

## Course Syllabus

What you will learn in this course

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### **EKG Technician 1b: Analysis and Response**

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Does the thought of becoming an EKG Technician still make your heart skip a beat? Continue your journey through the peaks and valleys of EKG waves and really dig into the details of the cardiac code to fulfill your ultimate goal: saving lives! This course will prepare you to interpret different EKG waves, how to spot wave abnormalities, how to differentiate between different disorders, and how to treat those disorders. Let's get ready to continue your adventure into the world of cardiology and a possible career as a EKG Technician!

### **Unit 1: Patient Care Considerations**

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The little things we do when caring for patients make all the difference in how well a test or a procedure goes. As we explore patient care considerations, we'll look at the things we do and say before, during, and after a procedure as part of care delivery. We'll investigate ways to keep the

patient safe, the best ways to communicate, and the steps to take throughout the testing process. Together, we'll find the best ways to make our patients our priority!

## What will you learn in this unit?

1. Describe universal precautions and the personal protective equipment used to keep healthcare providers and patients safe
2. Explain the proper ways to transfer and transport patients
3. Analyze vital signs in order to assess for abnormalities and provide first aid and emergency response, if needed
4. Identify the ways to prepare patients mentally and physically for a procedure
5. Name the steps of the pre-EKG process along with precautions and safety measures

<b>UNIT 1 Assignments</b>	
<b>Assignment</b>	<b>Type</b>
Unit 1 Critical Thinking Questions	Homework
Unit 1 Activity 1	Homework
Unit 1 Activity 2	Homework
Unit 1 Activity 3	Homework
Unit 1 Activity 4	Homework
Unit 1 Discussion 1	Discussion
Unit 1 Discussion 2	Discussion
Unit 1 Quiz	Quiz

## Unit 2: What's in a Wave? The EKG Strip

Armed with the knowledge of how to provide the best patient care, we're getting closer to using our skills as EKG techs. Before performing EKGs on patients, we need to understand exactly what we're recording and what that wave really means. During our exploration of what seems to be a tiny wave on graph paper, we'll see how the information contained in that wave is a lot more than meets the eye. Let's break down each part of an EKG strip and find out what's in a wave!

## What will you learn in this unit?

1. Describe the parts of the PQRST wave, including measurements for each part
2. Discuss ways to calculate the heart rate
3. Define the electrical axis and describe its relationship to the EKG leads
4. Explain the purpose of pacemakers and identify pacemaker spikes on the EKG strip
5. Analyze EKG artifacts and take steps to correct them

UNIT 2 Assignments	
Assignment	Type
Unit 2 Critical Thinking Questions	Homework
Unit 2 Activity 1	Homework
Unit 2 Activity 2	Homework
Unit 2 Activity 3	Homework
Unit 2 Activity 4	Homework
Unit 2 Discussion 1	Discussion
Unit 2 Discussion 2	Discussion
Unit 2 Quiz	Quiz

## Unit 3: Normal and Sinus Rhythms

To determine what's abnormal in an EKG, we first need to understand what's normal. As we decipher the characteristic PQRST wave, we'll see what sinus rhythm is and break down variations of this type of waveform, including the impact on patients and the proper response by healthcare professionals. So, is a sinus rhythm good or bad for the patient? In this quest, we'll dissect the parts of the EKG wave to find the answer!

## What will you learn in this unit?

1. Describe and recognize normal sinus rhythm
2. Explain sinus tachycardia
3. Identify sinus bradycardia
4. Interpret sinus arrhythmia

5. Elucidate sinus pause, sinus arrest, and junctional escape beats

<b>UNIT 3 Assignments</b>	
<b>Assignment</b>	<b>Type</b>
Unit 3 Critical Thinking Questions	Homework
Unit 3 Activity 1	Homework
Unit 3 Activity 2	Homework
Unit 3 Discussion 1	Discussion
Unit 3 Discussion 2	Discussion
Unit 3 Quiz	Quiz

## **Unit 4: When It's Not Sinus: Arrhythmias**

Just like any complex system, the electrical conduction system of the heart doesn't always function as it should. During this learning adventure, we'll investigate various types of arrhythmias and learn how to recognize them. As you might guess, an EKG tech plays a key role in initiating quick responses to some of them! Do you want to learn more about the part you'll play as a member of a healthcare team? Let's find out what happens when it's not sinus rhythm but an arrhythmia!

### **What will you learn in this unit?**

1. Identify and respond to atrial, ventricular, and junctional arrhythmias
2. Differentiate between normal sinus rhythm and dysrhythmias and report them appropriately
3. Define the cardiac alarm policy and its importance at any healthcare facility

<b>UNIT 4 Assignments</b>	
<b>Assignment</b>	<b>Type</b>
Unit 4 Critical Thinking Questions	Homework
Unit 4 Activity 1	Homework

Unit 4 Activity 2	Homework
Unit 4 Discussion 1	Discussion
Unit 4 Discussion 2	Discussion
Unit 4 Quiz	Quiz

## EKG Technician 1b Midterm Exam

- Review information acquired and mastered from this course up to this point.
- Take a course exam based on material from the **first** half of the course (Note: You will be able to open this exam only one time.)

<b>MIDTERM</b> Assignments	
Assignment	Type
Midterm Exam	Exam
Midterm Discussion	Discussion

## Unit 5: Changes in the Strip: Abnormalities

With so many possible conditions impacting the way the heart functions, we need a way to help identify what's really going on. During this part of our EKG investigation, we'll look at various abnormalities to examine their causes and their appearance on the strip. As we'll see, recognizing these changes is the key to a healthcare worker's response to and report of irregular findings. It's time to learn how to decode the meaning of changes in the strip!

### What will you learn in this unit?

1. Explain the physiology behind bundle branch blocks and identify them on an EKG
2. Differentiate between first- and second-degree heart blocks and recognize them on the EKG
3. Describe third-degree heart blocks and recognize them on the EKG
4. Define chamber enlargement and hypertrophy and recognize them on the EKG
5. Distinguish between normal and abnormal EKG findings for pacemakers or implantable cardioverter defibrillators

## UNIT 5 Assignments

Assignment	Type
Unit 5 Critical Thinking Questions	Homework
Unit 5 Activity 1	Homework
Unit 5 Activity 2	Homework
Unit 5 Discussion 1	Discussion
Unit 5 Discussion 2	Discussion
Unit 5 Quiz	Quiz

## Unit 6: Identifying Ischemia, Injury, and Infarction

Before we began our in-depth study of cardiac arrhythmias and abnormalities, the first condition that probably would have come to mind if you were asked about the heart would have been a heart attack. Although that answer isn't wrong, as we've seen, we need to know much more to diagnose a patient. As we continue our study, we'll see that not all chest pain means that the patient is having or has had a heart attack! In fact, this condition can be further divided into what type of damage has occurred and how the EKG demonstrates this damage. Let's learn about cardiopulmonary compromise, myocardial ischemia, injury, and infarction to get a better idea of how to decipher the EKG for each type of patient!

### What will you learn in this unit?

1. Recognize cardiopulmonary compromise by its signs, symptoms, and the EKG to respond appropriately
2. Analyze signs, symptoms, and EKG changes to identify myocardial ischemia, injury, and ST elevated myocardial infarction
3. Identify non-ST elevated myocardial ischemia and other ischemias
4. Describe the qualities of effective leaders and team members as well as the roles they play in improving the healthcare environment

## UNIT 6 Assignments

Assignment	Type
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Unit 6 Critical Thinking Questions	Homework
Unit 6 Activity 1	Homework
Unit 6 Activity 2	Homework
Unit 6 Discussion 1	Discussion
Unit 6 Discussion 2	Discussion
Unit 6 Quiz	Quiz

## Unit 7: The Effects of Drugs and Other Chemicals

Medications provide a way to improve patient conditions. While a medication is doing its job, it may also create certain side effects. To gain a clearer understanding of how drugs and other chemicals affect patients and their heart rhythms, we need to perform a more in-depth investigation. As we take a closer look, we'll see how these chemicals work to change body function, we'll examine any adverse reactions, and we'll learn how each changes an EKG strip.

### What will you learn in this unit?

1. Describe common cardiovascular drugs inside and outside of Classes I–IV, including their mechanism of action and adverse effects
2. Identify EKG changes related to cardiovascular drugs and distinguish normal changes from abnormal ones
3. Understand electrolyte imbalances and their effects on the EKG
4. Explain how the EKG tech uses critical thinking and problem solving to identify the causes of the patient's problem and possible solutions

<b>UNIT 7 Assignments</b>	
<b>Assignment</b>	<b>Type</b>
Unit 7 Critical Thinking Questions	Homework
Unit 7 Activity 1	Homework
Unit 7 Activity 2	Homework
Unit 7 Discussion 1	Discussion
Unit 7 Discussion 2	Discussion

## Unit 8: Take a Closer Look: Other Cardiovascular Modalities

As we've seen, the EKG allows healthcare professionals to take a closer look at how well the heart's electrical system is working. Sometimes, the results lead to answers, while in other cases, more questions arise. To help answer those questions, providers use a variety of other types of cardiovascular testing and procedures. As we explore these other options, we'll examine their benefits and risks as well as the reasons one choice is better than another. Let's take a closer look!

### What will you learn in this unit?

1. Describe noninvasive cardiovascular modalities like the cardiovascular reflex test, CT, and MRI
2. Explain the types of cardiovascular ultrasounds
3. Differentiate between radiographic cardiovascular imaging and nuclear cardiovascular imaging
4. Outline invasive diagnostic and interventional cardiovascular procedures
5. Identify surgical cardiovascular treatments and developments in treatment options

### UNIT 8 Assignments

Assignment	Type
Unit 8 Critical Thinking Questions	Homework
Unit 8 Activity 1	Homework
Unit 8 Activity 2	Homework
Unit 8 Activity 3	Homework
Unit 8 Activity 4	Homework
Unit 8 Discussion 1	Discussion
Unit 8 Discussion 2	Discussion
Unit 8 Quiz	Quiz

## EKG Technician 1b Final Exam

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- Review information acquired and mastered from this course up to this point.
- Take a course exam based on material from the **second** half of the course (Note: You will be able to open this exam only one time.)

<b>FINAL</b> Assignments	
<b>Assignment</b>	<b>Type</b>
Final Exam	Exam
Final Exam Discussion	Discussion

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