Faculty Transition Guide from Ocean Studies

Logistics

Introduction to Ocean Sciences, 6th Edition (ISBN 978-1-960459-49-7) is available publicly for free via the AMSEDU site and LibreText under a CC-BY-NC-ND 4.0 license. You will no longer need to purchase the book or package through the AMS Education Bookstore.

The book is available via our website and Libretext.org. To receive the faculty resources, including lecture slides, test bank, and chapter progress questions, you may either fill out the adoption form or register for an instructor's account with LibreText.

The Ocean Sciences in Action manual will be available for purchase separately as before, either directly from the AMSEDU Bookstore or your campus bookstore.

Thematic differences

a. *Introduction to Ocean Sciences,* 6th Edition, is a longer and more detailed text than *Ocean Studies*.
b. *Introduction to Ocean Sciences* uses Critical Concepts instead of Learning Objectives. The critical concepts are expanded on at the end of the textbook.
c. *Introduction to Ocean Sciences* chapters are designed to be used in sequence, alone, or in any order. Suggested outlines for a more focused or abbreviated course are included below and in the Faculty Guide.

Chapter by chapter

Ocean Studies	*Introduction to Ocean Sciences*
Introduction	
IC.1&4: Why the Ocean is Important to Us & Humans and the Ocean	16.1-16.5: Impacts of Humans on the Oceans
IC.2: The Oceans and the Origin of Life	1.2: Oceans And The Origins Of Life
IC.3: The Ocean and Earth's Environment	1.3: The Oceans And Earth's Environment
Chapter 1: The Ocean and Earth System	
1.2: Earth as a System	1.3: The Oceans And Earth's Environment
1.3: The Ocean in the Global Water Cycle	5.1: Origins And Distribution Of The Earth's Water
1.4: Observing the Ocean	3.1-2: Difficulties of Studying the Ocean Environment
1.5: Modeling the Ocean	3.9: Computers And Modeling
Chapter 2: Ocean Basins and Plate Tectonics	
2.2: Distribution of the World Ocean	4.10: Present Day Oceans
2.3 Oceanic Crust and Continental Crust	4.1: Structure of the Earth & 4.8: Plate Interiors
2.4: Plate Tectonics and Ocean Basin Features	4.2-4.7: Plate Tectonics, Plate Boundaries, Hot Spots
2.5: Ocean Bottom Profile	4.1: Structure of the Earth & 3.3: Bathymetry
2.6: Spreading and Closing Cycles	4.2: Plate Tectonics
Chapter 3: Properties of Ocean Water	
3.2: The Unique Water Molecule and its Hydrogen Bond	5.2: The Water Molecule
3.3: Physical Properties of Ocean Water	5.7: Heat; 5.8: Pressure, Temperature, and Dissolved Salts; 5.11&12: Light and Sound Tranmission
3.4: Chemical Properties of Ocean Water	5.3-6 & 5.9-10: Water and Seawater
Chapter 4: The Atmosphere and Ocean	
4.2: Weather and Climate	Chapter 7: Ocean-Atmosphere Interactions
4.3: Heating and Cooling of Earth's Surface	7.5: Climate and Ocean Surface Water Properties
4.4: Heating Imbalances: Tropics versus High Latitudes	7.3: Water and Heat Budgets

Ocean Studies	*Introduction to Ocean Sciences*
Chapter 5: Ocean Currents	
5.2: Ocean's Vertical Structure	1.1: The Ocean and Earth's Environment
5.3: Ocean in Motion: The Forces	8.1-8.4: Energy Sources, Ekman Motion, Wind-Driven Currents
5.4: Wind-driven Surface Currents	8.5-8.7: Surface Currents by Latitude
5.5: Monitoring the Ocean Depths	Chapter 3: Studying the Oceans
5.6: Large-scale Ocean Circulation	8.13-8.15: Thermohaline Circulation
Chapter 6: Ocean Waves and Tides	
6.2: Water Waves	9.1-9.8: Wave Motions
6.3: Internal Waves	9.10: Internal Waves
6.4: Ocean Tides	Chapter 10: Tides
6.5: The Tsunami Hazard	9.9: Tsunamis
Chapter 7: The Dynamic Coast	
7.2: Coastline Formation	11.1: Processes that Form and Modify Coasts
7.3: Coastal Features	11.2-7: Beaches, Barrier Islands, Human Structures, etc.
7.4: Estuaries	13.6 Estuaries
7.5: Coastal Storms	7.10: Local Weather Effects
7.6: Tropical Cyclone Characteristics	7.9: Weather Systems
7.7: Extratropical Cyclones	7.9: Weather Systems
Chapter 8: Marine Ecosystems	
8.2: Requirements for Marine Life	12.1: How do we Describe Life?
8.3: Structure of Marine Ecosystems	12.2-4: Production, Consumption, and Decomposition, Microbes
8.4: Ecosystem Processes	12.5-8: Primary Production
8.5: Ocean's Role in the Global Carbon Cycle	12.9-10: Dissolved Oxygen and Carbon Dioxide, Organic Carbon
Chapter 9: Life in the Ocean	
9.2: Marine Habitats	12.11: Biological Provinces and Zones
9.3: Marine Animals	12.12-14: Plankton, Nekton, Benthos

Ocean Studies	***Introduction to Ocean Sciences***
9.4: Life Strategies and Adaptations	Chapter 14: Marine Ecology
9.5: Life in Selected Marine Environments	Chapter 15: Ocean Ecosystems
Chapter 10: The Ocean, Atmosphere, and Climate Variability	
10.2: Earth's Climate System	7.8: Global Climate Zones
10.3: El Niño-Southern Oscillation	7.6: Interannual Climate Variations
10.4: Other Atmosphere-Ocean Oscillations	7.6: Interannual Climate Variations
Chapter 11: Ocean Sediments	
11.2: Classification of Ocean Sediments	6.1-6: Classification of Sediments
11.3: Ocean Sediment Deposits	6.7-8: Sediment Transport, Deposition, and Accumulation
11.4: Distribution of Surface Sediments	6.9: Distribution of Surface Sediments
Chapter 12: The Ocean and Climate Change	
12.2: The Climate Record	6.10: The Sediment Historical Record
12.3: Factors Contributing to Climate Change	
12.4: Reconstructing Past Climate Conditions	4.9: Sea Level Change 6.10: The Sediment Historical Record
12.5: The Climate Future	16.6: Climate Change, Acidification, and Deoxygenation
12.6: Consequences of Global Warming	16.6: Climate Change, Acidification, and Deoxygenation
Chapter 13: Ocean Exploration: Past and Present	
13.2: Investigating the Ocean	2.1-2: What is Oceanography?, Exploration and Mapping
13.3: Modern Ocean Studies	Chapter 3: Studying the Oceans
Chapter 14: Ocean Stewardship	
14.2: Stewardship of the Ocean	2.3: National and International Law Applied to Oceans
14.3: Adverse Effects of Human Activities	16.1-5: Adverse Effects of Human Activities
14.4: Reversing the Decline of Estuaries	16.4-5: Waste Disposal and Ocean Pollution Issues

Ocean Studies	***Introduction to Ocean Sciences***
14.5: Fisheries and Sustainable Exploitation	2.4: Ocean Resources 13.5: Fisheries
14.6: Protecting Endangered Marine Species	
14.7: Aquaculture	
Chapter 15: Ocean and Climate Policy	
15.2: Milestones in Ocean Governance	Appendix 4
15.3: Global Policy in Response to Climate Change	2.3: National and International Law Applied to Oceans
15.4: Obstacles to Ocean Policy Making	2.3: National and International Law Applied to Oceans

Additional Subjects

- 1.3: How to Study Ocean Data - Graphs, contour plots, maps
- Chapter 3: Detailed information about sampling techniques
- 5.10: Surface Tension and Viscosity
- 5.11: Transmission of Light
- 8.10: Eddies
- 8.11: Inertial Currents
- 8.12: Langmuir Circulation
- 9.12: Standing Waves
- 10.8: Marine Species and the Rhythm of Tides
- 14.8: Communication and Navigation
- 15.2: Coral Reefs
- 15.5: Sargasso Sea
- 15.6: Polar Regions

Figures of Key Concepts

- Figure 1-3 Layered Structure of the Oceans
- Figure 2-11 Overfishing graphs
- Figure 4-2 Earth's Layered Structure
- Figure 4-5 Ocean Floor Profile
- Figure 4-25 Hot Spots
- Figure 4-32 and Figure 4-34
  Climate Temperature and Sea Level Reconstructions
- Figure 5-3 Water Molecules and Hydrogen Bonding
- Figure 5-10 Water Phase Changes
- Figure 6-2 Sediment Classification
- Figure 6-10 Calcium Compensation Depth
- Figure 6-19 Ocean Sediment Distributions
- Figure 7-5 Water Cycle
- Figure 7-6, 8 Earth's Energy Budget
- Figure 7-18 and Figure 7-19
  El Niño
- Figure 7-27 Tropical Cyclones
- Figure 8-3 Surface Currents Map
- Figure 8-4 Ekman Transport
- Figure 8-28 Thermohaline Circulation
- Figure 9-2 Wave Properties
- Figure 9-16 Deep and Shallow Water Waves
- Figure 9-18 Wave Reflection and Refraction
- Figure 10-8 Tides by Latitude
- Figure 10-10 Lunar Tidal Bulges
- Figure 11-4 Coastal Features
- Figure 11-17 Longshore Current
- Figure 12-3 Energy and Mass Cycles
- Figure 12-8 Nutrient Concentrations by Depth
- Figure 12-12 Food Web
- Figure 12-14 Depth Zones
- Figure 13-2 Coastal Haloclines
- Figure 13-8 Upwelling
- Figure 13-14 Seasonal Nutrients and Production
- Figure 13-18 and Figure 13-21
  Estuary Types
- Figure 15-9 Hydrothermal Vents
- Figure 16B1-4 Oil Spills

Ocean Sciences in Action Manual

Ocean Sciences in Action Manual	*Previous Manual and Current Studies*
Investigation 1A: Maps in Action	Investigation 1B: Mapping the Ocean
Investigation 1B: Data in Action	Investigation 13B: Sensing the Upper Ocean
Investigation 2A: Ocean Policy in Action	Investigation 15A: Ocean Policy
Investigation 2B: Bathymetry in Action	New
Investigation 3A: Observation in Action	Current Ocean Studies 1: Ocean Observation
Investigation 3B: Exploration in Action	Current Ocean Studies 2: The Hadal Zone
Investigation 4A: Plate Tectonics in Action	Investigation 2A: The Ocean Floor
Investigation 4B: Coastal Margins in Action	Investigation 2B: Ocean Floor Bathymetry
Investigation 5A: Water and Heat in Action	Investigation 3A: Ocean Temperature, Salinity, and Density
Investigation 5B: Density in Action	Investigation 3B: Fresh Water, Ocean Water, and Sea Ice
Investigation 6A: Sediment in Action	Investigation 11A: Marine Sediments Investigation 11B: Sediment Transport from Land to Ocean
Investigation 6B: Mass Extinction in Action	New
Investigation 7A: Planetary Heating in Action	Investigation 4A: Solar Radiation
Investigation 7B: Atmospheric Circulation in Action	Investigation 10B: El Niño and La Niña
Investigation 8A: Surface Currents in Action	Investigation 5A: Ocean in Motion Investigation 10A: Temperature, Pressure, and Boundary Currents
Investigation 8B: The Conveyor Belt in Action	Investigation 5B: Density Driven Water Masses Current Ocean Studies 5: Atlantic Meridional Overturning Circulation
Investigation 9A: Waves in Action	Investigation 6A: Waves
Investigation 9B: Wave Movements in Action	New
Investigation 10A: Tidal Formation in Action	Investigation 6B: Tides
Investigation 10B: Tides in Action	Investigation 6B: Tides
Investigation 11A: Shifting Shorelines in Action	Investigation 7A: Coastal Processes

Ocean Sciences in Action Manual	***Previous Manual and Current Studies***
Investigation 11B: Tropical Cyclones in Action	Investigation 7B: Tropical Cyclones and Coastal Impacts
Investigation 12A: Primary Production in Action	Investigation 9A: Primary Production
Investigation 12B: Trophic Transfers in Action	Investigation 8B: Marine Ecosystems
Investigation 13A: Eutrophication in Action	Current Ocean Studies 8: Dead Zones
Investigation 13B: Estuaries in Action	Current Ocean Studies 9: Salt Marshes
Investigation 14A: Survival Strategies in Action	New
Investigation 14B: Reproduction in Action	New
Investigation 15A: Coral Reefs in Action	Current Ocean Studies 10 Coral Bleaching
Investigation 15B: The Midnight Zone in Action	Current Ocean Studies 2: The Hadal Zone
Investigation 16A: Human Impacts in Action	Investigation 14B: Plastic Menace
Investigation 16B: Climate Change in Action	Current Ocean Studies 12: A Changing Climate
Case Study 1: Decades of Melting	Current Ocean Studies 3: Decades of Melting
Case Study 2: Ocean Internal Waves	Current Ocean Studies 6: Ocean Internal Waves
Case Study 3: Marine Heatwaves	Current Ocean Studies 13: Marine Heatwaves
Case Study 4: Reducing Bycatch	Current Ocean Studies 14: Reducing Bycatch
Case Study 5: Oil Spills	Current Ocean Studies 15: Oil Spills

Course Outlines

While the Ocean Sciences in Action Manual Investigations are not required, it is designed to be used in conjunction with the textbook.

Semester-long Introductory Course (16 modules)

Module 1: Introduction
- Chapter 1
  - Investigation 1A: Maps in Action
  - Investigation 1B: Data in Action
- CC9: The Global Greenhouse Effect

Module 2: Studying the Ocean, Past and Present
- Chapter 2: Sections 1&2
- Chapter 3: Sections 1&7
  - Investigation 3A: Observation in Action
  - Investigation 3B: Exploration in Action

Module 3: Plate Tectonics
- Chapter 4
  - Investigation 3A: Plate Tectonics in Action
  - Investigation 3B: Coastal Margins in Action
- CC2: Isostasy, Eustasy, and Sea Level
- CC3: Convection and Convection Cells

Module 4: The Seafloor
- Chapter 2: Section 2
  - Investigation 2B: Bathymetry in Action
- Chapter 6: Sections 1&2, 9&10
  - Investigation 6B: Mass Extinction in Action

Module 5: Water and Heat
- Chapter 5: Sections 1-7
  - Investigation 5A: Water and Heat in Action
- CC5: Transfer and Storage of Heat by Water
- CC6: Salinity, Temperature, Pressure, and Water Density

Module 6: Ocean-Atmosphere Interactions
- Chapter 7
  - Investigation 7A: Planetary Heating in Action
  - Investigation 7B: Atmospheric Circulation in Action
- CC9: The Global Greenhouse Effect
- CC15: Transfer and Storage of Heat by Water

Module 7: Surface Ocean Processes
- Chapter 8: Sections 1-7
  - Investigation 8A: Surface Currents in Action
- Chapter 7: Section 9
  - Investigation 11B: Tropical Cyclones in Action
- CC3: The Coriolis Effect

Module 8: Thermohaline Circulation
- Chapter 5: Sections 8&9
  - Investigation 5B: Density in Action
- Chapter 8: Sections 13-16
  - Investigation 8B: The Conveyor Belt in Action
- CC8: Residence Time

Module 9: Waves
- Chapter 9: Sections 1-9
  - Investigation 9A: Waves in Action
  - Investigation 9B: Wave Movements in Action

Module 10: Tides
- Chapter 10: Sections 1-4
  - Investigation 10A: Tidal Formation in Action
  - Investigation 10B: Tides in Action
- CC12: The Coriolis Effect

Module 11: Coasts and Estuaries
- Chapter 11: Section 1 + Choose 2 more
  - Investigation 11A: Shifting Shorelines in Action
- Chapter 13: Section 6
  - Investigation 13B: Estuaries in Action

Module 12: Primary Production
- Chapter 12: Sections 1-2, 5-10
  - Investigation 12A: Primary Production in Action
- Chapter 13: Sections 3-4
  - Investigation 13A: Eutrophication in Action
- CC14. Phototrophy, Light, and Nutrients

Module 13: Food Chains and Webs
- Chapter 12: Sections 7-10
  - Investigation 12B: Trophic Transfers in Action
- CC15: Food Chain Efficiency

Module 14: Marine Organisms
- Chapter 12: Sections 11-14
- Chapter 14
  - Investigation 14A: Survival Strategies in Action
  - Investigation 14B: Reproduction in Action
- CC17: Species Diversity and Biodiversity

Module 15: Ocean Ecosystems
- Chapter 15: Choose a few example ecosystems
  - Investigation 15A: Coral Reefs in Action
  - Investigation 15B: The Midnight Zone in Action
- CC15. Food Chain Efficiency

Module 16: Humans and the Ocean
- Chapter 16
  - Investigation 16A: Human Impacts in Action
  - Investigation 16B: Climate Change in Action
- CC9: The Global Greenhouse Effect

Abbreviated Introductory Course (9 modules)

Module 1: Introduction

- Chapter 1
  - Investigation 1B: Data in Action
  - Investigation 2B: Bathymetry in Action
- CC9: The Global Greenhouse Effect

Module 2: Plate Tectonics

- Chapter 4
  - Investigation 4A: Plate Tectonics in Action
  - Investigation 4B: Coastal Margins in Action
- CC2: Isostasy, Eustasy, and Sea Level
- CC3: Convection and Convection Cells

Module 3: Water and Seawater

- Chapter 5: Sections 1-9
  - Investigation 5A: Water and Heat in Action
  - Investigation 5B: Density in Action
- CC5: Transfer and Storage of Heat by Water
- CC6: Salinity, Temperature, Pressure, and Water Density

Module 4: The Oceans and Climate

- Chapter 7
  - Investigation 7A: Planetary Heating in Action
  - Investigation 7B: Atmospheric Circulation in Action
- CC9: The Global Greenhouse Effect
- CC15: Transfer and Storage of Heat by Water

Module 5: Currents

- Chapter 8
  - Investigation 8A: Surface Currents in Action
  - Investigation 8B: The Conveyor Belt in Action
- CC3: The Coriolis Effect
- CC8: Residence Time

Module 6: Waves and Tides

- Chapter 9: Sections 1-9
  - Investigation 9A: Waves in Action
- Chapter 10: Sections 1-4
  - Investigation 10A: Tidal Formation in Action
- CC12: The Coriolis Effect

Module 7: Coasts and Estuaries

- Chapter 11: Section 1 + Choose 2 more
  - Investigation 11A: Shifting Shorelines in Action
- Chapter 13: Section 6
  - Investigation 13B: Estuaries in Action

Module 8: Food Chains and Webs

- Chapter 12: Sections 1-10
  - Investigation 12A: Primary Production in Action
  - Investigation 12B: Trophic Transfers in Action
- CC14: Phototrophy, Light, and Nutrients
- CC15: Food Chain Efficiency
- Chapter 15: Choose a few example ecosystems

Module 9: Humans and the Ocean

- Chapter 16
  - Investigation 16A: Human Impacts in Action
  - Investigation 16B: Climate Change in Action
- CC9: The Global Greenhouse Effect

Physical Oceanography Focus (14 modules)

Module 1: Introduction

- Chapter 1
  - Investigation 1A: Maps in Action
  - Investigation 1B: Data in Action
- CC9: The Global Greenhouse Effect

Module 2: Studying the Ocean, Past and Present

- Chapter 2: Sections 1&2
- Chapter 3: Sections 1&7
  - Investigation 3A: Observation in Action
  - Investigation 3B: Exploration in Action

Module 3: Plate Tectonics

- Chapter 4: Sections 1-10
  - Investigation 4A: Plate Tectonics in Action
- CC3: Convection and Convection Cells

Module 4: Tectonic Geography

- Chapter 4: Sections 7-10
  - Investigation 2B: Bathymetry in Action
  - Investigation 4B: Coastal Margins in Action
- CC2: Isostasy, Eustasy, and Sea Level

Module 5: Ocean Sediments

- Chapter 6
  - Investigation 6A: Sediment in Action
  - Investigation 6B: Mass Extinction in Action
- CC7: Radioactivity and Age Dating
- CC4. Particle Size, Sinking, Deposition, and Resuspension

Module 6: Water and Seawater

- Chapter 5: Sections 1-7
  - Investigation 5A: Water and Heat in Action
  - Investigation 5B: Density in Action
- CC5: Transfer and Storage of Heat by Water
- CC6: Salinity, Temperature, Pressure, and Water Density

Module 7: Ocean-Atmosphere Interactions

- Chapter 7
  - Investigation 7A: Planetary Heating in Action
  - Investigation 7B: Atmospheric Circulation in Action
- CC3: The Coriolis Effect
- CC9: The Global Greenhouse Effect
- CC15: Transfer and Storage of Heat by Water

Module 8: Wind-Driven Currents

- Chapter 8: Sections 1-7
  - Investigation 8A: Surface Currents in Action
  - Investigation 11B: Tropical Cyclones in Action
- CC3: The Coriolis Effect

Module 9: Thermohaline Circulation

- Chapter 5: Sections 8&9
  - Investigation 5B: Density in Action
- Chapter 8: Sections 13-16
  - Investigation 8B: The Conveyor Belt in Action
- CC6: Salinity, Temperature, Pressure, and Water Density
- CC8: Residence Time

Module 10: Waves
- Chapter 9: Sections 1-9
  - Investigation 9A: Waves in Action
  - Investigation 9B: Wave Movements in Action

Module 11: Tides
- Chapter 10: Sections 1-4
  - Investigation 10A: Tidal Formation in Action
  - Investigation 10B: Tides in Action
- CC12: The Coriolis Effect

Module 12: Coasts and Estuaries
- Chapter 11
  - Investigation 11A: Shifting Shorelines in Action
- Chapter 13: Section 6
  - Investigation 13B: Estuaries in Action
- CC4: Particle Size, Sinking, Deposition, and Resuspension

Module 13: Humans and the Ocean
- Chapter 2: Sections 3&4
  - Investigation 2A: Ocean Policy in Action
- Chapter 16: Sections 1-5
  - Investigation 16A: Human Impacts in Action
- CC9: The Global Greenhouse Effect

Module 14: Climate Change
- Chapter 16: Sections 6&7
  - Investigation 16B: Climate Change in Action
- CC9: The Global Greenhouse Effect
- CC10: Modeling
- CC11: Chaos

Marine Biology Focus (14 modules)

Module 1: Introduction

- Chapter 1
  - Investigation 1A: Maps in Action
  - Investigation 1B: Data in Action
- CC9: The Global Greenhouse Effect

Module 2: Studying the Ocean, Past and Present

- Chapter 2: Sections 1&2
  - Investigation 2A: Ocean Policy in Action
- Chapter 3: Sections 1&7
  - Investigation 3B: Exploration in Action

Module 3: Sampling Techniques

- Chapter 3
  - Investigation 2B: Bathymetry in Action
  - Investigation 3A: Observation in Action

Module 4: Water and Seawater

- Chapter 5: Sections 1-7
  - Investigation 5A: Water and Heat in Action
- CC5: Transfer and Storage of Heat by Water
- CC6: Salinity, Temperature, Pressure, and Water Density

Module 5: Ocean-Atmosphere Interactions

- Chapter 7
  - Investigation 7A: Planetary Heating in Action
  - Investigation 7B: Atmospheric Circulation in Action
- CC9: The Global Greenhouse Effect
- CC15: Transfer and Storage of Heat by Water

Module 6: Currents

- Chapter 8: Sections 1-7, 13-16
  - Investigation 8A: Surface Currents in Action
  - Investigation 8B: The Conveyor Belt in Action
- CC3: The Coriolis Effect
- CC6: Salinity, Temperature, Pressure, and Water Density
- CC8: Residence Time

Module 7: Waves and Tides

- Chapter 9: Sections 1-9
  - Investigation 9A: Waves in Action
- Chapter 10: Sections 1-4
  - Investigation 10A: Tidal Formation in Action
- CC12: The Coriolis Effect

Module 8: Coastal Oceans and Estuaries

- Chapter 11
  - Investigation 11A: Shifting Shorelines in Action
- Chapter 13: Section 6
  - Investigation 13B: Estuaries in Action
- CC4: Particle Size, Sinking, Deposition, and Resuspension

Module 9: Primary Production

- Chapter 12: Sections 1-2, 5-10
  - Investigation 12A: Primary Production in Action
- Chapter 13: Sections 3-4
  - Investigation 13A: Eutrophication in Action
- CC14. Phototrophy, Light, and Nutrients

Module 10: Food Chains and Webs
- Chapter 12: Sections 7-10
  - Investigation 12B: Trophic Transfers in Action
- CC15: Food Chain Efficiency

Module 11: Marine Organisms
- Chapter 12: Sections 11-14
- Chapter 14
  - Investigation 14A: Survival Strategies in Action
  - Investigation 14B: Reproduction in Action
- CC17: Species Diversity and Biodiversity

Module 12: Marine Ecology
- Chapter 14
  - Investigation 14A: Survival Strategies in Action
  - Investigation 14B: Reproduction in Action
- CC15: Food Chain Efficiency
- CC17: Species Diversity and Biodiversity

Module 13: Ocean Ecosystems
- Chapter 15: Choose a few example ecosystems
  - Investigation 15A: Coral Reefs in Action
  - Investigation 15B: The Midnight Zone in Action
- CC15. Food Chain Efficiency

Module 14: Humans and the Ocean
- Chapter 2: Sections 3,4
- Chapter 16: Sections 1-5
  - Investigation 16A: Human Impacts in Action
  - Investigation 16B: Climate Change in Action
- CC9: The Global Greenhouse Effect
- CC9: The Global Greenhouse Effect