

**UNDERLINES INDICATE A NEW WORD BOLD CAPS INDICATE CHANGES**

MEGOSE CODE	1996 MCF	2000 MCF	BENCHMARKS	Comments
<b>Constructing New Scientific Knowledge (C) I.1</b>				
C1	I.1.E.1	I.1.E.1	Generate questions about the world based on observation.	<b>SAME AS I.1.MS.1 AND SIMILAR TO I.1.HS.1</b>
C2	I.1.E.2	I.1.E.2	Develop solutions to problems through reasoning, observation, and investigations.	<b>UNCHANGED BUT NEW KEY CONCEPTS.</b>
C3	I.1.E.3		Manipulate simple mechanical devices and explain how they work.	<i>Moved to IV.3 (PMO)E.5 - Manipulate simple mechanical devices</i>
		I.1.E.3	Manipulate simple devices that aid observation and data collection.	<i>New</i> <b>BENCHMARK</b> - Use scientific tools
C4	I.1.E.4	I.1.E.4	Use simple measurement devices to make measurements in scientific investigations.	<b>WORD "METRIC" DELETED FROM BENCHMARK. METRIC ENGLISH MEASURES INCLUDED. TOOLS ADDED</b>
C5	I.1.E.5	I.1.E.5	Develop strategies and skills for information gathering and problem solving.	<b>ADDITIONS TO KEY CONCEPTS</b>
C6	I.1.E.6	I.1.E.6	Construct charts and graphs and prepare summaries of observations.	<b>ADDITIONS TO KEY CONCEPTS. REAL-WORLD - BAR GRAPHS.</b>
C7	I.1.MS.1	I.1.MS.1	Generate scientific questions about the world based on observation.	<b>NEW KEY CONCEPTS</b>
C8	I.1.MS.2	I.1.MS.2	Design and conduct <u>SCIENTIFIC</u> investigations.	<b>NEW KEY CONCEPTS AND REAL-WORLD</b>
C9	I.1.MS.3		Investigate toys/simple appliances and explain how they work, using instructions and appropriate safety precautions.	<i>Moved to IV.1.MS.6 - How electrical devices work</i>
		I.1.MS.3	Use tools and equipment appropriate to scientific investigations	<i>New</i> <b>BENCHMARK. KEY CONCEPTS, REAL-WORLD</b>
C10	I.1.MS.4	I.1.MS.4	Use <u>METRIC</u> measurement devices to provide consistency in an investigation.	<b>KEY CONCEPTS - ONLY METRIC TERMS. NEW REAL-WORLD</b>
C11	I.1.MS.5	I.1.MS.5	Use sources of information in <u>SUPPORT OF SCIENTIFIC INVESTIGATIONS.</u>	<b>TOOLS UPDATED</b>
C12	I.1.MS.6	I.1.MS.6	Write and follow procedures in the form of step-by-step instructions, formulas, flow diagrams, and sketches.	<b>ADD DATA TO KEY CONCEPTS. REAL-WORLD OMIT RECIPE</b>
C13	I.1.HS.1	I.1.HS.1	<u>ASK</u> questions that can be investigated empirically.	
C14	I.1.HS.2		Suggest empirical tests of hypotheses.	<i>NEW</i> Part of HS.1 & HS.2- Suggest tests of hypotheses

**UNDERLINES INDICATE A NEW WORD BOLD CAPS INDICATE CHANGES**

MEGOSE CODE	1996 MCF	2000 MCF	BENCHMARKS	Comments
C15	I.1.HS.3	I.1.HS.2	Design and conduct scientific investigations.	<b>NOTE NEW NUMBER. NEW TERMS IN RELATED CONCEPTS/TOOLS.</b>
C16	I.1.HS.4		Diagnose possible reasons for failures of mechanical or electronic systems.	<b>DELETED</b>
C17	I.1.HS.5		Assemble mechanical or electronic systems using appropriate tools and instructions	<b>DELETED</b>
C18	I.1.HS.6	I.1.HS.3	Recognize and explain the limitations of measuring devices.	<b>ADDITIONS TO KEY CONCEPTS</b>
C19	I.1.HS.7	I.1.HS.4	Gather and synthesize information from books and other sources of information.	<b>NEW KEY CONCEPTS, REAL-WORLD</b>
C20	I.1.HS.8	I.1.HS.5	Discuss topics in groups by making clear presentations, restating or summarizing what others have said, asking for clarification or elaboration, taking alternative perspectives, and defending a position.	<b>NEW BENCHMARK WORKING, AND KEY CONCEPTS.</b>
C21	I.1.HS.9		Reconstruct previously learned knowledge.	<i>Deleted</i>
<b>Reflecting on Scientific Knowledge (R) II.1</b>				
R1	II.1.E.1	II.1.E.1	Develop an awareness of the need for evidence in making decisions scientifically.	<b>ADDITIONS TO KEY CONCEPTS, REAL-WORLD CONTEXTS.</b>
R2	II.1.E.2	II.1.E.2	Show how science concepts can be <b>ILLUSTRATED</b> through creative expression such as language arts and fine arts.	<b>BASICALLY UNCHANGED</b>
R3	II.1.E.3	II.1.E.4	Develop an awareness of and sensitivity to the natural world.	<b>CHANGE IN NUMBER 3 TO 4.</b>
R4	II.1.E.4	II.1.E.3	Describe <b>WAYS</b> in which technology is used in everyday life.	<b>CHANGE IN NUMBER 4 TO 3. ADDITION TO REAL-WORLD</b>
R5	II.1.E.5	II.1.E.5	Develop an awareness of contributions made to science by people of diverse backgrounds <b>AND CULTURES.</b>	
R6	II.1.MS.1	II.1.MS.1	Evaluate the strengths and weaknesses of claims, arguments, or data.	<b>INFERENCE, OBSERVATION ADDED TO CONCEPTS ADDITION TO REAL-WORLD. KEY CONCEPTS ADDITION.</b>
R7	II.1.MS.2	II.1.MS.2	Describe limitations in personal knowledge.	
R8	II.1.MS.3	II.1.MS.3	Show how common themes of science, mathematics, and technology apply in real-world contexts.	<b>UNCHANGED</b>
R9	II.1.MS.4	II.1.MS.4	Describe the advantages and risks of new technologies.	<b>REWORDING OF BENCHMARK. ADDITIONS TO REAL-WORLD.</b>
		II.1.MS.5	Develop an awareness of and sensitivity to the natural world.	<i>New</i> - <b>BENCHMARK. REAL CONCEPTS,</b>

**UNDERLINES INDICATE A NEW WORD    BOLD CAPS INDICATE CHANGES**

MEGOSE CODE	1996 MCF	2000 MCF	BENCHMARKS	Comments
				<b>REAL-WORLD</b>
R10	II.1.MS.5	II.1.MS.6	Recognize the contributions made in science by cultures and individuals of diverse backgrounds.	<b>CULTURAL EMPHASIZED. ADDITIONS TO REAL-WORLD</b>
R11	II.1.HS.1	II.1.HS.1	Justify plans or explanations on a theoretical or empirical basis.	<b>UNCHANGED</b>
R12	II.1.HS.2	II.1.HS.2	Describe some general limitations of scientific knowledge.	<b>ADDITIONS TO KEY CONCEPTS</b>
R13	II.1.HS.3	II.1.HS.3	<b>SHOW</b> how common themes of science, mathematics, and technology apply in real-world contexts.	<b>"EXPLAIN" CHANGED TO "SHOW"</b>
R14	II.1.HS.4	II.1.HS.4	Discuss the historical development of key scientific concepts and principles.	<b>KEY CONCEPTS HAVE NEW REFERENCE. REAL-WORLD EXAMPLES DELETED.</b>
R15	II.1.HS.5		Evaluate alternative, long-range plans for resource use and by-product disposal in terms of environmental and economic impact.	<i>Moved to V.1 (EG) HS.4 - Environmental and economic aspects of resource use and by-product disposal</i>
		II.1.HS.5	Explain the social and economic advantages and risks of new technology.	<i>New - BENCHMARK</i>
		II.1.HS.6	Develop an awareness of and sensitivity to the natural world.	<i>New - BENCHMARK</i>
R16	II.1.HS.6	II.1.HS.7	Describe the historical, political, and social factors affecting developments in science.	<b>ADDITIONAL EXAMPLES IN REAL-WORLD.</b>
<b>Using Life Science III</b>				
<b>Cells (LC) III.1</b>				
LC1	III.1.E.1		Describe cells as living systems.	<i>Deleted - AND COMBINED WITH MS</i>
		III.1.M.1	Demonstrate evidence that all parts of living things are made of cells.	<i>New - BENCHMARK</i>
LC2	III.1.MS.1		Describe similarities/differences between single-celled and multi-cellular organisms.	<i>In III.2 (LO) MS.1 - Single celled organisms</i>
LC3	III.1.MS.2	III.1.MS.2	Explain why <b>AND HOW</b> selected specialized cells are needed by plants and animals.	Specialized cells
LC4	III.1.MS.3		Explain how cells use food as a source of energy.	<i>In III.2 (LO) HS.3 - Use of food for energy</i>
LC5	III.1.HS.1		Classify cells/organisms on the basis of organelle and/or cell types.	<i>In III.2 (LO) HS.1 - Cell organelles/types</i>
LC6	III.1.HS.2	III.1.HS.1	Explain how multi-cellular organisms grow, based on how cells grow and reproduce.	<b>ADDITIONS TO KEY CONCEPTS AND REAL-WORLD.</b>
LC7	III.1.HS.3	III.1.HS.2	Compare and contrast ways in which selected cells are specialized to carry out particular life functions.	<b>ADDITIONS TO KEY CONCEPTS AND REAL-WORLD.</b>

**UNDERLINES INDICATE A NEW WORD    BOLD CAPS INDICATE CHANGES**

<b>MEGOSE CODE</b>	<b>1996 MCF</b>	<b>2000 MCF</b>	<b>BENCHMARKS</b>	<b>Comments</b>
LC8	III.1.HS.4		Compare and contrast the chemical composition of selected cell types.	<i>In HS.1 Chemical composition of cells</i>
LC9	III.1.HS.5		Compare the transformations of matter and energy during photosynthesis and respiration.	<i>Deleted - Contrast photosynthesis and respiration</i>
LC10	III.1.HS.6		Explain how essential materials move into cells and how waste and other materials get out.	<i>Deleted - Explain diffusion and osmosis</i>
LC11	III.1.HS.7		Explain how cells use food to grow.	<i>In III.2 (LO) HS.3 - Use of food for growth</i>
<b>Living Things (LO) III.2</b>				
LO1	III.2.E.1	III.2.E.2	Compare and contrast (K-2) or classify (3-5) familiar organisms on the basis of observable body parts in a variety of animals.	<b>NOTE NUMBER CHANGE.</b>
LO2	III.2.E.2	III.2.E.1	Explain characteristics and functions of observable body parts in a variety of animals.	<b>NOTE NUMBER CHANGE.</b>
LO3	III.2.E.3	III.2.E.3	Describe life cycles of familiar organisms.	<b>KEY CONCEPTS: ADD PLANT, LARVA, PUPA, REAL-WORLD BEAN <u>PLANTS</u>, APPLE <u>TREES</u></b>
LO4	III.2.E.4	III.2.E.4	Compare and contrast food, energy, and environmental needs of selected organisms.	<b>ALSO SEE LEC.E.2</b>
LO5	III.2.E.5	III.2.E.5	<b>EXPLAIN</b> functions of selected seed plant parts.	<b>ALSO SEE LE.E.2</b>
LO6	III.2.MS.1	III.2.MS.1	Compare and classify organisms into major groups on the basis of their structure.	<b>"VERTEBRATES" ADD TO RELATED CONCEPTS; ADDITIONS TO REAL-WORLD</b>
LO7	III.2.MS.2	III.2.MS.2	Describe the life cycle of a flowering plant.	<b>TERMS ADD TO KEY CONCEPTS.</b>
LO8	III.2.MS.3	III.2.MS.3	Describe evidence that plants make and store food.	<b>ADDITIONS TO KEY CONCEPTS.</b>
LO9	III.2.MS.4	III.2.MS.4	Explain how selected systems and processes work together in animals.	<b>UNCHANGED</b>
LO10	III.2.HS.1	III.2.HS.1	Classify major groups of organisms to the kingdom level.	<b>CHANGE IN BENCHMARK WORDINGS, ADDITIONS TO KEY CONCEPTS.</b>
LO11	III.2.HS.2	III.2.HS.2	Describe the life cycle of an organism associated with human disease.	<b>TERM "BOOKWORM" DELETED FROM REAL-WORLD.</b>
LO12	III.2.HS.3	III.2.HS.3	Explain the process of food storage and food use in organisms.	<b>KEY CONCEPTS AND REAL-WORLD UPDATED.</b>
LO13	III.2.HS.4	III.2.HS.4	Explain how living things maintain a stable internal environment.	<b>"HOMEOSTASIS" ADDED TO KEY CONCEPTS</b>

**UNDERLINES INDICATE A NEW WORD    BOLD CAPS INDICATE CHANGES**

MEGOSE CODE	1996 MCF	2000 MCF	BENCHMARKS	Comments
LO14	III.2.HS.5	III.2.HS.5	Describe technology used in the prevention, diagnosis, and treatment of diseases <b><u>AND EXPLAIN ITS FUNCTION IN TERMS OF HUMAN BODY PROCESSES.</u></b>	
<b>Heredity (LH) III.3</b>				
LH1	III.3.E.1	III.3.E.1	Give evidence that characteristics are passed from parents to young.	<b>MINOR CHANGES IN KEY CONCEPTS</b>
LH2	III.3.MS.1	III.3.MS.1	Describe how the characteristics of living things are passed on through generations.	<b>ADDITIONS TO KEY CONCEPTS, REAL-WORLD</b>
LH3	III.3.MS.2	III.3.MS.2	Describe how heredity and environment may influence/determine characteristics of an organism.	
LH4	III.3.HS.1	III.3.HS.1	Explain how characteristics of living things are passed on from generation to generation.	<b>"VARIATION MUTATION" DELETED FROM KEY CONCEPTS</b>
LH5	III.3.HS.2	III.3.HS.2	Describe how genetic material is passed from parent to young during sexual and asexual reproduction.	<b>ADDITIONS TO KEY CONCEPTS AND REAL-WORLD</b>
LH6	III.3HS.3	III.3HS.3	Explain how new traits may arise in individuals through changes in genetic material (DNA).	<b>ADDITIONS TO KEY CONCEPTS AND REAL-WORLD</b>
<b>Evolution (LE) III.4</b>				
LE1	III.4.E.1	III.4.E.1	Explain how fossils provide evidence about the nature of ancient life.	<b>CONNECTED TO EGE-4</b>
LE2	III.4.E.2	III.4.E.2	Explain how physical and behavioral characteristics of animals help them to survive in their environments.	<b>PHRASE "ADAPTATIONS TO CHANGES IN THE ENVIRONMENT" DELETED.</b>
LE3	III.4.MS.1	III.4.MS.1	Describe how scientific theory traces possible evolutionary relationships among present and past life forms.	<b>BENCHMARK REWORDED</b>
		III.4.MS.2	Explain how new traits might become established in a population and how species become extinct.	<b>NEW</b>
LE4	III.4.HS.1	III.4.HS.1	Describe what biologists consider to be evidence for human evolutionary relationships to selected animal groups.	<b>"DNA, PROTEIN STRUCTURE" ADDED TO KEY CONCEPTS</b>
LE5	III.4.HS.2	III.4.HS.2	Explain how a new species or variety may originate through the evolutionary process of natural selection.	<b>KEY CONCEPTS ADD "CONCEPT OF SPECIES"</b>
LE6	III.4.HS.3		Explain how new traits might arise and become established in a population.	<i>Moved to III.4 (LE) MS.2</i>
<b>Ecosystems (LEC) III.5</b>				
LEC1	III.5.E.1	III.5.E.1	Identify familiar organisms as part of a food chain or food web and describe their feeding relationships within the web.	<b>"COMMUNITY" ADDED TO KEY</b>

UNDERLINES INDICATE A NEW WORD    BOLD CAPS INDICATE CHANGES

MEGOSE CODE	1996 MCF	2000 MCF	BENCHMARKS	Comments
				<b>CONCEPTS</b>
LEC2	III.5.E.2		Explain common patterns of interdependence and interrelationships of living things.	<i>Combined with E.1</i>
LEC3	III.5.E.3	III.5.E.2	Describe the basic requirements for all living things to maintain their existence.	<b>SEE LOE-4</b>
LEC4	III.5.E.4	III.5.E.3	<b>DESIGN</b> systems that encourage growing of particular plants and animals.	
LEC5	III.5.E.5	III.5.E.4	Describe positive and negative effects of humans on the environment.	<b>ADD "RENEWABLE AND NON-RENEWABLE RESOURCES RECYCLING"</b>
LEC6	III.5.MS.1	III.5.MS.1	Describe common patterns of relationships among populations.	<b>DELETE "SYMBIOSIS" ADD "MUTUALLY BENEFICIAL" IMPROVED REAL-WORLD</b>
LEC7	III.5.MS.2	III.5.MS.3	Predict the effects of changes in one population in a food web on other populations.	<b>ADDITIONS TO KEY CONCEPTS, REAL-WORLD</b>
LEC8	III.5.MS.3	III.5.MS.2	Describe how organisms acquire energy directly or indirectly from sunlight.	<b>ADDITION TO KEY CONCEPTS</b>
LEC9	III.5.MS.4	III.5.MS.4	Describe the likely succession of a given ecosystem over time.	<b>ADD "PIONEER"</b>
LEC10	III.5.MS.5		Identify some common materials that cycle through the environment.	<i>Moved to HS.5</i>
LEC11	III.5.MS.6	III.5.MS.6	Describe ways in which humans alter the environment.	<b>ADDITIONS TO KEY CONCEPTS, REAL-WORLD</b>
LEC12	III.5.MS.7	III.5.MS.5	Explain how humans use and benefit from plant and animal materials.	<b>OMIT "PROTEIN"</b>
LEC13	III.5.HS.1	III.5.HS.1	Describe common ecological relationships between and among species and their environments.	<b>ADDITIONS TO KEY CONCEPTS</b>
LEC14	III.5.HS.2	III.5.HS.2	Explain how energy flows through familiar ecosystems.	<b>CHANGE "FOOD CHAINS" TO "FOOD WEBS"</b>
LEC15	III.5.HS.3	III.5.HS.3	Describe general factors regulating population size in ecosystems.	<b>ADD "LOSS OF HABITAT"</b>
LEC16	III.5.HS.4	III.5.HS.4	Describe responses of an ecosystem to events that cause it to change.	<b>ADDITIONS TO KEY CONCEPTS, REAL-WORLD</b>
LEC17	III.5.HS.5	III.5.HS.5	Describe how <b>CARBON AND SOIL NUTRIENTS</b> cycle through selected ecosystems.	<b>NEW REAL-WORLD</b>
LEC18	III.5.HS.6	III.5.HS.6	Explain the effects of agriculture and <b>URBAN DEVELOPMENT</b> on selected ecosystems.	<b>NEW KEY CONCEPTS</b>

**Matter and Energy (PME) IV.1**

**UNDERLINES INDICATE A NEW WORD    BOLD CAPS INDICATE CHANGES**

MEGOSE CODE	1996 MCF	2000 MCF	BENCHMARKS	Comments
PME1	IV.1.E.1	IV.1.E.1	Classify common objects and substances according to observable attributes/properties.	<b>ADDITIONS TO KEY CONCEPTS. DELETE "GASOLINE" AS AN EXAMPLE</b>
PME2	IV.1.E.2		Measure weight, dimensions, and temperature of appropriate objects and materials.	<i>Part of I.1 (C) E.4 - Measure properties</i>
PME3	IV.1.E.3	IV.1.E.2	Identify properties of materials which make them useful.	<b>ADDITIONS TO KEY CONCEPTS</b>
PME4	IV.1.E.4	IV.1.E.3	Identify forms of energy associated with common phenomena.	<b>MODIFICATIONS TO KEY CONCEPTS. ELECTRICAL CIRCUITS ADDED TO REAL-WORLD</b>
PME5	IV.1.E.5		Describe the interaction of magnetic materials with other magnetic materials and non-magnetic materials.	<i>Moved to IV.3 (PMO) E. 3 - Magnets</i>
PME6	IV.1.E.6		Describe the interaction of charged materials with other charged or uncharged materials.	<i>A part of IV.3 (PMO) MS.3 - Static electricity</i>
		IV.1.E.4	Construct simple, useful electrical circuits. (3-5)	<b>NEW</b>
PME7	IV.1.E.7	IV.1.E.5	Describe possible electrical hazards to be avoided at home and at school. (K-2)	<b>NEW NUMBER. ADDITIONS TO REAL-WORLD</b>
		IV.1.MS.1	Describe and compare objects in terms of mass, volume, and density.	<i>Moved from HS.1</i>
PME8	IV.1.MS.1		Measure physical properties of objects or substances (mass, weight, temperature, dimensions, area, volume).	<i>In I.1 (C) M.4 <b>NEW PLACEMENT</b></i>
PME9	IV.1.MS.2	IV.1.MS.2	<b><u>EXPLAIN</u></b> when length, mass, weight, density, area, volume or temperature are appropriate to describe the properties of an object or substance.	<b>REVISED KEY CONCEPTS, REAL-WORLD CONCEPTS</b>
PME10	IV.1.MS.3	IV.1.MS.3	Classify substances as elements, compounds, or mixtures <b><u>AND JUSTIFY CLASSIFICATIONS IN TERMS OF ATOMS AND MOLECULES.</u></b>	<b>SEE PMEM-4</b>
PME11	IV.1.MS.4		Describe matter as consisting of extremely small particles (atoms) that bond to form molecules.	<i>In MS.3 - Atoms and Molecules</i>
PME12	IV.1.MS.5	IV.1.MS.4	Describe the arrangement and motion of molecules in solids, liquids, and gases.	<b>"SEE PCMM-4"</b>
PME13	IV.1.MS.6		Describe energy and the many common forms it takes (mechanical, heat, light, sound, electrical).	<i>In IV.2 (PCM) MS.4 - Forms of Energy</i>
PME14	IV.1.MS.7		Describe how common forms of energy can be converted, one to another.	<i>Moved to IV.2 (PCM) MS.4 - Energy Transformations</i>
PME15	IV.1.MS.8	IV.1.MS.5	<b><u>CONSTRUCT SIMPLE CIRCUITS AND EXPLAIN HOW THEY WORK</u></b> in terms of the flow of current.	<b>ADDITIONS TO KEY CONCEPTS. "FLASHLIGHT" DELETED</b>

**UNDERLINES INDICATE A NEW WORD    BOLD CAPS INDICATE CHANGES**

MEGOSE CODE	1996 MCF	2000 MCF	BENCHMARKS	Comments
		IV.1.MS.6	Investigate electrical devices and explain how they work, using instructions and appropriate safety precautions.	<i>Moved from I.1 (C) M.3 -</i>
PME16	IV.1.MS.9		Use electric currents to create magnetic fields.	<i>Moved to IV.3 (PMO)MS.4 - Electromagnetism</i>
PME17	IV.1.HS.1		Describe and compare objects in terms of mass, volume, and density.	<i>Moved to MS.1 - Density</i>
PME18	IV.1.HS.2	IV.1.HS.2	<b><u>IDENTIFY PROPERTIES</u></b> of common families of elements.	<b>RECORDED BENCHMARK</b>
PME19	IV.1.HS.3	IV.1.HS.1	Analyze properties of common household and agricultural materials in terms of risk/benefit balance.	
PME20	IV.1.HS.4	IV.1.HS.3	Explain how elements differ, in terms of the structural parts and electrical charges of atoms.	<b>REWORDED BENCHMARK, ADDITION TO KEY CONCEPTS.</b>
PME21	IV.1.HS.5		Describe how energy is conserved during transformations.	<i>In IV.2 (PCM) MS.4 - Energy Conservation</i>
PME22	IV.1.HS.6		Explain changes in matter and energy involving heat transfer.	<i>Moved to IV.2 (PCM) HS.5 - Heat transfer</i>
PME23	IV.1.HS.7	IV.1.HS.5	Describe how electric currents can be produced by interacting wires and magnets, and <b><u>EXPLAIN APPLICATIONS OF THIS PRINCIPLE.</u></b>	<b>KEY CONCEPTS/REAL-WORLD CONTEXT REVISED.</b>
PME24	IV.1.HS.8	IV.1.HS.4	Explain how current is controlled in simple series and parallel circuits.	<b>REVISED BENCHMARK</b>
<b>Changes in Matter (PCM) IV.2</b>				
PCM1	IV.2.E.1	IV.2.E.1	Describe common physical changes in matter - size, shape; melting, freezing (K-2); dissolving, evaporating (3-5).	<b>PROCESSES ADDED TO KEY CONCEPTS. "PUDDLES DRYING UP" ADDED.</b>
PCM2	IV.2.E.2	IV.2.E.2	Prepare mixtures and separate them into their component parts.	<b>KEY CONCEPTS &amp; REAL WORLD - MINOR REVISIONS</b>
PCM3	IV.2.E.3		Construct simple objects that fulfill a technological purpose.	<i>Deleted -</i>
PCM4	IV.2.MS.1	IV.2.MS.1	Describe common physical changes in matter: evaporation, condensation, sublimation, thermal expansion and contraction.	<b>PROCESSES ADDED TO KEY CONCEPTS, REAL-WORLD</b>
PCM5	IV.2.MS.2	IV.2.MS.2	Describe common chemical changes in terms of properties of reactants and products.	<b>ADDITIONS TO KEY CONCEPTS, REAL-WORLD</b>
PCM6	IV.2.MS.3		Distinguish between physical and chemical changes in natural and technological systems.	<i>In MS.1 and MS.2 - Distinguish between physical and chemical changes</i>
PCM7	IV.2.MS.4		Describe how waste products accumulating from natural and technological activity create pollution.	<i>Part of other pollution benchmarks</i>
PCM8	IV.2.MS.5	IV.2.MS.3	Explain physical changes in terms of the arrangement and motion of atoms and molecules.	<b>ADDITIONS TO KEY CONCEPTS</b>

**UNDERLINES INDICATE A NEW WORD    BOLD CAPS INDICATE CHANGES**

MEGOSE CODE	1996 MCF	2000 MCF	BENCHMARKS	Comments
		IV.2.MS.4	<b>Describe common energy transformation in every day situations.</b>	<b>REVISED BENCHMARK</b>
PCM9	IV.2.HS.1	IV.2.HS.2	Explain <u>WHY</u> mass is conserved in physical and chemical changes.	<b>REVISED KEY CONCEPTS, REAL-WORLD</b>
PCM10	IV.2.HS.2	IV.2.HS.3	Contrast nuclear fission, nuclear fusion, and natural radioactivity.	<b>ENTIRE BENCHMARK REVISED</b>
PCM11	IV.2.HS.3		Trace, to an original source, the energy used by living things and machines.	<i>Part of III.5 (LEC) MS.2 - Sun as original source of energy</i>
PCM12	IV.2.HS.4		Describe how common materials are made and disposed of or recycled.	Included in V.1 (EG) HS.3
PCM13	IV.2.HS.5	IV.2.HS.1	Explain chemical changes in terms of the breaking of bonds and the rearrangement of atoms to form new substances.	<b>REVISED WORDING, ADDITIONS TO KEY CONCEPTS</b>
PCM14	IV.2.HS.6		Describe, compare, and contrast changes in atoms and/or molecules during physical, chemical, and nuclear changes.	<i>Included in other benchmarks</i>
PCM15	IV.2.HS.7	IV.2.HS.4	Describe energy transformations involved in physical, chemical <b>AND NUCLEAR CHANGES, AND CONTRAST THEIR RELATIVE MAGNITUDES.</b>	<b>REVISED KEY CONCEPTS, REAL-WORLD</b>
PCM16	IV.2.HS.8		Describe, compare, and contrast relative magnitude of energy changes involved in physical, chemical, and nuclear changes.	<i>Combined with HS.4 - Magnitudes of energy changes</i>
		IV.2.HS.5	Explain changes in matter and energy involving heat transfer.	<i>Moved from IV.1 (PME) HS.6 - Heat transfer</i>
<b>Motions of Objects (PMO) IV.3</b>				
PMO1	IV.3.E.1	IV.3.E.1	Describe or compare motions of common objects in terms of speed and direction.	
PMO2	IV.3.E.2	IV.3.E.2	Explain how forces (pushes or pulls) are needed to speed up, slow down, stop, or change the direction of a moving object.	<b>ADDITIONS TO KEY CONCEPTS</b>
		IV.3.E.3	Describe patterns of interaction of magnetic materials with other magnetic and non-magnetic materials.	<i>Moved from I.1 (PME) E.5 - Magnetic interactions</i>
PMO3	IV.3.E.3	IV.3.E.4	<b>IDENTIFY</b> and use simple machines <b>AND DESCRIBE HOW THEY CHANGE EFFORT.</b>	<b>CHANGES TO KEY CONCEPTS "SEE-SAW" ADDED.</b>
		IV.3.E.5	Manipulate simple mechanical devices and explain how their parts work together.	<i>Moved from I.1 (C) E.3 - How simple mechanical devices work</i>
PMO4	IV.3.MS.1	IV.3.MS.1	Qualitatively describe and compare motions in two dimensions.	Describe motion in two dimensions
PMO5	IV.3.MS.2	IV.3.MS.2	Relate motion of objects to unbalanced forces in <b>TWO</b> dimensions.	<b>ADDITIONS TO KEY CONCEPTS, REAL-WORLD</b>

**UNDERLINES INDICATE A NEW WORD    BOLD CAPS INDICATE CHANGES**

MEGOSE CODE	1996 MCF	2000 MCF	BENCHMARKS	Comments
PMO6	IV.3.MS.3	IV.3.MS.3	Describe the <u>NON-CONTACT</u> forces exerted by magnets, electrically charged objects, and gravity.	<b>REVISED KEY CONCEPTS, REAL-WORLD</b>
		IV.3.MS.4	Use electric currents to create magnetic fields, and explain applications of this principle.	<i>Moved from I.1 (PME) - Electromagnetism</i>
PMO7	IV.3.MS.4	IV.3.MS.5	Design strategies for moving objects by application of forces, including the use of simple machines.	<b>REVISED KEY CONCEPTS</b>
PMO8	IV.3.HS.1		Perform measurements and calculations to describe the speed and direction of an object.	<i>Measuring is in Constructing (I.1)</i>
PMO9	IV.3.HS.2		Describe that whenever one object exerts a force on a second object, the second object exerts an equal and opposite force on the first object.	<i>In MS.2 - "Reaction force"</i>
PMO10	IV.3.HS.3	IV.3.HS.1	Analyze <u>PATTERNS</u> of force and motion in the operation of complex machines.	<b>REVISED RELATED CONCEPTS. "PUMPS" ADDED TO REAL-WORLD</b>
PMO11	IV.3.HS.4	IV.3.HS.2	Explain energy conversions in moving objects and machines.	<b>ADDITIONS TO KEY CONCEPTS, REAL-WORLD CONTEXTS.</b>
<b>Waves and Vibrations (PWV) IV.4</b>				
PWV1	IV.4.E.1	IV.4.E.1	Describe sounds in terms of their properties.	
PWV2	IV.4.E.2	IV.4.E.1	Explain how sounds are made.	
		IV.4.E.3.	Use prisms and filters with light sources to produce various colors of light.	<b>NEW</b>
PWV3	IV.4.E.3.		Describe light from a light source in terms of its properties.	<i>Deleted</i>
PWV4	IV.4.E.4		Explain how light illuminates objects.	<i>In E.4 &amp; MS.3</i>
PWV5	IV.4.E.5	IV.4.E.4	Explain how shadows are made.	<b>ADDITIONS TO KEY CONCEPTS. ADDITION TO REAL-WORLD CONTEXT</b>
PWV6	IV.4.MS.1	IV.4.MS.1	Explain how sound travels through different media.	<b>"VACUUM" ADDED TO KEY CONCEPTS</b>
PWV7	IV.4.MS.2	IV.4.MS.2	Explain how echoes occur and how they are used.	<b>"REFLECTION" ADDED TO KEY CONCEPTS</b>
PWV8	IV.4.MS.3	IV.4.MS.3	Explain how light <u>IS REQUIRED</u> to see objects.	<b>PARTS OF EYE DELETED. ADDITION TO KEY CONCEPTS AND REAL-WORLD CONTEXTS</b>
PWV9	IV.4.MS.4	IV.4.MS.4	Describe ways in which light interacts with matter.	<b>ADDITIONS TO REAL-WORLD CONTEXTS</b>

**UNDERLINES INDICATE A NEW WORD    BOLD CAPS INDICATE CHANGES**

MEGOSE CODE	1996 MCF	2000 MCF	BENCHMARKS	Comments
PWV10	IV.4.MS.5	IV.4.MS.5	Describe the motion of vibrating objects.	<b>SOME DELETIONS FROM KEY CONCEPTS. RE-WORDED BENCHMARK</b>
PWV11	IV.4.MS.6	IV.4.MS.6	Explain how <u>MECHANICAL</u> waves transfer energy.	<b>ADDITIONS TO KEY CONCEPTS, REAL-WORLD CONTEXTS</b>
PWV12	IV.4.HS.1	IV.4.HS.1	Relate characteristics of sounds that we hear to properties of sound waves.	<b>NO CHANGE</b>
PWV13	IV.4.HS.2		Explain how sound recording and reproducing devices work.	<i>Deleted -</i>
PWV14	IV.4.HS.3		Relate colors to wavelengths of light.	<i>Included in HS.3</i>
PWV15	IV.4.HS.4	IV.4.HS.2	Explain how we see colors of objects.	<b>ADDITIONS TO KEY CONCEPTS, REAL-WORLD CONTEXTS</b>
PWV16	IV.4.HS.5	IV.4.HS.4	Describe different types of waves and their technological applications.	<b>"GAMMA RAYS" OMITTED. ADDITIONS TO REAL-WORLD CONTEXTS</b>
PWV17	IV.4.HS.6	IV.4.HS.3	Describe waves in terms of their properties	<b>BENCHMARK WORDING CHANGED. "COLORS OF LIGHT" ADD TO KEY CONCEPTS, ADDITIONS TO REAL-WORLD CONTEXTS</b>
PWV18	IV.4.HS.7		Describe the behavior of waves when they interact.	<i>Deleted -</i>
PWV19	IV.4.HS.8		Relate changes in detected frequency of a source to the motion of the source and/or the detector.	<i>Deleted -</i>
PWV20	IV.4.HS.9		Explain how energy is stored and transformed in vibrating and oscillating objects.	<i>Deleted -</i>
<b>Geosphere (EG) V.1</b>				
EG1	V.1.E.1	V.1.E.1	Describe major features of the earth's surface.	<b>CHANGES TO KEY CONCEPTS AND REAL-WORLD CONTEXTS</b>
EG2	V.1.E.2	V.1.E.2	Recognize and describe different types of earth materials.	<b>ADDITIONS TO KEY CONCEPTS.</b>
EG3	V.1.E.3	V.1.E.4	Explain how rocks and fossils are used to understand the history of the earth.	<b>CHANGES TO KEY CONCEPTS, REAL-WORLD CONTEXTS</b>
EG4	V.1.E.4	V.1.E.3	Describe natural changes in the earth's surface	<b>ADDITIONS TO KEY CONCEPTS, REAL-WORLD CONTEXTS</b>
EG5	V.1.E.5	V.1.E.5	Describe uses of materials taken from the earth.	<b>CHANGES TO KEY CONCEPTS, REAL-WORLD CONTEXTS</b>

**UNDERLINES INDICATE A NEW WORD    BOLD CAPS INDICATE CHANGES**

MEGOSE CODE	1996 MCF	2000 MCF	BENCHMARKS	Comments
EG6	V.1.E.6	V.1.E.6	Demonstrate ways to <u>CONSERVE NATURAL RESOURCES AND REDUCE POLLUTION THROUGH REDUCTION, REUSE, AND RECYCLING</u> of manufactured materials.	<b>ADDITIONS TO REAL-WORLD CONTEXTS</b>
EG7	V.1.MS.1	V.1.MS.1	Describe and identify surface features using maps.	
EG8	V.1.MS.2	V.1.MS.2	Explain how rocks and minerals are formed.	<b>ADDITIONS TO KEY CONCEPTS, REAL-WORLD CONTEXTS</b>
EG9	V.1.MS.3	V.1.MS.4	Explain how rocks and fossils are used to understand the age and geological history of the earth.	<b>ADDITIONS TO KEY CONCEPTS, REAL-WORLD CONTEXTS</b>
EG10	V.1.MS.4	V.1.MS.3	Explain how rocks are broken down, how soil is formed and how surface features change.	<b>CHANGES TO KEY CONCEPTS, REAL-WORLD CONTEXTS</b>
EG11	V.1.MS.5	V.1.MS.5	Explain how technology changes the surface of the earth.	<b>"POSITIVE CONSEQUENCES" ADDED TO REAL-WORLD CONTEXTS</b>
EG12	V.1.HS.1	V.1.HS.1	Explain the surface features of the Great Lakes region using Ice Age theory.	<b>MODIFICATIONS TO KEY CONCEPTS</b>
EG13	V.1.HS.2	V.1.HS.2	Use the plate tectonics theory to explain features of the earth's surface and geological phenomena and describe evidence for the plate tectonics theory.	<b>SEVERAL ADDITIONS TO KEY CONCEPTS AND REAL-WORLD CONTEXTS</b>
EG14	V.1.HS.3	V.1.HS.3	Explain how common objects are made from earth materials and why earth materials are conserved and recycled.	<i>Includes old IV.2.HS.4 (PCM) 12 - Technological uses of earth materials</i>
		V.1.HS.4	Evaluate alternative long-range plans for resource use and by-product disposal in terms of environmental and economic impact.	<i>Was II.1.HS.5 (R 15) - Environmental and economic aspects of resource use and by-product disposal</i>
<b>Hydrosphere (EH) V.2</b>				
EH1	V.2.E.1	V.2.E.1	Describe how water exists on earth in three states.	<b>GRADE LEVELS INDICATED FOR KEY CONCEPTS. ADDITIONS TO REAL-WORLD CONTEXTS</b>
EH2	V.2.E.2	V.2.E.2	Trace the path that rain water follows after it falls.	<b>MODIFICATION TO KEY CONCEPTS. MORE EXAMPLES FOR REAL-WORLD CONTEXTS.</b>
EH3	V.2.E.3	V.2.E.3	Identify sources of water <u>AND ITS USES</u> .	<b>MORE EXAMPLES FOR KEY CONCEPTS AND REAL-WORLD CONTEXTS.</b>
EH4	V.2.E.4		Describe uses of water.	<i>Included in E.4</i>

**UNDERLINES INDICATE A NEW WORD    BOLD CAPS INDICATE CHANGES**

MEGOSE CODE	1996 MCF	2000 MCF	BENCHMARKS	Comments
EH5	V.2.MS.1	V.2.MS.1	<u>USE MAPS OF THE EARTH TO LOCATE</u> water in its various forms and describe conditions under which they exist.	<b>"CLIMATE" ICE AGES" DELETED, MAPS ADDED TO KEY CONCEPTS.</b>
EH6	V.2.MS.2	V.2.MS.2	Describe how <u>SURFACE WATER</u> in Michigan reaches the ocean <u>AND RETURNS</u> .	<b>KEY CONCEPTS MODIFIED. REAL-WORLD CONTEXTS - ADD "SALTYNESS OF OCEAN"</b>
		V.2.MS.3	Explain how water exists below the earth's surface and how it is replenished	<i>Moved from old H.1 (EH 8) - Groundwater</i>
EH7	V.2.MS.3	V.2.MS.4	Describe the origins of pollution in the hydrosphere.	<b>KEY CONCEPTS - ADD "AGRICULTURAL RUN-OFF"</b>
		V.2.HS.1	Identify and describe regional watersheds.	<i>New - Watersheds</i>
EH8	V.2.HS.1	V.2.MS.3	Explain how water moves below the earth's surface.	<i>Moved to M.3 - Groundwater</i>
EH9	V.2.HS.2		Explain relationships between the hydrosphere, regional climates, and human activities.	<i>Included in V.3 (EAW) HS.1 - Climates and human activities</i>
EH10	V.2.HS.3	V.2.HS.2	Describe how human activities affect the quality of water in the hydrosphere.	<b>SLIGHT MODIFICATIONS TO KEY-CONCEPTS</b>
<b>Atmosphere and Weather (EAW) V.3</b>				
EAW1	V.3.E.1		Describe the atmosphere.	<i>Combined with E.2 - The atmosphere</i>
EAW2	V.3.E.2	V.3.E.1	Describe weather conditions.	<i>Includes old E.1 (EAW 1) - <b>CLIMATE DELETED</b></i>
EAW3	V.3.E.3	V.3.E.2	Describe seasonal changes in Michigan's weather.	<b>KEY-CONCEPTS EXPANDED</b>
EAW4	V.3.E.4	V.3.E.3	Explain appropriate safety precautions during severe weather.	<b>BLIZZARD ADDED</b>
EAW5	V.3.MS.1	V.3.MS.2	Describe the composition and characteristics of the atmosphere.	<b>ADDITIONS TO REAL-WORLD CONTEXTS</b>
EAW6	V.3.MS.2	V.3.MS.1	<u>EXPLAIN</u> patterns of changing weather and how they are measured.	<b>ADDED STATIONERY FRONT, HUMIDITY, LAKE EFFECT SNOW</b>
EAW7	V.3.MS.3	V.3.MS.3	<u>EXPLAIN THE BEHAVIOR OF WATER IN THE ATMOSPHERE.</u>	<b>ADDITIONS TO KEY CONCEPTS AND REAL-WORLD CONTEXTS.</b>
EAW8	V.3.MS.4	V.3.MS.4	Describe health effects of polluted air.	<b>ADD ACID RAIN, OZONE WARNINGS.</b>
EAW9	V.3.HS.1	V.3.HS.2	Describe patterns of air movement in the atmosphere and how they affect weather conditions.	<b>MODIFICATIONS TO KEY CONCEPTS, REAL-WORLD CONTEXTS</b>

**UNDERLINES INDICATE A NEW WORD BOLD CAPS INDICATE CHANGES**

MEGOSE CODE	1996 MCF	2000 MCF	BENCHMARKS	Comments
EAW10	V.3.HS.2	V.3.HS.3	Explain and predict general weather patterns and storms.	<b>ADDITIONS TO KEY CONCEPTS AND REAL-WORLD CONTESTS.</b>
EAW11	V.3.HS.3	V.3.HS.1	Explain how interactions of the atmosphere, hydrosphere and geosphere create climates and how climates change over time	<i>Includes old V.2 HS.2 (EH HS.2) - Climates</i>
EAW12	V.3.HS.4	V.3.HS.4	Explain the impact of human activities on the atmosphere and <b><u>EXPLAIN WAYS THAT INDIVIDUALS AND SOCIETY CAN REDUCE POLLUTION.</u></b>	
<b>Solar System (ES) V.4</b>				
ES1	V.4.E.1	V.4.E.1	Compare and contrast <b><u>CHARACTERISTICS</u></b> of the sun, moon and earth.	
ES2	V.4.E.2	V.4.E.2	Describe the motion of the earth around the sun and the <b><u>MOON AROUND THE EARTH.</u></b>	<b>ADDITIONS TO KEY CONCEPTS, DELETIONS FROM REAL-WORLD CONTESTS.</b>
ES3	V.4.MS.1	V.4.MS.1	Compare the earth to other planets <b><u>AND MOONS</u></b> in terms of supporting life.	<b>MODIFICATION TO KEY CONCEPTS AND REAL-WORLD CONTESTS</b>
ES4	V.4.MS.2	V.4.MS.2	Describe, compare, and explain the motions of <b><u>SOLAR SYSTEM OBJECTS.</u></b>	<b>CLARIFICATION OF KEY CONCEPTS AND REAL-WORLD CONTESTS</b>
ES5	V.4.MS.3	V.4.MS.3	Describe and explain common observations of the night skies.	<b>ADDITIONS TO KEY CONCEPTS AND REAL-WORLD CONTESTS</b>
ES6	V.4.MS.4		Explain how the solar system formed.	<i>In HS.3 - Solar system formation</i>
ES7	V.4.HS.1	V.4.HS.1	Compare our sun to other stars.	<b>MODIFICATIONS TO KEY CONCEPTS AND REAL-WORLD CONTESTS.</b>
ES8	V.4.HS.2		Explain common observations of the day and night sky.	<i>In MS.3 - Common observations of the sky</i>
ES9	V.4.HS.3	V.4.HS.2	Describe the position and motion of our solar system <b><u>IN OUR GALAXY AND THE OVERALL SCALE, STRUCTURE AND AGE OF THE UNIVERSE.</u></b>	<b>ADDITIONS TO KEY CONCEPTS, REAL WORLD TOOLS</b>
ES10	V.4.HS.4		Explain why seasons occur on earth.	<i>In MS.4 - Seasons</i>
ES11	V.4.HS.5	V.4.HS.3	Explain how stars <b><u>AND PLANETARY SYSTEMS</u></b> form and how stars produce energy.	<i>Includes old MS.4 (ES.6) -</i> <b>ADDITIONS TO KEY CONCEPTS, REAL-WORLD CONTESTS</b>
ES12	V.4.HS.6	V.4.HS.4	Explain how technology and scientific inquiry have helped us learn about the universe.	<b>COMPUTER IMAGING, EXTRATERRESTRIAL LIFE ADDED</b>

UNDERLINES INDICATE A NEW WORD    BOLD CAPS INDICATE CHANGES

<b>MEGOSE CODE</b>	<b>1996 MCF</b>	<b>2000 MCF</b>	<b>BENCHMARKS</b>	<b>Comments</b>