

HACC, Central Pennsylvania's Community
College

Introduction to Physical Science

Robert M Wagner

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CHAPTER OVERVIEW

1: What is Science?

Topic hierarchy

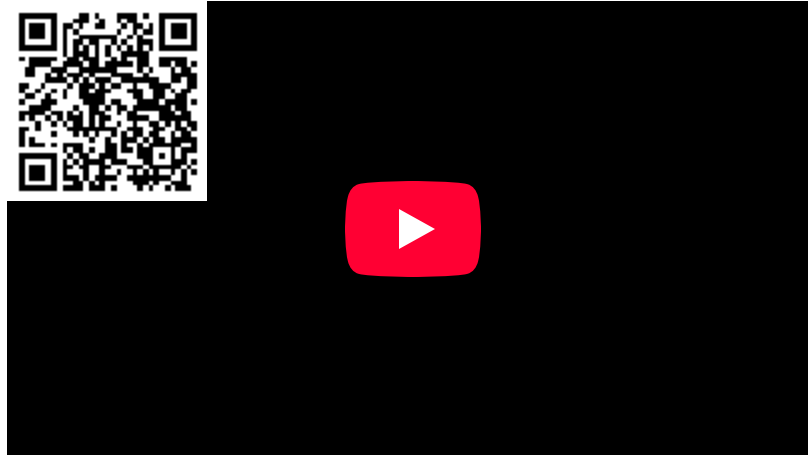
- 1.1: Lecture 1 - What is Science?
- 1.2: Lecture 2 - Physical Quantities and Units
- 1.3: Lecture 3 - Accuracy, Precision, and Significant Figures

This lesson is based on Chapter 1 of the OpenStax College Physics textbook. Each section of the chapter will include my lecture slides as well as an embedded link to my YouTube video for that lecture.

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1.1: Lecture 1 - What is Science?

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1.3: Lecture 3 - Accuracy, Precision, and Significant Figures

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2: Motion in One Dimension

Topic hierarchy

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- [2.2: Lecture 2 - Velocity and Acceleration](#)
- [2.3: Lecture 3 - Equations of Motion](#)
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This lesson is based on Chapter 2 (2.1-2.7) and Chapter 4 (4.1-4.4) and Chapter 6 (6.5) of the OpenStax College Physics textbook. Each section of the chapter will include my lecture slides as well as an embedded link to my YouTube video for that lecture.

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2.1: Lecture 1 - Vectors and Scalars

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2.3: Lecture 3 - Equations of Motion

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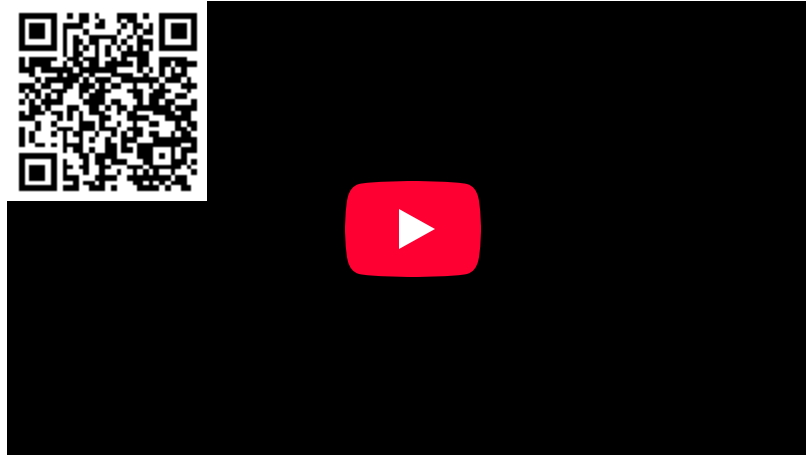
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This lesson is based on Chapter 7 (7.1-7.7) and Chapter 8 (8.1-8.4) of the OpenStax College Physics textbook. Each section of the chapter will include my lecture slides as well as an embedded link to my YouTube video for that lecture.

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3.1: Lecture 1 - Work and Kinetic Energy

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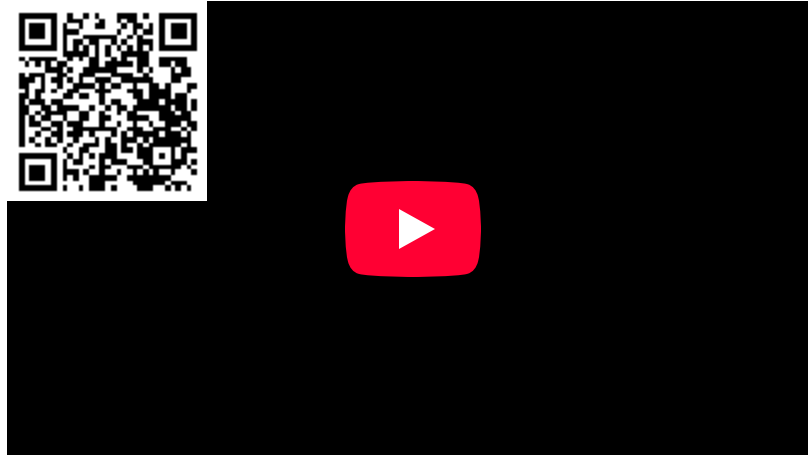
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3.3: Lecture 3 - Conservation of Energy

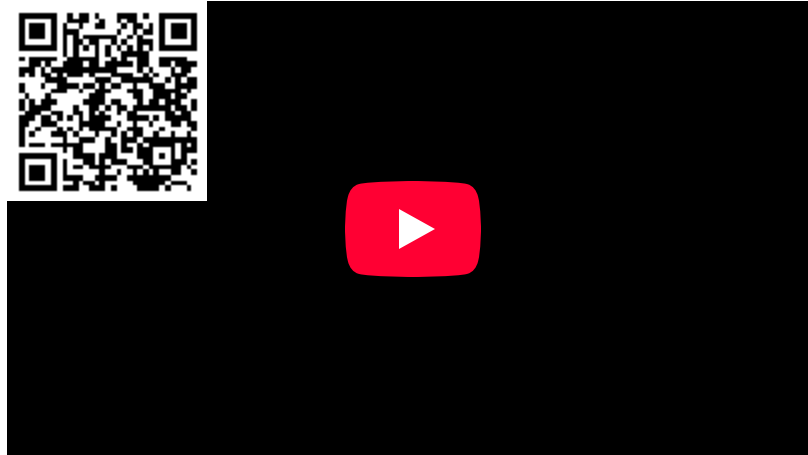
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3.5: Lecture 5 - Momentum and Impulse

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4: Heat

Topic hierarchy

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- 4.2: Lecture 2 - The Ideal Gas Law
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This lesson is based on Chapter 3 (13.1-13.3, & 13.5) and Chapter 14 (14.1-14.7) and Chapter 15 (15.1-15.3) of the OpenStax College Physics textbook. Each section of the chapter will include my lecture slides as well as an embedded link to my YouTube video for that lecture.

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4.1: Lecture 1 - Temperature

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4.2: Lecture 2 - The Ideal Gas Law

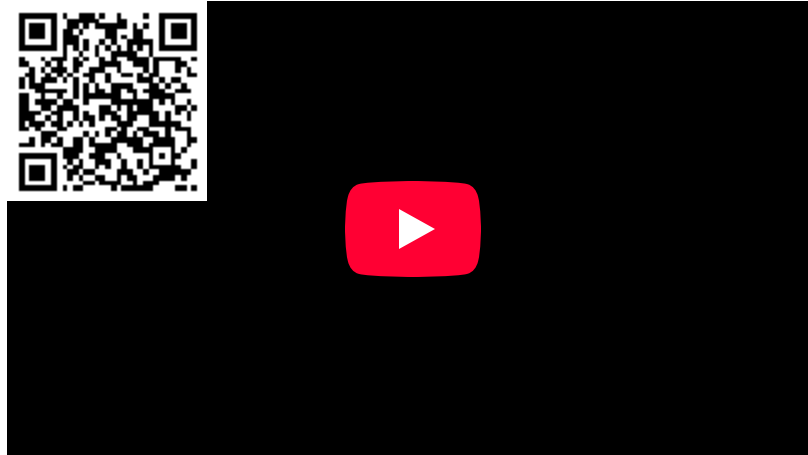
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4.4: Lecture 4 - Latent Heat

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4.5: Lecture 5 - Heat Transfer

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4.6: Lecture 6 - Thermodynamics

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5: Oscillations and Waves

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- [5.2: Lecture 2 - Simple Harmonic Motion](#)
- [5.3: Lecture 3 - Waves](#)
- [5.4: Lecture 4 - Sound](#)
- [5.5: Lecture 5 - Doppler Effect](#)

This lesson is based on Chapter 16 (16.1-16.4 & 16.8-16.10) and Chapter 17 (17.1-17.4) of the OpenStax College Physics textbook. Each section of the chapter will include my lecture slides as well as an embedded link to my YouTube video for that lecture.

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5.1: Lecture 1 - Oscillations

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5.2: Lecture 2 - Simple Harmonic Motion

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5.3: Lecture 3 - Waves

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5.4: Lecture 4 - Sound

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CHAPTER OVERVIEW

6: Electricity and Magnetism

Topic hierarchy

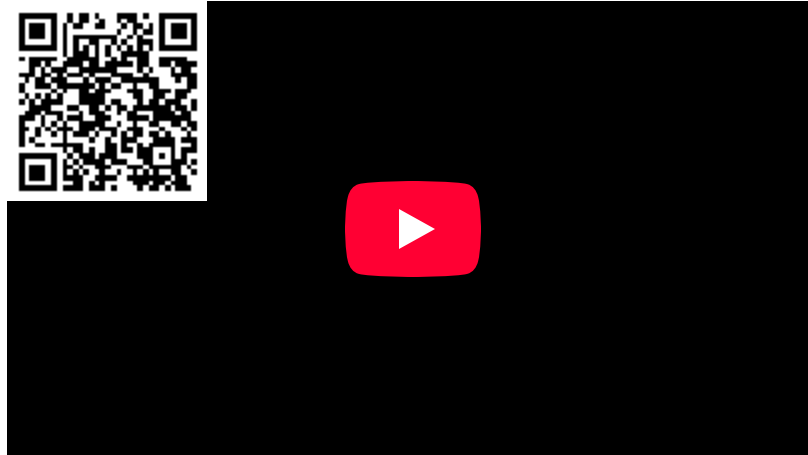
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- 6.2: Lecture 2 - Electric Current and Ohm's Law
- 6.3: Lecture 3 - Resistance and Electric Power
- 6.4: Lecture 4 - Electric Circuits
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This lesson is based on Chapter 18 (18.1-18.3) and Chapter 19 (19.1) and Chapter 20 (20.1-20.4) and Chapter 21 (21.1 & 21.3) and Chapter 22 (22.1-22.3) of the OpenStax College Physics textbook.

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6.1: Lecture 1 - Electric Fields and Coulomb's Law

The lesson is based on section 18.1-18.3 & 19.1 in the OpenStax College Physics textbook. The lecture slides are provided in [PowerPoint](#), [Keynote](#), and [pdf](#) formats.



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6.2: Lecture 2 - Electric Current and Ohm's Law

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6.3: Lecture 3 - Resistance and Electric Power

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6.4: Lecture 4 - Electric Circuits

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6.5: Lecture 5 - Kirchhoff's Rules

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6.6: Lecture 6 - Magnetism

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CHAPTER OVERVIEW

7: Electromagnetic Radiation

Topic hierarchy

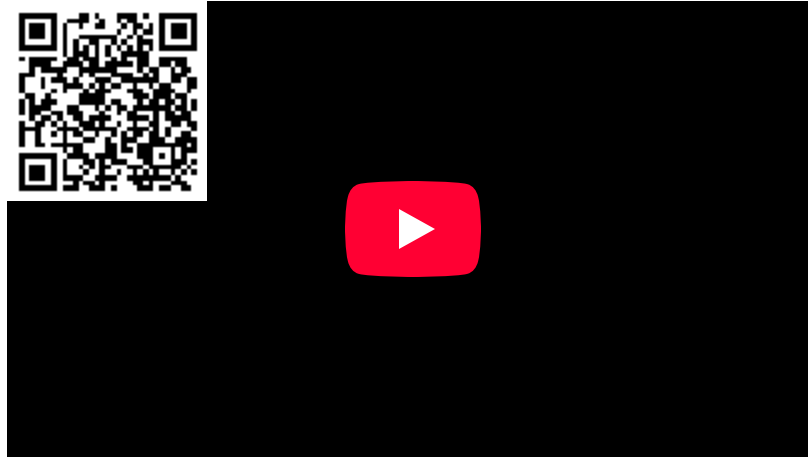
- [7.1: Lecture 1 - Electromagnetic Waves](#)
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- [7.7: Lesson 7 - Microscopes and Telescopes](#)

This lesson is based on Chapter 24 (24.1-24.4) and Chapter 25 (25.1-25.6) and Chapter 26 (26.1-26.2 & 26.4-26.6) of the OpenStax College Physics textbook. Each section of the chapter will include my lecture slides as well as an embedded link to my YouTube video for that lecture.

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7.1: Lecture 1 - Electromagnetic Waves

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7.2: Lecture 2 - Electromagnetic Spectrum

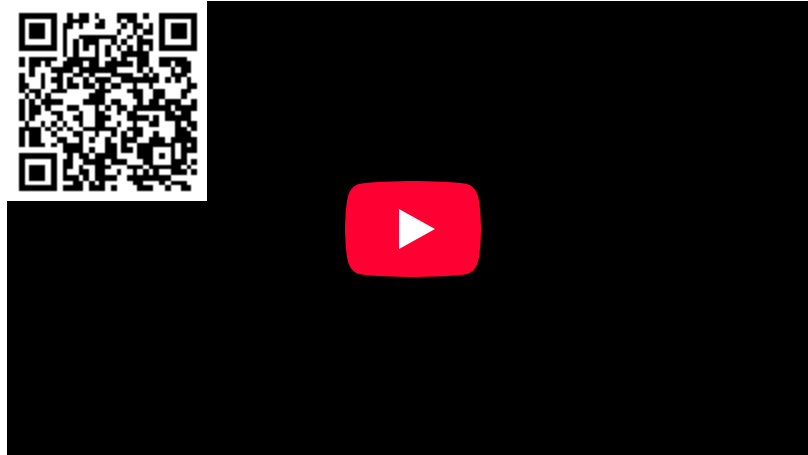
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7.3: Lecture 3 - Optics- Reflection and Refraction

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CHAPTER OVERVIEW

8: Midterm Exam

Topic hierarchy

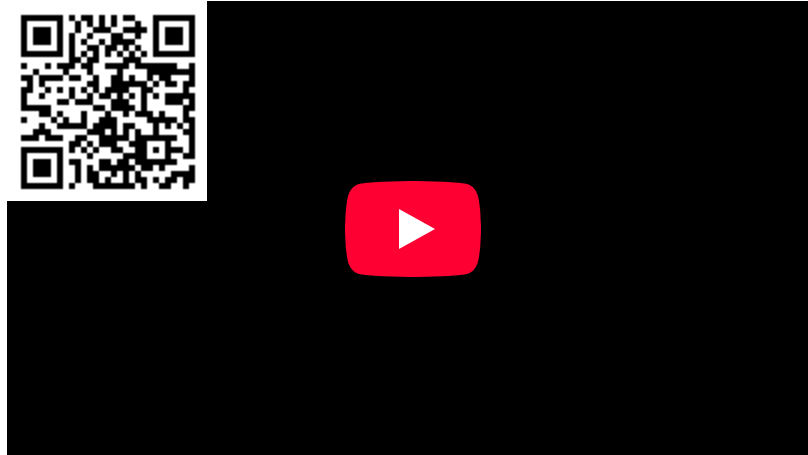
[8.1: Lecture 1 - Midterm Exam](#)

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8.1: Lecture 1 - Midterm Exam

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CHAPTER OVERVIEW

9: Atoms and Periodic Properties

Topic hierarchy

9.1: Lecture 1 - Atomic Theory

9.2: Lecture 2 - Atomic Structure and Chemical Formulae

9.3: Lecture 3 - The Periodic Table

9.4: Lecture 4 - Compounds and Nomenclature

This lesson is based on Chapter 2 of the OpenStax Chemistry textbook. Each section of the chapter will include my lecture slides as well as an embedded link to my YouTube video for that lecture.

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9.1: Lecture 1 - Atomic Theory

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9.2: Lecture 2 - Atomic Structure and Chemical Formulae

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9.3: Lecture 3 - The Periodic Table

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9.4: Lecture 4 - Compounds and Nomenclature

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CHAPTER OVERVIEW

10: Molarity and Chemical Equations

Topic hierarchy

[10.1: Lecture 1 - Formula Mass and the Mole Concept](#)

[10.2: Lecture 2 - Molarity](#)

[10.3: Lecture 3 - Balancing Chemical Equations](#)

[10.4: Lecture 4 - Classifying Chemical Reactions](#)

This lesson is based on Chapter 3 (3.1-3.3) and Chapter 4 (4.1-4.2) of the OpenStax Chemistry 2e textbook. Each section of the chapter will include my lecture slides as well as an embedded link to my YouTube video for that lecture.

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10.1: Lecture 1 - Formula Mass and the Mole Concept

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10.2: Lecture 2 - Molarity

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10.3: Lecture 3 - Balancing Chemical Equations

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10.4: Lecture 4 - Classifying Chemical Reactions

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CHAPTER OVERVIEW

11: Models and Bonding

Topic hierarchy

- [11.1: Lecture 1 - Quantizations and the Bohr Model](#)
- [11.2: Lecture 2 - Quantum Theory](#)
- [11.3: Lecture 3 - Electron Configurations](#)
- [11.4: Lecture 4 - Ionic and Covalent Bonding](#)
- [11.5: Lecture 5 - Lewis Symbols](#)

This lesson is based on Chapter 6 (6.1-6.4) and Chapter 7 (7.1-7.3) of the OpenStax Chemistry 2e textbook. Each section of the chapter will include my lecture slides as well as an embedded link to my YouTube video for that lecture.

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11.1: Lecture 1 - Quantizations and the Bohr Model

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11.2: Lecture 2 - Quantum Theory

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11.3: Lecture 3 - Electron Configurations

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11.4: Lecture 4 - Ionic and Covalent Bonding

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11.5: Lecture 5 - Lewis Symbols

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CHAPTER OVERVIEW

12: Water and Solutions

Topic hierarchy

[12.1: Lecture 1 - Solutions](#)

[12.2: Lecture 2 - Solubility](#)

[12.3: Lecture 3 - Acids and Bases, pH](#)

[12.4: Lecture 4 - Strengths of Acids and Bases](#)

This lesson is based on Chapter 11 (11.1-11.3) and Chapter 14 (14.1-14.3) of the OpenStax Chemistry 2e textbook. Each section of the chapter will include my lecture slides as well as an embedded link to my YouTube video for that lecture.

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12.1: Lecture 1 - Solutions

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12.2: Lecture 2 - Solubility

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12.3: Lecture 3 - Acids and Bases, pH

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12.4: Lecture 4 - Strengths of Acids and Bases

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CHAPTER OVERVIEW

13: Organic Compounds

Topic hierarchy

- [13.1: Lecture 1 - Hydrocarbons](#)
- [13.2: Lecture 2 - Alcohols and Ethers](#)
- [13.3: Lecture 3 - Aldehydes, Ketones, Carboxylic Acids, and Esthers](#)
- [13.4: Lecture 4 - Amines and Amides](#)

This lesson is based on Chapter 20 of the OpenStax Chemistry 2e textbook. Each section of the chapter will include my lecture slides as well as an embedded link to my YouTube video for that lecture.

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13.1: Lecture 1 - Hydrocarbons

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13.2: Lecture 2 - Alcohols and Ethers

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13.3: Lecture 3 - Aldehydes, Ketones, Carboxylic Acids, and Esthers

The lesson is based on section 20.3 in the OpenStax Chemistry 2e textbook. The lecture slides are provided in [PowerPoint](#), [Keynote](#), and [pdf](#) format.



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13.4: Lecture 4 - Amines and Amides

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CHAPTER OVERVIEW

14: Nuclear Reactions

Topic hierarchy

[14.1: Lecture 1 - Nuclear Structure](#)

[14.2: Lecture 2 - Nuclear Equations](#)

[14.3: Lecture 3 - Radioactive Decay](#)

[14.4: Lecture 4 - Nuclear Energy](#)

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14.1: Lecture 1 - Nuclear Structure

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