
Quizzes (average %)	1-11	1	15	X	79%	=	11.85
Midterm Exam	1-10	1	15	X	84%	=	12.60
Final Exam (comprehensive)	1-13	1	15	X	86%	=	12.90
							86.55
0.5 and above rounded up; below 0.5 rounded down							Grade: B+

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

96.5-100%	A plus	92.5-96.4%	A	89.5-92.4%	A minus
86.5-89.4%	B plus	82.5-86.4%	B	79.5-82.4%	B minus
76.5-79.4%	C plus	72.5-76.4%	C	69.5-72.4%	C minus
66.5-69.4%	D plus	62.5-66.4%	D	59.5-62.4%	D minus
Below 59.5%			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		

IMPORTANT: Quizzes will not be included in the Canvas grade until the end of the semester. This is because quiz percentages are recorded in Canvas. This makes it appear that each quiz is worth 100 points of the total points in the class. This is **NOT** correct. Also, the two lowest quiz percentages will be dropped at the end of the semester. You can easily determine how you are doing in the class at any time during the semester by putting your points into the example provided.

The University grading policy can be found here: University Grading System Policy F18-5

Competencies

Students will demonstrate proficiency in each of the following:

- Measuring resting blood pressure
- Measuring blood pressure during treadmill walking
- Measuring blood pressure during stationary cycling
- Preparing a client for a 12-lead ECG
- Checking treadmill calibration
- Calibrating a Monark bicycle ergometer

Grading on competency tests:
A (95%) = excellent technique
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 – this is an attempt. 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. Only one competency may be attempted on the last day of competency testing.

Assignments

- For the **Submaximal Exercise Assignment**, you will collect data in a group. The analysis of the data is done **INDIVIDUALLY.** Review the warning under University Policies, Academic Integrity, about sharing your work with others.
- For the **Resting ECG Interpretation**, you will record and analyze your resting ECG.
- For the **Exercise Programming Case Study**, you will receive data to use. You will receive feedback on your exercise program from others in the class before submitting your final assignment. However, what you submit is your **INDIVIDUAL** work.
- For the **Behavior Change Presentation**, you will be working in a small group to briefly present a behavior change theory or strategy to the class.
- For the **Maximal GXT Assignment**, you will collect data in a group. The analysis of the data is done **INDIVIDUALLY.** Review the warning under University Policies, Academic Integrity, about sharing your work with others.
- For the **Clinical Videos Quiz**, you will be viewing short videos of clinical and pharmaceutical exercise tests and procedures in class, then completing a quiz on that material. This is an **INDIVIDUAL** assignment.
- Instructions for each assignment are posted on Canvas, including how to submit the assignment (e.g., uploaded to Canvas or hard copy submitted in class).

- Written work must be typed, double spaced, and proofread. (Check for grammar, spelling, and syntax -- if in doubt, look it up!) Assignments that are submitted during class must be submitted by the end of class on the due date. Assignments submitted on Canvas should be uploaded 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)
	Saturday 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
	Monday 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

- In-person quizzes and exams will be completed during class time. They are closed book and notes. 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 2 quiz scores will be dropped.

University Policies

- Per University Policy S16-9 (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 the Syllabus Information web page 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, dropping this course after Sept. 16 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. However, an extended illness or family emergency may require dropping after Sept. 16. Additional information is available at the Registar's web site at https://www.sjsu.edu/registrar/forms/index.php. The last day to add is Sept. 16; however, students who receive add codes should use them within 24 hours or the space and add code may be given to another student.
- University Policy S16-9, states: "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." **This is equivalent to 9 hours/week.** If you are unable to commit this amount of time to the class, reconsider taking the class this semester.

- The University Attendance and Participation Policy F15-12 states, "Students are expected to attend all meetings for the courses in which they are enrolled as they are responsible for material discussed therein, and active participation is frequently essential to ensure maximum benefit to all class members . . . Attendance shall not be used as a criterion for grading."

- **Course Materials: "**Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without her approval." You may not publicly share or upload instructor-generated material for this course, such as exam or quiz questions, lecture notes, or hand-outs, without instructor consent. **You may not copy or take photos of any exam or quiz question.** Doing so is a violation of the Academic Integrity Policy.

- **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." Recording any students during class activities requires permission of those individuals as well as permission from the instructor.

- **Academic Integrity:** As a student, your commitment to learning is evidenced by your enrollment at San José 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. Copying, cheating on exams, or plagiarism (presenting the work of another as your own, or using another person's ideas without giving proper credit) will result in a failing grade and sanctions by the University. Unless designated as a group assignment, work submitted in this course must be your own. Contributions from anyone or anything else, including AI sources, must be properly quoted and cited every time they are used. Failure to do so is an academic integrity violation. Do **NOT** share part or all of your assignment with others. By doing this, you lose control over your work and leave yourself open to cheating and violations of the academic integrity policy. If another student copies and submits your work, you have **enabled** cheating. All students involved will be reported to the Office of Student Conduct and Ethical Development, and appropriate sanctions will be taken. Although you are encouraged to discuss the course material with other students and the instructor to enhance your understanding, individual assignments that are submitted **MUST** be your own work.

  "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, Fall 2025
PROPOSED SCHEDULE

(Subject to change with fair notice – changes will be announced in class, via e-mail and/or posted on Canvas.)

Date	Topic	Reading Assignments
Wed., Aug. 20	Introduction & class overview, cardiac anatomy & physiology	
Mon., Aug. 25	Cardiac anatomy & physiology	Wesley - Chap. 1
Wed., Aug. 27	Measuring blood pressure, benefits and risks of exercise, pre-participation health screening	ACSM- Foreward, Nota Bene, Preface, Chaps. 1 & 2, pp. 61 & Boxes 3.1 & 3.2
Mon., Sept. 1	**Labor Day Holiday**	
Wed., Sept. 3	Submaximal exercise testing, contraindications, informed consent, pretest instructions **Quiz #1** (Cardiac anatomy & physiology)	ACSM – pp. 58-61, 73-90, Appendix D Canvas – Sartor et al., 2013
Mon., Sept. 8	Submaximal exercise testing (con't), treadmill and bicycle calibration YMCA bike & treadmill submaximal test demonstrations	
Wed., Sept. 10	Electrode placement, ECG leads **Quiz #2** (Measuring blood pressure, benefits & risks of exercise, pre-participation health screening)	Wesley – Chap. 2 (skip modified chest leads) & pp. 174-183 (skip right-sided chest leads) ACSM – Tables B.1 & B.2
Mon., Sept. 15	Components of the ECG	Wesley – Chap. 3 ACSM – Table B.4
Wed., Sept. 17	ECG interpretation **Quiz #3** (Submaximal exercise testing, contraindications, informed consent, pretest instructions)	Wesley - Chap. 4 ACSM – Table B.3
Mon., Sept. 22	Sinus rhythms	Wesley – Chap. 5
Wed., Sept. 24	Mean QRS Axis **Quiz #4** (Electrode placement, ECG leads)	Wesley - pp. 183-196, Appendix A (Method D, 6-lead method)
Mon., Sept. 29	Atrial rhythms **Deadline for 1st attempt at resting BP competency**	Wesley - Chap. 6

Date	Topic	Reading Assignments
Wed., Oct. 1	Atrial rhythms (con't) **Quiz #5** (ECG components & interpretation) **DUE: Submaximal Exercise**	
Mon., Oct. 6	Junctional rhythms	Wesley - Chap. 7
Wed., Oct. 8	Maximal exercise testing, VO_2, emergency management Sign up for behavior change presentation & maximal GXT testing date **Quiz #6** (Sinus rhythms & mean QRS axis) **Deadline for 1st attempt at bike or treadmill BP** **DUE: Resting ECG Interpretation**	ACSM –pp. 73-80, 87, 89-92, 113-133 Canvas - Skinner & McLellan, 1980
Mon., Oct. 13	Catch-up & review	
Wed., Oct. 15	**MIDTERM EXAM**	
Mon., Oct. 20	Data interpretation, GXT demonstration	
Wed., Oct. 22	Data interpretation & exercise programming GXT **Quiz #7** (Maximal exercise testing, VO_2, emergency management) **Deadline for 1st attempt at electrode placement competency**	ACSM – pp. 142-153 Canvas - Blair
Mon., Oct. 27	**Behavior Change Presentations** Discuss Maximal GXT assignment	ACSM – Chap. 12
Wed., Oct. 29	Ventricular rhythms GXT **Quiz #8** (Data interpretation)	Wesley - Chap. 8
Mon., Nov. 3	Coronary heart disease & the ECG GXT Groups for feedback on Exercise Programming Case Study	Wesley - Chaps. 15 & 16
Wed., Nov. 5	Coronary heart disease & the ECG GXT **Quiz #9** (Exercise programming & behavior change)	

Date	Topic	Reading Assignments
Mon., Nov. 10	AV blocks GXT **Deadline for 1st attempt at bike or treadmill calibration** **DUE: Exercise Programming Case Study**	Wesley - Chap. 9
Wed., Nov. 12	Clinical exercise testing, sensitivity & specificity – videos and in-class **Clinical Videos Quiz** GXT **Quiz #10** (Ventricular rhythms)	ACSM - pp. 133-137 Canvas – Ashley & Myers, 2003
Mon., Nov. 17	Help with Maximal GXT Assignment	
Wed., Nov. 19	Bundle branch blocks GXT **Quiz #11** (Coronary heart disease & the ECG)	Wesley – Chap. 13 (skip hemiblocks & fascicular blocks)
Mon., Nov. 24	Catch up **DUE: Maximal GXT Assignment**	
Wed., Nov. 26	**No Classes**	
Mon., Dec. 1	Cardiac enlargement	Wesley – pp. 212-217 Canvas – deJong, 2011
Wed., Dec. 3	Legal issues & certification **Quiz #12** (AV & bundle branch blocks) **Last Day for Competency Testing**	Canvas – Eickhoff-Shemek, 2013 ACSM – Appendix C
Mon., Dec. 8	Catch-up & review	
Wed., Dec. 10 10:45 am-12:45 pm	**FINAL EXAM**	

In addition to assigned readings from the two textbooks, other readings are posted on Canvas in the appropriate module.