Syllabus Mapping:

Introduction to Biology

Chapter 01: Intro to Biology

JoVE Core Chapter 01: Scientific Inquiry

• 1.1: What is Biology?
• 1.2: Levels of Organization

Textbook Mapping: Openstax Biology CH 1 The Study of Life

Chapter 02: Chemistry of Life: Molecules, Water

JoVE Core Chapter 02: Chemistry of Life

• 2.5: Molecules and Compounds
• 2.6: Molecular Shapes
• 2.7 Carbon Skeletons
• 2.14 States of Water

Textbook Mapping: Openstax Biology CH 2 The Chemical Foundation of Life

Chapter 02 (cont): Chemistry of Life: Macromolecules

JoVE Science Education: Introductory Biology

• Macromolecules

JoVE Core Chapter 02: Chemistry of Life

• 2.5: Molecules and Compounds
• 2.6: Molecular Shapes

JoVE Core Chapter 03: Macromolecules

• 3.1 What are Proteins?
• 3.2 Protein Organization
• 3.3 Protein Folding
• 3.4 What are Carbohydrates?
• 3.7 What are Lipids?
• 3.8 What are Nucleic Acids?
Chapter 03: Cell Structure & Function

JoVE Science Education: Introductory Biology
- Cell Structure

JoVE Core Chapter 04: Cell Structure & Function
- Cell Structure and Function Chapter

JoVE Core Chapter 05: Membranes & Cellular Transport
- 5.1 What are Membranes?
- 5.2 Membrane Fluidity
- 5.3 The Fluid Mosaic Model

Textbook Mapping: Openstax Biology CH 4 Cell Structure

Chapter 04: How Cells Obtain Energy

JoVE Science Education: Introductory Biology
- Cellular Respiration

JoVE Core Chapter 08: Cellular Respiration
- 8.1 What is Cellular Respiration?
- 8.4 Energy-releasing Steps of Glycolysis
- 8.5 Outcomes of Glycolysis
- 8.8 Products of the Citric Acid Cycle
- 8.13 Fermentation

Textbook Mapping: Openstax Biology Chapter 6: Metabolism  Openstax Biology CH 7 Cellular Respiration

Chapter 05: Photosynthesis

JoVE Science Education: Introductory Biology
- Photosynthesis

JoVE Core Chapter 09: Photosynthesis
- Photosynthesis Chapter
Chapter 06: Cell Cycle: Mitosis

JoVE Science Education: Introductory Biology
- Cell Division

JoVE Core Chapter 10: Cell Cycle and Division
- 10.1 What is the Cell Cycle?
- 10.2 Genomic DNA in Prokaryotes
- 10.3 Binary Fission
- 10.4 Geonomic DNA in Eukaryotes
- 10.5 Interphase
- 10.6 Mitosis and Cytokinesis

JoVE Science Education: Advanced Biology — Cell Biology
- Live Cell Imaging of Mitosis

Textbook Mapping: Openstax Biology CH 10: Cell Reproduction

Chapter 06 (cont): Cell Cycle: Cell Cycle & Cancer

JoVE Core Chapter 10: Cell Cycle and Division
- 10.9 Cancer

Textbook Mapping: Openstax Biology CH 10: Cell Reproduction

Chapter 07: Sexual Reproduction: Meiosis

JoVE Core Chapter 11: Meiosis
- Meiosis Chapter

JoVE Core Chapter 25: Reproduction and Development
- 25.2: Oogenesis

Textbook Mapping: Openstax Biology CH 11: Meiosis and Sexual Reproduction

Chapter 08: Mendelian Genetics
Chapter 09: Molecular Biology

JoVE Core Chapter 12: Classical and Modern Genetics

- 12.10 Multiple Allele Traits
- 12.11 Chromosomal Theory of Inheritance
- 12.12 Non-nuclear Inheritance
- 12.13 X-linked Traits
- 12.14 Sex-linked Disorders
- 12.15 X-Inactivation

JoVE Core Chapter 13: DNA Structure & Function

- 13.1 The DNA Helix
- 13.2 DNA Packaging
• 13.3 Organization of Genes
• 13.4 Karyotyping
• 13.10 Mutations
• 13.11 Transcription
• 13.12 Translation

Textbook Mapping: Openstax Biology CH 15: Genes and Proteins   Openstax Biology CH 16: Gene Expression

Chapter 10: Mendelian Genetics

JoVE Core Chapter 15: Biotechnology
• CH 15 Biotechnology

Textbook Mapping: Openstax Biology CH 17: Biotechnology and Genomics

Chapter 11: Evolution

JoVE Core Chapter 01: Scientific Inquiry
• 1.8 Phylogeny

JoVE Core Chapter 31: Natural Selection
• Natural Selection Chapter

JoVE Core Chapter 32: Population Genetics
• Population Genetics Chapter

JoVE Core Chapter 33: Evolutionary History
• Evolutionary History Chapter


Chapter 12, 14, 15: Diversity of Life

JoVE Core Chapter 29: Biodiversity and Conservation
• CH 29 Biodiversity and Conservation
JoVE Core Chapter 30: Speciation and Diversity
  • Speciation and Diversity Chapter

Textbook Mapping: Openstax Biology CH 47: Conservation Biology and Biodiversity

Chapter 19: Population and Community Ecology
JoVE Core Chapter 28: Population and Community Ecology
  • CH 28 Population and Community Ecology
Textbook Mapping: Openstax Biology CH 45 Population and Community Ecology

Chapter 20: Ecosystems and Biosphere
JoVE Core Chapter 27: Ecosystems
  • CH 27 Ecosystems
JoVE Core Chapter 01: Scientific Inquiry
  • 1.2: Levels of Organization
Openstax Biology CH 46: Ecosystems

Chapter 13: Diversity of Microbes
JoVE Science Education: Introductory Biology
  • Microbial and Fungal Diversity
Chapter 17: The Immune System and Disease

JoVE Core Chapter 24: Immune System

- CH 24 Immune System

Textbook Mapping: Openstax Biology CH 42 The Immune System