

National Science Education Standards		Lake Erie Literacy Concepts by Letter					
UNIFYING CONCEPTS AND PROCESSES		7a	7b	7c	7d	7e	7f
All Grades	1. Systems, Order and Organization		x				
	2. Evidence, Models and Explanation	x	x	x	x	x	x
	3. Change, Constancy and Measurement			x	x	x	
	4. Evolution and Equilibrium	x	x				
	5. Form and Function			x			

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EARTH AND SPACE		7a	7b	7c	7d	7e	7f
Grades K-4	6. Properties of Earth Materials						
	7. Objects in the Sky						
	8. Changes in Earth and Sky						
Grades 5-8	9. Structure of the Earth System			x			
	10. Earth's History						
	11. Earth in the Solar System						
Grades 9-12	12. Energy in the Earth System						
	13. Origin and Evolution of the Earth System			x			
	14. Origin and Evolution of the Universe						
	15. Geochemical Cycles						

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LIFE SCIENCE		7a	7b	7c	7d	7e	7f
Grades K-4	16. Characteristics of Organisms						
	17. Life Cycles of Organisms						
	18. Organisms and Environments	x	x	x			
Grades 5-8	19. Structure and Function in Living Systems						
	20. Reproduction and Heredity						
	21. Regulation and Behavior						
	22. Populations and Ecosystems	x	x	x			
	23. Diversity and Adaptations of Organisms						

Grades 9–12	24. Interdependence of Organisms	x		x			
	25. Behavior of Organisms						
	26. Matter, Energy and Organization in Living Systems						
	27. Biological Evolution						
	28. Molecular Basis of Heredity						
	29. The Cell						

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PHYSICAL SCIENCE		7a	7b	7c	7d	7e	7f
Grades K–4	30. Properties of Objects and Materials						
	31. Position and Motion of Objects						
	32. Light, Heat, Electricity and Magnetism						
Grades 5–8	33. Properties and Changes of Properties in Matter						
	34. Motions and Forces						
	35. Transfer of Energy						
Grades 9–12	36. Structure of Atoms						
	37. Structure and Properties of Matter						
	38. Chemical Reactions						
	39. Motions and Forces						
	40. Conservation in Energy and Increase in Disorder						
	41. Interactions of Energy and Matter					x	

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HISTORY AND NATURE OF SCIENCE		7a	7b	7c	7d	7e	7f
All Grades	42. Science as Human Endeavor K–12	x	x	x	x	x	x
	43. Nature of Scientific Knowledge 5–12	x	x	x	x	x	x
Grades 5–8	44. History of Science	x	x	x	x	x	
Grades 9–12	45. Historical Perspectives	x		x		x	

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PERSONAL AND SOCIAL PERSPECTIVES		7a	7b	7c	7d	7e	7f
All Grades	46. Personal Health K–8		x	x	x		x
Grades K–4	47. Characteristics and Changes in Populations			x			
	48. Types of Resources			x			
	49. Changes in Environments			x			
	50. Science and Technology in Local Challenges		x	x	x	x	x
Grades 5–8	51. Populations, Resources and Environments			x			
	52. Natural Hazards					x	
	53. Risks and Benefits		x	x	x	x	x
	54. Science and Technology in Society	x	x	x	x	x	x
Grades 9–12	55. Personal and Community Health		x	x	x	x	x
	56. Population Growth	x	x	x			
	57. Natural Resources		x	x			
	58. Environmental Quality	x	x	x	x		x
	59. Natural and Human–Induced Hazards				x	x	
	60. Science and Technology in Local, National & Global Challenges	x	x	x	x	x	x

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SCIENCE AND TECHNOLOGY		7a	7b	7c	7d	7e	7f
Grades K–4	61. Abilities to Distinguish Between Natural Objects & Objects Made by Humans						
	62. Abilities of Technological Design K–4	x	x		x	x	
	63. Understanding About Science & Technology K–4	x	x	x	x	x	x
Grades 5–8	64. Abilities of Technological Design 5–8	x	x		x	x	
	65. Understanding About Science & Technology 5–8	x	x	x	x	x	x
	66. Abilities of Technological Design 9–12	x	x		x	x	

Grades 9–12	67. Understanding About Science & Technology 9–12	x	x	x	x	x	x
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SCIENCE AS INQUIRY		7a	7b	7c	7d	7e	7f
All Grades	68. Abilities Necessary to Do Scientific Inquiry K–12	x	x	x	x	x	x
	69. Understanding About Scientific Inquiry K–12	x	x	x	x	x	x