

Radio Receivers

Information Flow Series

Instructor's Guide

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DEVELOPED BY THE TEACHING AND LEARNING LABORATORY AT MIT
FOR THE SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN



Introduction

When to Use this Video

- In Phys 201 or a circuits course
- Prior knowledge: basic circuits, and how inductors, capacitors, and AM transmitters work

Learning Objectives

After watching this video students will be able to explain how a basic radio receiver circuit functions to select particular radio frequencies.

Motivation

This video prompts students to think about all of the devices around them that transmit and receive signals. This video provides nice motivation and concrete application of concepts students may be learning in class.

Student Experience

It is highly recommended that the video is paused when prompted so that students are able to attempt the activities on their own and then check their solutions against the video.

During the video, students will use a circuit diagram to identify the components of a radio receiver.

Key Information

Duration: 12:07

Narrator: Elena Glassman

Materials Needed:

- paper
- pencil

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Video Highlights

This table outlines a collection of activities and important ideas from the video.

Time	Feature	Comments
0:50	Prerequisites and Learning Objectives	
1:08	Chapter 1: Amateur Radio	
4:11	Chapter 2: Regenerative Circuits	
5:44	A trombone is used as an analogy to explain how a parallel inductor and capacitor work.	
9:50	Chapter 3: The Radio Spectrum	
11:00	To Review	

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Video Summary

This video prompts students to think about how radio receivers select for a particular signal out of all of the radio waves around them. Students see how the components in the regenerative receiver circuit work together to dampen unwanted frequencies, while selectively amplifying and demodulating a desired AM signal.

Phys 101 Materials

Pre-Video Materials

When appropriate, this guide is accompanied by additional materials to aid in the delivery of some of the following activities and discussions.



1. The STEM Concept Video, Maxwell's Equations (www.youtube.com/edit?o=U&video_id=zwTODL8HFqw), provides a nice overview of AM Radio broadcasting.

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Additional Resources

References

The following resources may be useful if you are interested in learning more about amateur radio.

- The National Association for Amateur Radio: <http://www.arrl.org/licensing-education-training>
- U.S. Federal Communications Commission Amateur Radio Service: http://wireless.fcc.gov/services/index.htm?job=service_home&id=amateur

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RES.TLL.004 STEM Concept Videos
Fall 2013

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