



**2019 AP<sup>®</sup> Environmental Science Course Framework Topic Alignment to  
Friedland & Relyea, *Environmental Science for the AP<sup>®</sup> Course*, 3rd edition**



CF Topic Number	2019 Course Framework Topic Title	Friedland/Relyea Third Edition Chapter/Module
<b>Unit 1: The Living World—Ecosystems   Weight 5-7%</b>		
1.1	Introduction to Ecosystems	Chapter 1, Modules 1-2; Chapter 6, Module 20
1.2	Terrestrial Biomes	Chapter 4, Module 12
1.3	Aquatic Biomes	Chapter 4, Module 13
1.4	The Carbon Cycle	Chapter 3, Module 7
1.5	The Nitrogen Cycle	Chapter 3, Module 7
1.6	The Phosphorus Cycle	Chapter 3, Module 7
1.7	The Hydrologic (Water) Cycle	Chapter 3, Module 7
1.8	Primary Productivity	Chapter 3, Module 6
1.9	Trophic Levels	Chapter 3, Module 6
1.10	Energy Flow and the 10% Rule	Chapter 3, Module 6
1.11	Food Chains and Food Webs	Chapter 3, Module 6; Chapter 6, Module 20
<b>Unit 2: The Living World—Biodiversity   Weight 5-7%</b>		
2.1	Introduction to Biodiversity	Chapter 1, Modules 1 and 2; Chapter 3, Module 8; Chapter 5, Modules 14-15 and 17
2.2	Ecosystem Services	Chapter 1, Module 2; Chapter 10, Module 29; Chapter 18, Module 59; Chapter 20, Module 65
2.3	Island Biogeography	Chapter 6, Module 21
2.4	Ecological Tolerance	Chapter 5, Module 17
2.5	Natural Disruptions to Ecosystems	Chapter 3, Module 8; Chapter 18, Module 61; Chapter 19, Module 63



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2.6	Adaptations	Chapter 5, Module 15
2.7	Ecological Succession	Chapter 6, Module 21; Chapter 14, Module 41
<b>Unit 3: Populations   Weight 10-12%</b>		
3.1	Generalist and Specialist Species	Chapter 5, Module 17
3.2	<i>K-Selected</i> <i>r-Selected Species</i>	Chapter 6, Module 19
3.3	Survivorship Curves	Chapter 6, Module 19
3.4	Carrying Capacity	Chapter 6, Module 18
3.5	Population Growth and Resource Availability	Chapter 6, Module 18
3.6	Age Structure Diagrams	Chapter 7, Module 22
3.7	Total Fertility Rate	Chapter 7, Module 22; Chapter 11, Module 31
3.8	Human Population Dynamics	Chapter 7, Modules 22 and 23; Chapter 11, Module 31
3.9	Demographic Transition	Chapter 7, Module 23
<b>Unit 4: Earth Systems and Resources   Weight 10-12%</b>		
4.1	Plate Tectonics	Chapter 8, Module 24
4.2	Soil Formation and Erosion	Chapter 8, Module 25; Chapter 11, Module 33
4.3	Soil Composition and Properties	Chapter 8, Module 25
4.4	Earth's Atmosphere	Chapter 4, Module 9
4.5	Global Wind Patterns	Chapter 4, Module 10
4.6	Watersheds	Chapter 3, Module 8
4.7	Solar Radiation and Earth's Seasons	Chapter 4, Module 9
4.8	Earth's Geography and Climate	Chapter 4, Module 10
4.9	El Niño and La Niña	Chapter 4, Module 11
<b>Unit 5: Land and Water Use   Weight 10-12%</b>		
5.1	The Tragedy of the Commons	Chapter 10, Module 29; Chapter 20, Module 65
5.2	Clear Cutting	Chapter 10, Module 30
5.3	The Green Revolution	Chapter 11, Module 32



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5.4	Impacts of Agricultural Practices	Chapter 11, Module 32
5.5	Irrigation Methods	Chapter 9, Module 28; Chapter 11, Module 32
5.6	Pest Control Methods	Chapter 11, Module 32
5.7	Meat Production Methods	Chapter 11, Module 32
5.8	Impacts of Overfishing	Chapter 11, Module 32; Chapter 18, Module 60
5.9	Impacts of Mining	Chapter 8, Module 25
5.10	Impacts of Urbanization	Chapter 7, Module 23; Chapter 9, Module 26; Chapter 10, Module 30
5.11	Ecological Footprints	Chapter 1, Module 2
5.12	Introduction to Sustainability	Chapter 1, Module 2; Chapter 10, Module 29; Chapter 11, Module 33; Chapter 13, Module 37; Chapter 20, Module 66
5.13	Methods to Reduce Urban Runoff	Chapter 3, Module 7; Chapter 10, Module 29
5.14	Integrated Pest Management	Chapter 11, Module 33
5.15	Sustainable Agriculture	Chapter 11, Module 33
5.16	Aquaculture	Chapter 11, Modules 32 and 33
5.17	Sustainable Forestry	Chapter 10, Module 29
<b>Unit 6: Energy Resources and Consumption   Weight 10-12%</b>		
6.1	Renewable and Nonrenewable Resources	Chapter 12, Module 34; Chapter 13, Module 40
6.2	Global Energy Consumption	Chapter 12, Modules 34 and 35; Chapter 13, Module 37
6.3	Fuel Types and Uses	Chapter 12, Modules 35 and 35
6.4	Distribution of Natural Energy Resources	Chapter 12, Modules 35 and 36
6.5	Fossil Fuels	Chapter 12, Modules 35 and 36
6.6	Nuclear Power	Chapter 12, Module 36
6.7	Energy from Biomass	Chapter 13, Module 38
6.8	Solar Energy	Chapter 13, Module 39
6.9	Hydroelectric Power	Chapter 9, Module 27; Chapter 13, Module 38



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6.10	Geothermal Energy	Chapter 13, Module 39
6.11	Hydrogen Fuel Cell	Chapter 13, Module 39
6.12	Wind Energy	Chapter 13, Module 39
6.13	Energy Conservation	Chapter 12, Module 34; Chapter 13, Modules 37 and 40
<b>Unit 7: Atmospheric Pollution   Weight 7-9%</b>		
7.1	Introduction to Air Pollution	Chapter 12, Module 35; Chapter 15, Module 46
7.2	Photochemical Smog	Chapter 15, Modules 47-48
7.3	Thermal Inversion	Chapter 15, Module 47
7.4	Atmospheric CO <sub>2</sub> and Particulates	Chapter 15, Module 46
7.5	Indoor Air Pollutants	Chapter 15, Module 50
7.6	Reduction of Air Pollutants	Chapter 15, Module 48
7.7	Acid Rain	Chapter 15, Module 47
7.8	Noise Pollution	Chapter 10 (TE), Module 30; Chapter 14, Module 44
<b>Unit 8: Aquatic and Terrestrial Pollution   Weight 7-9%</b>		
8.1	Sources of Pollution	Chapter 14, Modules 41-43; Chapter 17, Module 57
8.2	Human Impacts on Ecosystems	Chapter 8, Module 25; Chapter 14, Modules 41-44; Chapter 16, Modules 51-54; Chapter 17, Module 57; Chapter 18, Module 60
8.3	Endocrine Disruptors	Chapter 14, Modules 42 and 44; Chapter 17, Module 57
8.4	Human Impacts on Wetlands and Mangroves	Chapter 4, Module 13; Chapter 18, Module 60
8.5	Eutrophication	Chapter 14, Module 41
8.6	Thermal Pollution	Chapter 14, Module 44
8.7	Persistent Organic Pollutants (POPs)	Chapter 17, Module 57
8.8	Bioaccumulation and Biomagnification	Chapter 17, Module 57
8.9	Solid Waste Disposal	Chapter 14, Module 44; Chapter 16, Modules 51-54
8.10	Waste Reduction Methods	Chapter 16, Modules 52-55



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8.11	Sewage Treatment	Chapter 14, Module 41
8.12	Lethal Dose 50% (LD50)	Chapter 17, Module 57
8.13	Dose Response Curve	Chapter 17, Module 57
8.14	Pollution and Human Health	Chapter 14, Module 41; Chapter 15, Modules 46-47; Chapter 17, Modules 56, 58
8.15	Pathogens and Infectious Diseases	Chapter 17, Module 56; Chapter 19, Module 64
<b>Unit 9: Global Change   Weight 18-20%</b>		
9.1	Stratospheric Ozone Depletion	Chapter 15, Module 49
9.2	Reducing Ozone Depletion	Chapter 15, Module 49; Chapter 19, Module 62
9.3	The Greenhouse Effect	Chapter 19, Module 62
9.4	Increases in Greenhouse Gases	Chapter 1, Module 2; Chapter 3, Module 7; Chapter 12, Module 35; Chapter 13, Module 38; Chapter 15, Module 46; Chapter 19, Modules 62-63
9.5	Global Climate Change	Chapter 4, Module 11; Chapter 19, Modules 62-64
9.6	Ocean Warming	Chapter 4, Module 11; Chapter 19, Module 64
9.7	Ocean Acidification	Chapter 2, Module 4; Chapter 19, Module 63
9.8	Invasive Species	Chapter 18, Module 60
9.9	Endangered Species	Chapter 10, Module 30; Chapter 18, Modules 59, 61
9.10	Human Impacts on Biodiversity	Chapter 1, Module 1; Chapter 4, Modules 12-13; Chapter 18, Modules 59-61