



INSTRUCTIONAL PACKAGE

AHS 145

Electrocardiography

201810

Fall 2018

INSTRUCTIONAL PACKAGE

PART I: COURSE INFORMATION

Effective Term: 201810

COURSE PREFIX: AHS 145

COURSE TITLE: Electrocardiography

CONTACT HOURS: 2-0-2

CREDIT HOURS: 2

RATIONALE FOR THE COURSE:

Emphasis will be on proper operation of equipment for accurate ECG interpretation.

COURSE DESCRIPTION:

This course provides the basic skills necessary to perform ECGs in a hospital, physician's office or other health care setting. The student will be able to perform and interpret basic ECGs.

PREREQUISITES/CO-REQUISITES:

None

REQUIRED MATERIALS:

Please visit the Bookstore online site for most current textbook information. Use the direct link below to find textbooks.

[BOOKSTORE](#).

Enter the semester, course prefix, number and section when prompted and you will be linked to the correct textbook.

ADDITIONAL REQUIREMENTS:

None

TECHNICAL REQUIREMENTS:

Access to Desire2Learn (D2L), HGTC's student portal for course materials.
WaveNet and D2L email access.

STUDENT IDENTIFICATION VERIFICATION

Students enrolled in online courses will be required to participate in a minimum of one (1) proctored assignment and/or one (1) virtual event to support student identification verification. Please refer to your Instructor Information Sheet for information regarding this requirement.

CLASSROOM ETIQUETTE:

As a matter of courtesy to other students and your professor, please turn off cell phones and other communication/entertainment devices before class begins. If you are monitoring for an emergency, please notify your professor prior to class and switch cell phone ringers to vibrate.

NETIQUETTE: is the term commonly used to refer to conventions adopted by Internet users on the web, mailing lists, public forums, and in live chat focused on online communications etiquette. For more information regarding Netiquette expectations for distance learning courses, please visit: [Online Netiquette](#).

Part II: Student Learning Outcomes

COURSE LEARNING OUTCOMES and ASSESSMENTS*:

1. Relate the cardiac surfaces or areas represented by the ECG leads.
2. Differentiate among the primary mechanisms responsible for producing cardiac arrhythmias.
3. Describe the arrhythmias originating in the sinus node.
4. Describe the arrhythmias originating in the AV junction.
5. Describe the arrhythmias originating in the atria.
6. Describe the arrhythmias originating in the ventricles.
7. Describe the arrhythmias originating within the AV node.
8. Describe the arrhythmias originating within the bundle branch system.
9. Describe the conditions of pulseless electrical activity and cardiac asystole.
10. Describe the phenomena of reentry, aberration and accessory pathways.
11. Recognize the changes on the ECG that may reflect evidence of myocardial ischemia and injury.
12. Recognize the limitations of the ECG in reflecting evidence of myocardial ischemia and injury.
13. Identify the major therapeutic objectives in the treatment of the patient with any arrhythmia.

COURSE LEARNING OUTCOMES

Module #1 – Chapters 1-4

Material Covered:

Walraven Basic Arrhythmia

Assessments:

Chapter Quizzes

Module #1 Test

Learning Outcomes:

1. Give the uses and limitations of cardiac arrhythmia monitoring.
2. Distinguish between the electrical and the mechanical functions of the heart.
3. Relate cardiac arrhythmia monitoring to pulse/perfusion assessment.
4. Explain how cardiac impulses are formed.
5. Briefly describe the sodium pump.
6. Define polarization and describe the polarized state.
7. Define depolarization and explain how it occurs.
8. Define repolarization and explain how it occurs.
9. Describe the heart's electrical conduction system.
10. Identify the five major areas of electrical conduction.
11. Outline the physical layout of the conduction system.
12. Describe the usual pattern of electrical flow through the conduction system.

13. Give the inherent rates for the SA node, the AV junction, and the ventricles.
14. Explain the influence of the nervous system on rate of cardiac impulse formation.
15. Differentiate between irritability and escape.
16. Name the nervous system that exerts an influence over rate of cardiac impulse formation.
17. Identify the two opposing branches of the above-named nervous system, and tell how each would influence the heart if stimulated.
18. Describe the effect on the heart if one of the branches is blocked.
19. Demonstrate the monitoring equipment used to detect cardiac electrical activity.
20. Prepare equipment/materials for monitoring.
21. Demonstrate electrode placement for basic arrhythmia monitoring.
22. Optimize contact between electrode and skin.
23. Select a lead that gives good wave visibility for arrhythmia interpretation.
24. Cite specifications of the graph paper used to display cardiac electrical activity.
25. Given the standardized speed at which EKG graph paper is run through the EKG machine, identify the time intervals associated with each of the following:
 - a. time notches in the margins
 - b. one small box
 - c. one large box
26. Given a calibrated tracing, identify the voltage associated with each of the following:
 - a. one small box
 - b. one large box
27. Relate the components of a single cardiac cycle to the electrophysiological events that created them.
28. Differentiate between the following graphic deflections:
 - a. wave
 - b. segment
 - c. interval
 - d. complex
29. Given a single cardiac cycle, locate each of the following components and describe the electrical events that created it:
 - a. P wave
 - b. PR segment
 - c. PR interval
 - d. Q wave
 - e. R wave
 - f. S wave
 - g. QRS complex
 - h. ST segment
 - i. T wave
30. Give the normal time duration for each of the following:
 - a. PR interval
 - b. QRS complex
31. Identify the two phases of the refractory period.

32. Identify the vulnerable phase of the cardiac cycle.
33. Recognize deflections on an EKG tracing that were created by something other than cardiac electrical activity.
34. Differentiate between a single cardiac cycle and an EKG rhythm strip.
35. Relate the use of a systematic analysis format to the eventual interpretation of an arrhythmia.
36. Outline the five components of an organized approach to rhythm strip analysis.
37. Describe the pertinent aspects of a systematic analysis of regularity, including R–R intervals, P–P intervals, patterns, and ectopics.
38. Describe the pertinent aspects of a systematic analysis of *rate*.
39. Describe the pertinent aspects of a systematic analysis of *P waves*, including location, morphology, and patterns.
40. Describe the pertinent aspects of systematic analysis of *PR intervals*, including duration, changes, and patterns.
41. Describe the pertinent aspects of a systematic analysis of *QRS complexes*, including duration, morphology, and patterns.
42. Describe the characteristics of a sinus pacemaker.
43. Outline the physiologic mechanisms common to the sinus node.
44. Describe the expected path of conduction for an impulse originating from a sinus pacemaker.
45. Identify EKG features common to all arrhythmias in the sinus category.
46. Outline the identifying features specific to each of the arrhythmias originating in the sinus node.
47. Describe *Normal Sinus Rhythm*, including etiology, conduction, and resulting EKG features (regularity, rate, P waves, PR intervals, and QRS complexes).
48. Describe *Sinus Bradycardia*, including etiology, conduction, and resulting EKG features (regularity, rate, P waves, PR intervals, and QRS complexes).
49. Describe *Sinus Tachycardia*, including etiology, conduction, and resulting EKG features (regularity, rate, P waves, PR intervals, and QRS complexes).
50. Describe *Sinus Arrhythmia*, including etiology, conduction, and resulting EKG features (regularity, rate, P waves, PR intervals, and QRS complexes).

Module #2 – Chapters 5 & 6

Material Covered:

Walraven Basic Arrhythmia

Assessments:

Chapter Quizzes

Module #2 Test

Learning Outcomes:

- 1) Describe the characteristics of an atrial pacemaker.
- 2) Outline the physiologic mechanisms common to atrial pacemakers.
- 3) Describe the expected path of conduction for an impulse originating from within the atrium.

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- 4) Identify EKG features common to all arrhythmias in the atrial category.
- 5) Outline the identifying features specific to each of the arrhythmias originating within the atrium.
- 6) Describe *Wandering Pacemaker*, including etiology, conduction, and resulting EKG features (regularity, rate, P waves, PR intervals, and QRS complexes).
- 7) Describe *Premature Atrial Complexes*, including etiology, conduction, and resulting EKG features (regularity, rate, P waves, PR intervals, and QRS complexes).
- 8) Describe *Atrial Tachycardia*, including etiology, conduction, and resulting EKG features (regularity, rate, P waves, PR intervals, and QRS complexes).
- 9) Describe *Atrial Flutter*, including etiology, conduction, and resulting EKG features (regularity, rate, P waves, PR intervals, and QRS complexes).
- 10) Describe *Atrial Fibrillation*, including etiology, conduction, and resulting EKG features (regularity, rate, P waves, PR intervals, and QRS complexes).
- 11) Describe the characteristics of a junctional pacemaker.
- 12) Outline the physiologic mechanisms common to junctional pacemakers.
- 13) Describe the expected path of conduction for an impulse originating in the AV junction.
- 14) Identify EKG features common to all arrhythmias in the junctional category.
- 15) Outline the identifying features specific to each of the arrhythmias originating in the AV junction.
- 16) Describe *Premature Junctional Complexes*, including etiology, conduction, and resulting EKG features (regularity, rate, P waves, PR intervals, and QRS complexes).
- 17) Describe *Junctional Escape Rhythm*, including etiology, conduction, and resulting EKG features (regularity, rate, P waves, PR intervals, and QRS complexes).
- 18) Describe *Junctional Tachycardia*, including etiology, conduction, and resulting EKG features (regularity, rate, P waves, PR intervals, and QRS complexes).
- 19) Describe *Accelerated Junctional Rhythm*, including etiology, conduction, and resulting EKG features (regularity, rate, P waves, PR intervals, and QRS complexes).
- 20) Describe the term *Supraventricular Tachycardia*, and define circumstances in which it can be used appropriately.

Module #3 – Chapters 7&8

Material Covered:

Walraven Basic Arrhythmia

Assessments:

Chapter Quizzes

Module #3 Test

Learning Outcomes:

- 1) Describe the characteristics of the category of arrhythmias known as AV heart blocks.
- 2) Outline the physiologic mechanisms involved in AV heart block.
- 3) Describe the conduction defects encountered in AV heart blocks.
- 4) Identify EKG features common to all arrhythmias in the heart block category.

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- 5) Outline the identifying features specific to each of the arrhythmias included in the heart block category.
- 6) Describe *First-Degree Heart Block*, including etiology, conduction, and resulting EKG features (regularity, rate, P waves, PR intervals, and QRS complexes).
- 7) Describe Type I *Second-Degree Heart Block (Wenckebach)*, including etiology, conduction, and resulting EKG features (regularity, rate, P waves, PR intervals, and QRS complexes).
- 8) Describe *Type II Second-Degree Heart Block*, including etiology, conduction, and resulting EKG features (regularity, rate, P waves, PR intervals, and QRS complexes).
- 9) Describe *Third-Degree Heart Block*, including etiology, conduction, and resulting EKG features (regularity, rate, P waves, PR intervals, and QRS complexes).
- 10) Describe the characteristics of a ventricular pacemaker.
- 11) Outline the physiologic mechanisms common to ventricular pacemakers.
- 12) Describe the expected path of conduction for an impulse originating in the ventricles.
- 13) Identify EKG features common to all arrhythmias in the ventricular category.
- 14) Outline the identifying features specific to each of the arrhythmias originating in the ventricles.
- 15) Describe Premature Ventricular Complexes, including etiology, conduction, and resulting EKG features (regularity, rate, P waves, PR intervals, and QRS complexes).
- 16) Describe Ventricular Tachycardia, including etiology, conduction, and resulting EKG features (regularity, rate, P waves, PR intervals, and QRS complexes).
- 17) Describe Ventricular Fibrillation, including etiology, conduction, and resulting EKG features (regularity, rate, P waves, PR intervals, and QRS complexes).
- 18) Describe Idioventricular Rhythm, including etiology, conduction, and resulting EKG features (regularity, rate, P waves, PR intervals, and QRS complexes).
- 19) Describe Asystole, including etiology, conduction, and resulting EKG features (regularity, rate, P waves, PR intervals, and QRS complexes).

****Students – please refer to the Instructor’s Course Information sheet for specific information on assessments and due dates.***

Part III: Grading and Assessment

EVALUATION OF REQUIRED COURSE MEASURES/ARTIFACTS*

Students’ performance will be assessed and the weight associated with the various measures/artifacts are listed below.

EVALUATION*

Tests	60%
Quizzes	15%
<u>Final Exam</u>	<u>25%</u>
	100%

****Students, for the specific number and type of evaluations, please refer to the Instructor’s Course Information Sheet.***

GRADING SYSTEM:

HGTC has a standardized grading scale for academic courses. The grading scale is:

- A: 90%-100%
- B: 80%-89%
- C: 70%-79%
- D: 60%-69%
- F: below 60%

Grades earned in courses impact academic progression and financial aid status. Before withdrawing from a course, be sure to talk with your instructor and financial aid counselor about the implications of that course of action. Ds, Fs, Ws, WFs and Is also negatively impact academic progression and financial aid status.

The Add/Drop Period is the first 5 days of the semester for **full term** classes. Add/Drop periods are shorter for accelerated format courses. Please refer to the academic calendar for deadlines for add/drop ([ACADEMIC CALENDAR](#)). You must attend at least one meeting of all of your classes during that period. If you do not, you will be dropped from the course(s) and your Financial Aid will be reduced accordingly.

Part IV: Attendance

Horry-Georgetown Technical College maintains a general attendance policy requiring students to be present for a minimum of eighty percent (80%) of his or her classes in order to be eligible to receive credit for any course. However, due to the varied nature of courses taught at the College, a more rigid attendance policy may be required by individual instructors. At a minimum, a student may be withdrawn from a course(s) after he or she has been absent in excess of ten percent (10%) of the total contact hours for a course. **Instructors define absentee limits for their class at the beginning of each term; please refer to the Instructor Course Information Sheet.**

For online and hybrid courses, check your Instructor's Course Information Sheet for any required on-site meeting times. Please note, instructors may require tests to be taken at approved testing sites, if you use a testing center other than those provided by HGTC, the center may charge a fee for its services.

Part V: Student Resources



The Student Success and Tutoring Center (SSTC)

The SSTC offers to all students the following **free** resources:

1. **Academic coaches** for most subject areas, **Writing Center Support**, and **college success skills**.
2. **On-line student success and academic support resources**.

Visit the SSTC website: [Student Success & Tutoring Center](#) and visit the student services tab in your WaveNet account to schedule appointments using TutorTrac. For more information, call: SSTC Conway, 349-7872; SSTC Grand Strand, 477-2113; and SSTC Georgetown, 520-1455. Room locations and Live Chat is available on the SSTC website.



Student Information Center: WaveNet Central (WNC)

WNC offers to all students the following **free** resources:

1. **Getting around HGTC:** General information and guidance for enrollment!
2. Use the [Online Resource Center \(ORC\)](#) for COMPASS support, technology education, and online tools.
3. **Drop-in technology support or scheduled training** in the Center or in class.
4. **In-person workshops, online tutorials and more services** are available.

Visit the WNC website: [Wavenet Central](#). Live Chat and Center locations are posted on the website. Or please call one of the following locations: WNC Conway, 349-5182; WNC Grand Strand, 477-2076; and WNC Georgetown, 520-1473.

Student Testing: (If course is offered in multiple format include this section, delete if only F2F sections are offered.)

Testing in an **online/hybrid** course may be accomplished in a variety of ways:

- Test administered within D2L
- Test administered in writing on paper
- Test administered through Publisher Platforms

Further more tests may have time limits and/or require a proctor.

Proctoring can be accomplished either face-to-face at an approved site or online through RPNOW, our online proctoring service. To find out more about proctoring services, please visit the [Online Testing](#) section of the HGTC's Testing Center webpage.

The **Instructor Information Sheet** will have more details on test requirements for your course.

Disability Services

HGTC is committed to providing an accessible environment for students with disabilities. Inquiries may be directed to Jocelyn Williams, Director of Student Development on the Conway Campus Jaime Davis, Counselor/Advisor on the Georgetown Campus or Kristin Griffin, Counselor on the Grand Strand Campus. These individuals will review documentation of the student's disability and, in a confidential setting with the student, develop an educational accommodation plan.

Note: It is the student's responsibility to self-identify as needing accommodations and to provide acceptable documentation. After a student has self-identified and submitted documentation of a disability, accommodations may be determined, accepted, and provided.

Statement of Equal Opportunity/Non-Discrimination Statement

Horry Georgetown Technical College prohibits discrimination and harassment, including sexual harassment and abuse, on the basis of race, color, gender, national or ethnic origin, age, religion, disability, marital status, veteran status, sexual orientation, gender identity, or pregnancy in educational programs and/or activities.

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Title IX Requirements

Horry Georgetown Technical College prohibits the offenses of domestic violence, dating violence, sexual assault, and stalking. Any student who believe he or she has experienced or witnessed discrimination including sexual harassment, domestic violence, dating violence, sexual assault or stalking is encouraged to report such incidents to one of the College's Title IX Coordinators.

*Faculty and Staff are required to report incidents to the Title IX Coordinators when involving students. The only HGTC employees exempt from mandatory reporting are licensed mental health professionals (only as part of their job description such as counseling services).

Inquiries regarding the non-discrimination policies:	
Student and prospective student inquiries concerning Section 504, Title II, and Title IX and their application to the College or any student decision may be directed to the Associate Vice President for Student Affairs.	Employee and applicant inquiries concerning Section 504, Title II, and Title IX and their application to the College may be directed to the Associate Vice President for Human Resources.
Dr. Melissa Batten, AVP Student Affairs <i>Title IX Coordinator</i> Building 1100, Room 107A, Conway Campus PO Box 261966, Conway, SC 29528-6066 843-349-5228 Melissa.Batten@hgtc.edu	Jacquelyne Synder, AVP Human Resources <i>Section 504, Title II, and Title IX Coordinator</i> Building 200, Room 212A, Conway Campus PO Box 261966, Conway, SC 29528-6066 843-349-5212 Jacquelyne.Snyder@hgtc.edu