Michigan District Lutheran School Curriculum *SCOPE & SEQUENCE*

Grade Level: 5	**Curricular Area: Science**			
Unit 1: **Science Processes** • **Inquiry and Reflection**	**Unit 2:** **Physical** • **Motion of Objects** • **Energy** • **Properties of Matter** • **Changes in Matter**	**Unit 3:** **Life** • **Organization of Living Things** • **Heredity** • **Evolution** • **Ecosystems**	**Unit 4:** **Earth** • **Solid Earth** • **Earth Systems** • **Fluid Earth** • **Earth in Space and Time**	**Unit 5:** **Health** •

Michigan District Lutheran School Curriculum *OUTCOMES*

Curricular Area: Science (5th Grade)
Unit 1: Science Processes
Outcome 1A: (C) I.1 All students will ask questions that help them learn about the world. All students will design and conduct investigations using appropriate methodology and technology. All students will learn from books and other sources of information. All students will communicate findings of investigations using appropriate technology.

Grade Level Content Expectations (GLCEs)	**Content Statement**	**Integrating the Faith (I.F.)**
S.IR.05.01 Generate scientific questions based on observations, investigations, and research. S.IR.05.02 Design and conduct scientific investigations S.IR.05.03 Use tools and equipment appropriate to scientific investigations. S.IR.05.04 Use metric measurement devices in an investigation. S.IR.05.05 Construct charts and graphs from data and observations. S.IR.05.06 Identify patterns in data. S.IR.05.07 Analyze information from data tables and graphs to answer scientific questions.	S.IR.05.1 Inquiry involves generating questions, conducting investigations, and developing solutions to problems through reasoning and observation. Inquiry includes an analysis and presentation of findings that lead to future questions, research, and investigations.	

Outcome 1B:
(R) II.1 All students will analyze claims for their scientific merit and explain how scientists decide what constitutes scientific knowledge. All students will show how science is related to other ways of knowing.

Grade Level Content Expectations (GLCEs)	**Content Statement**	**Integrating the Faith (I.F.)**
S.IR.05.08 Evaluate the strengths and weaknesses of claims, arguments, and data. S.IR.05.09 Describe limitations in personal and scientific knowledge. S.IR.05.10 Identify the need for evidence in making scientific decisions. S.IR.05.11 Demonstrate scientific concepts through various illustrations, performances, models, exhibits, and activities. S.IR.05.12 Design solutions to problems using technology. S.IR.05.13 Describe the effect humans and other organisms have on the balance in the natural world. S.IR.05.14 Describe how science and technology have advanced because of the contributions of many people throughout history and across cultures.	S.IR.00.2 Reflecting knowledge is the application of scientific knowledge to new and different situations. Reflecting knowledge requires careful analysis of evidence that guides decision making and the application of science throughout history.	

Michigan District Lutheran School Curriculum *TEACHER ACCOUNTABILITY RECORD*

Unit 1: Science Processes **Teacher Name: _____** **Grade Level: 5**	**Curricular Area: Science** **School Year:**				
Standards Benchmark or *GLCE* *(Italics indicate the one used.)*	**Dates Taught (month/day/initials):**				
S.IR.05.01 Generate scientific questions based on observations, investigations, and research.					
S.IR.05.02 Design and conduct scientific investigations					
S.IR.05.02 Design and conduct scientific investigations					
S.IR.05.03 Use tools and equipment appropriate to scientific investigations.					
S.IR.05.04 Use metric measurement devices in an investigation.					
S.IR.05.05 Construct charts and graphs from data and observations.					
S.IR.05.06 Identify patterns in data.					
S.IR.05.07 Analyze information from data tables and graphs to answer scientific questions.					
S.IR.05.08 Evaluate the strengths and weaknesses of claims, arguments, and data.					
S.IR.05.09 Describe limitations in personal and scientific knowledge.					
S.IR.05.10 Identify the need for evidence in making scientific decisions.					
S.IR.05.11 Demonstrate scientific concepts through various illustrations, performances, models, exhibits, and activities.					
S.IR.05.12 Design solutions to problems using technology.					
S.IR.05.13 Describe the effect humans and other organisms have on the balance in the natural world.					

S.IR.05.14 Describe how science and technology have advanced because of the contributions of many people throughout history and across cultures.					

Unit 2: Physical Science

Outcome 2A: All students will describe frame of reference.

Grade Level Content Expectations (GLCEs)	Content Statement	Integrating the Faith (I.F.)
P.MO.05.15 Explain the motion of an object relative to its point of reference. P.MO.05.16 Describe the motion of an object in terms of distance, time and direction, as the object moves, in relationship to other objects. P.MO.05.17 Illustrate how motion can be measured and represented on a graph.	P.MO.05.2 Motion can be described by a change in position relative to a point of reference. An object's motion can be described by its speed and the direction it is moving. An object's position and speed can be measured and graphed as a function of time.	• When Jesus was a child he might have seen some pyramids. The Great Pyramid contained 2,300,000 stones. They were each 3' wide and weighed an average of 2.5 tons. The stones were cut and carried from a quarry 12 mile to the east. Calculate the work required to move one stone to the site. Then calculate the work needed for all the stones. • Energy can neither be created nor destroyed. The universe was created by God and when creation was finished, God rested (Gen. 2:1-3). Many churches burn a sanctuary candle. Where is the energy when the candle is burned up? • Discuss how we act in agreement or disagreement with God's will when we develop and use solar, wind, hydroelectric, nuclear, or geothermal energy. Are any of these immoral or against God's will for us?

Outcome 2B:
(PME) IV. 1 All students will measure and describe the things around us.
(PMO) IV. 3 All students will describe how things around us move, explain why things move as they do, and demonstrate and explain how we control the motions of objects.

Grade Level Content Expectations (GLCEs)	Content Statement	Integrating the Faith (I.F.)
P.MO.05.18 Describe how constant motion is the result of balanced forces. P.MO.05.19 Describe how changes in the motion of objects are caused by unbalanced forces. P.MO.05.20 Relate the size of change in motion to the strength of unbalanced forces and the mass of the object.	P.MO.05.3 Forces have a magnitude and direction. Forces can be added. The net force on an object is the sum of all of the forces acting on the object. An object's speed and/or direction of motion changes when a non-zero net force is applied to it. A balanced force on an object does not change the objects motion (the object either remains at rest or continues to move at a constant speed in a straight line).	

Outcome 2C:
All students will describe the effects of forces.

Grade Level Content Expectations (GLCEs)	Content Statement	Integrating the Faith (I.F.)
P.MO.05.21 Explain how contact forces change an object's motion. P.MO.05.22 Explain how non-contact forces change an object's motion.	P.MO.07.4 Some forces between objects act when the objects are in direct contact (touching), such as friction and air resistance, or when they are not in direct contact (not touching), such as magnetic force, electrical force, and gravitational force.	

Michigan District Lutheran School Curriculum *TEACHER ACCOUNTABILITY RECORD*

Unit 2: Physical Science **Teacher Name: _____** **Grade Level: 5**	**Curricular Area: Science** **School Year:**				
Standards Benchmark or *GLCE* **(Italicized indicates the one used)**	**Dates Taught (month/day/initials):**				
P.MO.05.15 Explain the motion of an object relative to its point of reference.					
P.MO.05.16 Describe the motion of an object in terms of distance, time and direction, as the object moves, in relationship to other objects.					
P.MO.05.17 Illustrate how motion can be measured and represented on a graph.					
P.MO.05.18 Describe how constant motion is the result of balanced forces.					
P.MO.05.19 Describe how changes in the motion of objects are caused by unbalanced forces.					
P.MO.05.20 Relate the size of change in motion to the strength of unbalanced forces and the mass of the object.					
P.MO.05.21 Explain how contact forces change an object's motion.					
P.MO.05.22 Explain how non-contact forces change an object's motion.					

Unit 3: Life Science

Outcome 3A: LO III.2 All students will analyze how parts of living things are adapted to carry out specific functions;

Grade Level Content Expectations (GLCEs)	**Content Statement**	**Integrating the Faith (I.F.)**
L.OL.05.23 Identify the general purpose of selected animal systems (digestive, circulatory, respiratory, skeletal, muscular, nervous, excretory, and reproductive). L.OL.05.24 Explain how animal systems (digestive, circulatory, respiratory, skeletal, muscular, nervous, excretory, and reproductive) work together to perform selected activities.	L.OL.05.4 Multicellular organisms may have specialized systems that perform functions that serve the needs of the organism.	• Read Gen. 1:11-12, 21-25,28 and 9:1,7. Why do you think God created two forms of reproduction? What might be the need for asexual reproduction? What are thee advantages of sexual reproduction? • Read the sex education books from Concordia Publishing House. • List similarities between plant and animal cells. Tell why these similarities make sense and demonstrate God's wisdom. Suppose God made them without these similarities. How would this have affected our study of plans and animals? • Identify some of the differences between plant and animal cells. How do they demonstrate the wisdom of the Creator?

Outcome 3B: LEC III.5 All students will investigate and explain how communities of living things change over a period of time.

Grade Level Content Expectations (GLCEs)	Content Statement	Integrating the Faith (I.F.)
L.EV.05.25 Describe the attributes of organisms that help them survive. L.EV.05.26 Describe how fossils provide evidence about the nature of ancient (extinct) and modern life forms. L.EV.05.27 Explain how behavioral characteristics (adaptation, instinct, learning, habit) of animals help them to survive in their environment.	L.EV.05.1 Species with certain traits are more likely than others to survive and have offspring in particular environments. When an environment changes, the advantage or disadvantage of the species' characteristics can change. Extinction of a species occurs when the environment changes and the characteristics of a species are insufficient to allow survival.	

Outcome 3C: LO III.2 All students will analyze how parts of living things are adapted to carry out specific functions;

Grade Level Content Expectations (GLCEs)	Content Statement	Integrating the Faith (I.F.)
L.EV.05.28 Relate degree of similarity in anatomical features to the classification of contemporary organisms. L.EV.05.29 Describe how scientific theory traces evolutionary relationships among present and past life forms.	L.EV.05.2 Similarities among organisms are found in anatomical features, which can be used to infer the degree of relatedness among organisms. In classifying organisms, biologists consider details of internal and external structures to be more important than behavior or general appearance.	

Michigan District Lutheran School Curriculum *TEACHER ACCOUNTABILITY RECORD*

Unit 3: Life Science **Teacher Name: _____** **Grade Level: 5**	**Curricular Area: Science** **School Year:**				
Standards Benchmark or *GLCE* **(Italicized indicates the one used)**	**Dates Taught (month/day/initials):**				
L.OL.05.23 Identify the general purpose of selected animal systems (digestive, circulatory, respiratory, skeletal, muscular, nervous, excretory, and reproductive).					
L.OL.05.24 Explain how animal systems (digestive, circulatory, respiratory, skeletal, muscular, nervous, excretory, and reproductive) work together to perform selected activities.					
L.EV.05.25 Describe the attributes of organisms that help them survive.					
L.EV.05.26 Describe how fossils provide evidence about the nature of ancient (extinct) and modern life forms.					
L.EV.05.27 Explain how behavioral characteristics (adaptation, instinct, learning, habit) of animals help them to survive in their environment.					
L.EV.05.28 Relate degree of similarity in anatomical features to the classification of contemporary organisms.					
L.EV.05.29 Describe how scientific theory traces evolutionary relationships among present and past life forms.					

Unit 4: Earth Science
Outcome 4A:
EG V.1 All students will describe the earth's surface;
EG V.1 All students will describe and explain how the earth's features change over time

Grade Level Content Expectations (GLCEs)	Content Statement	Integrating the Faith (I.F.)
E.SE.05.30 Explain the rock cycle as it relates to the three rock types (igneous, sedimentary and metamorphic). E.SE.05.31 Compare and contrast the formation of the different rock types, and demonstrate the similarities and differences using a model. E.SE.05.32 Classify rock samples as igneous (granite, basalt, obsidian, pumice), metamorphic (marble, slate, quartzite), and sedimentary (sandstone, limestone, shale, conglomerate). E.SE.05.33 Identify common rock forming minerals (quartz, feldspar, mica, halite, hematite, hornblende).	E.SE.05.2 Rocks and rock formations bear evidence of the minerals, materials, temperature/pressure conditions, and forces that created them.	• Identify and classify the following minerals mentioned in the Bible: quartz, sulfur, chalk, copper, flint, iron, lead, limestone, marble, salt, tin. • Research the Flood and list scientific evidence that it really occurred. • Tell why you would expect to find igneous rocks in Sodom and Gomorrah. What type of rocks would be found near the Dead Sea? • Do further research on rocks common to Palestine.

Outcome 4B:
LE III.4 All students will explain how scientists construct and scientifically test theories concerning the origin of life and evolution of species;
PME IV.1 All students will measure and describe the things around us;
EG V.1 All students will describe the earth's surface;
EG V.1 All students will describe and explain how the earth's features change over time

Grade Level Content Expectations (GLCEs)	Content Statement	Integrating the Faith (I.F.)
E.SE.05.34 Explain how physical and chemical weathering leads to erosion and the formation of soils and sediments. E.SE.05.35 Describe how soil is a mixture, made up of weather eroded rocks, humus, formed through decomposition of once living things. E.SE.05.36 Compare different soil samples based on particle size and texture.	E.SE.05.3 Soils consist of weathered rocks and decomposed organic materials from dead plants, animals, and bacteria. Soils are often found in layers with each having a different chemical composition and texture.	

Outcome 4C:
LE III.4 All students will explain how scientists construct and scientifically test theories concerning the origin of life and evolution of species;
PME IV.1 All students will measure and describe the things around us;
EG V.1 All students will describe the earth's surface;
EG V.1 All students will describe and explain how the earth's features change over time

Grade Level Content Expectations (GLCEs)	Content Statement	Integrating the Faith (I.F.)
E.SE.05.37 Explain plate tectonic movement and how the lithospheric plates move centimeters each year. E.SE.05.38 Demonstrate how major geological events (earthquakes, volcanic eruptions, mountain building) result from these plate motions. E.SE.05.39 Describe evidence that supports the theory of Pangaea. E.SE.05.40 Describe the three types of plate boundaries(convergent, divergent, transform) and geographic features associated with them (continental rifts and mid-ocean ridges, volcanic and island arcs, deep sea trenches). E.SE.05.41 Describe Earth's layers as a lithosphere (crust and upper mantle), convecting mantle, and dense metallic core.	E.SE.05.5 Earth's lithospheric plates constantly move, resulting in major geological events, such as earthquakes, volcanic eruptions, and mountain building.	

Outcome 4D:
LE III.4 All students will explain how scientists construct and scientifically test theories concerning the origin of life and evolution of species;
PME IV.1 All students will measure and describe the things around us;
EG V.1 All students will describe the earth's surface;
EG V.1 All students will describe and explain how the earth's features change over time

Grade Level Content Expectations (GLCEs)	**Content Statement**	**Integrating the Faith (I.F.)**
E.SE.05.42 Describe the Earth as a magnet and compare Earth's magnetic properties to that of a natural or man-made magnet. E.SE.05.43 Explain how a compass works using Earth's magnetic field. E.SE.05.44 Explain how people have used compasses to aid in navigation on land and sea.	E.SE.05.6 Earth as a whole has a magnetic field that is detectable at the surface with a compass.	•

Outcome 4E:
EG V.1 All students will describe the earth's surface;
EG V.1 All students will describe and explain how the earth's features change over time

Grade Level Content Expectations (GLCEs)	Content Statement	Integrating the Faith (I.F.)
E.ST.05.45 Explain how rocks and fossils are used to identify extinct plants and animals. E.ST.05.46 Explain how rocks and fossils are used to understand the age and geological history of the earth (timelines and relative dating, rock layers).	E.ST.05.3 Fossils provide important evidence of how life and environmental conditions have changed in a given location.	•

Outcome 4F:
LE III.4 All students will explain how scientists construct and scientifically test theories concerning the origin of life and evolution of species;
PME IV.1 All students will measure and describe the things around us;
EG V.1 All students will describe the earth's surface;
EG V.1 All students will describe and explain how the earth's features change over time

Grade Level Content Expectations (GLCEs)	Content Statement	Integrating the Faith (I.F.)
E.ST.05.47 Explain how waves, wind, water, glacier movement, and ice, shape and reshape the Earth's land surface by eroding rock and sand in some areas, and depositing them in other areas. E.ST.05.48 Describe how the history of the Earth is influenced by occasional natural occurrences, such as the impact of an asteroid or comet. E.ST.05.49 Describe how fossils provide important evidence of how life and environmental conditions have changed.	E.ST.05.4 Earth processes seen today (erosion, mountain building, and glacier movement) make possible the measurement of geologic time through methods such as observing rock sequences and using fossils to correlate the sequences at various locations.	

Michigan District Lutheran School Curriculum *TEACHER ACCOUNTABILITY RECORD*

Unit 4: Earth **Teacher Name: _____** **Grade Level: 5**	**Curricular Area: Science** **School Year:**				
Standards Benchmark or *GLCE* **(Italicized indicates the one used)**	**Dates Taught (month/day/initials):**				
E.SE.05.30 Explain the rock cycle as it relates to the three rock types (igneous, sedimentary and metamorphic).					
E.SE.05.31 Compare and contrast the formation of the different rock types, and demonstrate the similarities and differences using a model.					
E.SE.05.32 Classify rock samples as igneous (granite, basalt, obsidian, pumice), metamorphic (marble, slate, quartzite), and sedimentary (sandstone, limestone, shale, conglomerate).					
E.SE.05.33 Identify common rock forming minerals (quartz, feldspar, mica, halite, hematite, hornblende).					
E.SE.05.34 Explain how physical and chemical weathering leads to erosion and the formation of soils and sediments.					
E.SE.05.35 Describe how soil is a mixture, made up of weather eroded rocks, humus, formed through decomposition of once living things.					
E.SE.05.36 Compare different soil samples based on particle size and texture.					
E.SE.05.37 Explain plate tectonic movement and how the lithospheric plates move centimeters each year.					
E.SE.05.38 Demonstrate how major geological events (earthquakes, volcanic eruptions, mountain building) result from these plate motions.					
E.SE.05.39 Describe evidence that supports the theory of Pangaea.					
E.SE.05.40 Describe the three types of plate boundaries(convergent, divergent, transform) and geographic features associated with them (continental rifts and mid-ocean ridges, volcanic and island arcs, deep sea trenches).					
E.SE.05.41 Describe Earth's layers as a lithosphere (crust and upper mantle), convecting mantle, and dense metallic core.					

E.SE.05.42 Describe the Earth as a magnet and compare Earth's magnetic properties to that of a natural or man-made magnet.					
E.SE.05.43 Explain how a compass works using Earth's magnetic field.					
E.SE.05.44 Explain how people have used compasses to aid in navigation on land and sea.					
E.ST.05.45 Explain how rocks and fossils are used to identify extinct plants and animals.					
E.ST.05.46 Explain how rocks and fossils are used to understand the age and geological history of the earth (timelines and relative dating, rock layers).					
E.ST.05.47 Explain how waves, wind, water, glacier movement, and ice, shape and reshape the Earth's land surface by eroding rock and sand in some areas, and depositing them in other areas.					
E.ST.05.48 Describe how the history of the Earth is influenced by occasional natural occurrences, such as the impact of an asteroid or comet.					
E.ST.05.49 Describe how fossils provide important evidence of how life and environmental conditions have changed.					

Unit 5: Health

Grade Level Content Expectations (GLCEs)	Michigan Standards See revised Health Education GLCE for 5th grade.	Integrating the Faith (I.F.)