

**General Course Information**

|  |  |
| --- | --- |
| **Course Title** | **MS Science** |
| **Description** | **Middle School Life Science (Grizzly, Polar, Kodiak)**  We begin Life Science with an in-depth study of the scientific process and science inquiry. Students will explore the living world around them from the complexity of cells to the relationships between organisms in an ecosystem. We will examine Ecosystems and Evolution as well as Heredity. |
| **Room Number** | **140** |
| **Faculty Name** | **Patrick Ritt** |
| **Contact Information** | 810-225-6757  pritt@kwoods.org |
| **Course website** | rittkwoods@weebly.com |

**Introduction**

What is Science? Science is a way of making sense of the natural world. Scientists seek to describe its complexity, to explain its systems and events, and to find the patterns that allow for predictions. Science is the basis for the design of technologies that solve real-world problems.

**Course Expectations**

This course will follow the framework of Michigan Common Core State Standards as well as the Next Generation Science Standards. We will use class discussions, student research and projects, labs and project based learning.

Scientifically proficient students will

* Make sense of problems and persevere in solving them
* Be able to think scientifically and use scientific knowledge to make decisions about real-world problems
* Be able to construct new knowledge for themselves through research, reading and discussion
* Be familiar with the natural world, and respectful of its unity, diversity, and fragility
* Be able to make informed judgements on statements and debates claiming to have a scientific basis
* Be able to reflect in an informed way on the role of science in human affairs
* Students should review notes regularly rather than ‘cram’ for an assessment.
* Students should also keep up with homework and assignments, but if there is a problem please let me know right away. I do not want students to experience anxiety and stress. The goal is that students master the content.
* Most students will probably need 20-30 minutes of work time 2 to 3 times a week to keep on track. Some projects may require more time
* I would love to provide a hands-on learning environment for the class. This requires a large amount of materials. I will update my website with needed items. There will also be field trips and other ways to help.
* Please let me know about any issues! I want science to be an exciting experience for our students. I will most likely set aside Wednesdays as the day I stay late.

**Essential Standards of Learning**

**This is a sample of the Objectives**

1. **How to write an experiment using the scientific method.**
2. **Properly conduct and experiment, analyze and report the results.**
3. **Determine if something is living or non-living**
4. **Recognize the differences between different cell types and their parts.**
5. **Understand different interactions between organisms.**
6. **Describe and understand why organisms need to adapt and how that relates to evolution.**
7. **Understand and give examples of what heredity is.**
8. **Know and give examples of traits**

**Prerequisite knowledge/skills for success in this course**

|  |  |
| --- | --- |
| Mastery Level | Work habits: Students will be able to work effectively independently and in groups.  Academic integrity: Students will act honestly and ethically in their work.  Study skills: Students will adhere to assignment deadlines. |
| Familiarity Level | Intellectual openness, Analysis, and Interpretation (definitions in next section)  Reading and Comprehension:  Research: Students have had some experience… |

**Course Materials**

I ask that students have 1 notebook for a Science Reference Book. This will contain notes and vocabulary. Work and homework should be completed out of another notebook or on loose leaf paper. Students should also come prepared with writing utensils. For in-class projects I will have markers, glue, etc. in the classroom.

We will be using a variety of sources for this course so that I can target grade-level appropriate materials.

**Grading**

|  |  |
| --- | --- |
| Your ***semester*** grade will be determined as follows:    ***Summative Assessment.....80% Semester Exam....10%***  ***Formative Assessments- Practice***  ***Daily assignments & activities***  ***Summative Assessments-***  ***Chapter reviews, quizzes, tests & projects*** | ***KWS follows the following grading scale:***  A = 95-100 (4.0) C+ = 77-79 (2.3)  A- = 90-94 (3.7) C = 73-76 (2.0)  B+ = 87-89 (3.3) C- = 70-72 (1.6)  B = 83-36 (3.0) F = below 70 (0.0)  B- = 80-82 (2.7) |

Mastery Learning Program – The Mastery Learning Program is a program that allows every student the opportunity to succeed and, therefore, increases student achievement. In the program, every Kensington Woods student is expected to complete every assignment given by their teachers, providing them with the most opportunities for success. Students who do not complete their assignments (practice), or complete them with low quality, will be placed on the Mastery List and will be provided with extra opportunities to practice throughout the day.

Daily Assignment Policy

1. Assignments that are not completed during class time are expected to be finished as homework before the date it will be collected, usually Thursday of each week. On the due date, students must turn in an assignment that shows their best effort. If students feel that they need additional time to master the material, they must make arrangements with Mr. Ritt to get help outside of class time. If students do not turn in an assignment the day that it is collected, it will be put on the Mastery List that evening and will be taken off the list after students have had an opportunity to demonstrate mastery of the concepts in the assignment.

2. It is the students' responsibility to make sure that they find out what they missed during their absence. Students should check the class assignment list for a listing of the topic and assignment and make sure that they pick up any handouts that they may have missed.

3. Assignments should be done neatly. The process of solving a Science problem is just as important as the final answer. Therefore, you must show your work!

Retakes

* ***Retakes*~** **KWS- Request to Revise or Retest** Generally, students are not allowed to retake a chapter quiz or test during class time. However, students may fill out a ‘Request to Retest’ form and make arrangements outside of class time to master the material and then, retest.

**Classroom Expectations**

* ***Classroom Expectations****-*  Students should come to class ready to learn. Students should respect the learning environment, including the people and property around them.
* ***Cell Phones-*** Students should not have cell phones out during class instruction or class activities without permission. If students are using their phone to distract the learning environment (ie showing a video to friends) it will be taken from the student without warning.
* ***Beginning of Class-*** Be on time and in your seat with all required materials. ***\*\*\*Book, , Folder, Assignments, Pencil, Paper\*\*\****

* ***Class Assignments & Activities***~ Students will be expected to participate in classroom activities and to complete classroom assignments. Class assignments will usually be graded on effort and completeness. Assignments will generally be collected on a weekly basis. Students will sometimes be given the responsibility to check their own assignments in class. If a student is absent, they are responsible for getting the notes from the appropriate binder and copying them into their reference book.
* ***Handing in Work-*** Typically, students will hold on to their class assignments which will be collected once a week by the teacher . If directed to hand in work, students will use the silver tray at the front of the room with their block time labeled on it.
* ***End of Class-*** Students are expected to return all materials to their designated places and then return to their seats. Students will be dismissed by the **teacher. All students must be seated before class will be dismissed!**
* ***Finding out Course Grade-***  Students are encouraged to check MI-STAR in order to track their grades. Students may also make arrangements to see me outside of class to find out grade information. Time will not be taken out of class on a daily basis to discuss individual student grades.

**Schedule**

|  |  |  |
| --- | --- | --- |
| Time Frame | Topic | Assessment |
| September | Scientific Inquiry | TBD |
| October | Scientific Inquiry  Botany | TBD |
| November | Living Things  Invertebrates  Producers/Decomposers/  Consumers | TBD |
| December | Living Things  Fish  Abiotic/ Biotic | TBD |
| January | Ecosystems and Evolution  Amphibians | TBD |
| February | Ecosystems and Evolution  Reptiles  Environmental Impact | TBD |
| March | Heredity  Birds | TBD |
| April | Heredity  Mammals | TBD |
| May | Projects  Human biology | TBD |

\*\* There will be more updated information as I get more of the lessons finalized \*\*\*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Unit Overview** | **Essential Questions** | **Tasks/Activities** | **Assessment Task(s)** | **Instructional Resources and/or Vocabulary** |
| Science Inquiry | |  | | --- | | 1. How are science and common sense related? How does opinion affect inquiry? 2. How is scientific knowledge generated and validated? 3. How are scientific questions answered? and then validated? 4. How does measurement and science relate and how does that relate to the real world? | | We will be observing, then creating experiments. There will be class discussions, projects, and research. | |  | | --- | | 1. Scientific Method Rap/ Song 2. Scientific Method Create and Conduct and experiment. 3. How to measure Everything Lab 4. Homework 5. Quizzes 6. Test | | Teacher led Notes  Primary Sources  Vocabulary: Scientific method, observation, measurement, hypothesis,  experimentation, variable, independent variable, dependent variable, control |
| Living Things | |  | | --- | | 1. How are organisms classified based on similar characteristics and genes? Large and small scale. 2. How are cells organized on a cellular scale? Organism  level? 3. How does understanding other species origins help humans understand their origin? | | We will use discussions, research and projects to explore Botany and Zoology. | 1. Microscope Cell Identification Lab 2. Cladogram Classmate Building Project 3. Cell Model Project 4. Homework 5. Quizzes 6. Test | Teacher led Notes  Primary Sources  Vocabulary:   |  | | --- | | Protist, cell, unicellular, multicellular, prokaryotes, eukaryotic, plant cell, animal cell, nucleus, endoplasmic reticulum, ribosome, golgi body, vacuole, cell membrane, cell wall, lysosome, peroxisome, centriole, chloroplast, mitochondrion, stem cell, cladogram, species, ATP, ADP, phosphate, cycling, energy, reactants, products, chemical reaction, photosynthesis, cellular respiration, sunlight, carbon dioxide, water, glucose, oxygen, energy conversion, energy transfer, chloroplasts, mitochondria. | |
| Ecosystems and Evolution | 1. How do organisms interact to create an ecosystem? 2. What are the different levels in an ecosystem and what role do humans play in their ecosystem? 3. How do organisms adapt to their environment to survive and change their species in the process? 4. How do humans aid in evolving a species? Should we? Why or why not? 5. Is evolution still happening today? What examples prove or disprove this? | We will use discussions, research and projects to explore Ecosystems and Evolution. | 1. Biomes Project 2. Adaptation Lab 3. Endangered Species Paper 4. Daily Homework 5. Quizzes 6. Test | Teacher led Notes  Primary Sources  Vocabulary:   |  | | --- | | Abiotic Factors, Biotic Factors, Community, Consumer, Decomposer, Ecology, Ecosystem, Food Chain, Food Web, Habitat, Host, Limiting Factors, Niche, Parasite, Population, Predator, Prey, Herbivore, Producer, Secondary Consumer, Carnivore, Primary consumer, Tertiary Consumer, Energy Pyramid, Symbiosis, Parasitism, Mutualism, Commensalism, nitrogen cycle, carbon cycle, water cycle, phosphorus cycle, adaptation, artificial selection, coevolution, common ancestor, convergent evolution, Darwin, fossil, fossil record, gene flow, gene pool, genetic drift,, natural selection, non-random mating, reproductive isolation, speciation, species, migration, cladogram, fitness, evolution, mutation, extinction, | |
| Heredity | 1. Where do your features come from? How do they get passed on from generation to generation? 2. Why do cells need to divide? Do all cells divide the same way? 3. What are mutation? Are they beneficial or harmful to the organism? 4. What are the stages of growth and development? How does the time of development change between organisms? 5. Can we change our genes or another organism's genes? Is this ethical if we can? Why or why not? | We will use discussions, research and projects to explore Heredity. | 1. Family Tree Project 2. Blood Typing Lab 3. Homework 4. Quizzes 5. Test | Teacher led Notes  Primary Sources  Vocabulary: Cell division, life cycle, sexual reproduction, asexual reproduction, bacterial conjugation, plasmids, antibiotic resistance, binary fission, budding, cell cycle, interphase, G1 phase, G1 checkpoint, S phase, G2 phase, G2 checkpoint, M phase, mitosis, somatic cells,  prophase, metaphase, anaphase, telophase, meiosis, gamete/sex cells, sperm, egg, prophase 1, metaphase 1, anaphase 1, telophase 1, prophase 2, metaphase 2, anaphase 2, telophase 2, 1n/haploid, 2n/diploid, crossing over, alleles, genetic diversity, tumor, cancer, karyotype, sex chromosomes, Gregor Mendel, Mendelian genetics, genetics, traits/alleles, dominant, recessive, homozygous, heterozygous, Punnett square, phenotype, genotype, non Mendelian genetics, codominant trait, incomplete dominant trait, polygenic trait, |