Shady Creek Classes

There are currently 8 classes offered at Shady Creek Outdoor School. The core classes are survival, communities, creek, and birds. If your school is a *FitQuest* school, FitQuest class is required. Hikes not listed are the discovery hike, night hike, and closing hike. These are all susceptible to change based on a number of factors.

Classes with * means that part of the class curriculum comes from our NASA GLOBE goes to camp partnership.

Note: our teaching approach and learn cycle strategies have been formed using BEETLES materials.
BEETLES: (Better Environmental Education Teaching, Learning, and Expertise Sharing) is a program of The Lawrence Hall of Science at the University of California, Berkeley, *www.beetlesproject.org*

5 day week- Choose six classes
4 day week- Choose four classes

Birds
Utilizing argument from evidence is crucial to scientific practice. In birds class, students will explore bird adaptations and discuss the functions and benefits of structures found on birds. Students will collect evidence from bird observations to identify birds found around Shady Creek using binoculars. This class includes a visit to our raptor center with live birds of prey. All of our birds are injured and non-releasable. Meeting these birds teaches the students that both knowledge and caring are necessary in order to make a positive difference. **Page 4**

Communities
Communities is a team building class. While on communities class, students will have an opportunity to set goals as a group and as an individual. Students will be guided to use positive communication, inclusiveness, bravery, and kindness to achieve those goals. Over the course of the lesson students will gain a better understanding of what it means to be a member of a community. **Page 5**

****Creek Ecology***
In creek ecology, students explore and collect aquatic macroinvertebrates living in Shady Creek. After collecting macroinvertebrates, students will create a scientific drawing then use a field guide to learn more about their species and its relationship to the ecosystem. With this information students will determine the health of the creek and

surrounding watershed. Through discussions about the movement of water students will be able to make connections about human impacts on a watershed. **Page 6**

FitQuest

Fit Quest helps students learn things they can do to feel their best by focusing on physical, nutritional, and mindful practices. Students will participate in activities that get their pulse rate higher to experience what it means when they are told it is important to be active. Through discussions about food they will gain a better understanding of what different vitamins and minerals do for our bodies and why it is important to eat a variety of fruits and vegetables. They will have time to reflect on how they feel stress, what causes them to feel stress, and what they can do about it during a solo hike. If students know how to feel their best, they have the ability to do the things they enjoy. **Page 7**

****Forest Ecology***

This is Shady Creek's longest hike. It can be up to two miles in length, but can easily be amended to be shorter. During forest ecology, students will walk through three different plant communities looking for evidence to explain why there are different types of plants within each community. Students will explore interactions between living and non-living factors. By the end of this class, students will understand that each plant community has its own unique attributes based on the availability of resources. **Page 8**

Garden (newly restored class)

During Garden class, students will explore Shady Creek's organic garden using all of their senses. They will go over concepts of energy flow and matter cycling through exploring garden food chains. Also students will dig into concepts of decomposition, composting, tracing food back to the soil and tending to a garden. Dictated by the season, students will taste the produce that is growing in the garden. By the end of class, students will understand why gardens have ingredients for life. **Page 9**

Nature Awareness

Nature Awareness focuses on students using their senses to gain a deeper appreciation and awareness for nature. This class includes a guided sensory walk in which the students walk on a trail without using their vision. Students will have the opportunity to engage in different sensory activities such as rock stacking, and sound maps. This experience-based class helps students understand that people's experiences outside can influence the way the land is used. **Page 10**

Nature Investigation and Exploration (NIE)

During this class, students will start taking huge adventures on a small scale. Kids will discover natural mysteries and use science skills to conduct investigations. Scientific

practices will be accentuated and utilized throughout the hike. By the end of class, students will have used field guides to investigate natural wonders. For example, students will create a list of suspects and use evidence to determine what is causing logs to disappear in the forest. **Page 11**

Soil-ology (Pedology) New Class!

Soil-ology class will have students examine soils in different locations looking for what makes those spaces unique. Following what a NASA scientist does, students will identify what makes up the soil beneath their feet. They will examine erosion on Shady Creek's landscape and the formation of rocks. They will go panning not just for gold but also different rock types and identify them. **Page 12**

Survival

The survival class is designed to give students the opportunity to engineer a survival shelter based on criteria that the students establish. Over this two and a half hour class students will identify design constraints, and work together to improve their design to ensure survival under the wettest conditions. Students will learn about S.T.O.P. and F.I.B.S. as well as the most crucial aspects of surviving in the wild. **Page 13**

Birds

Objective- By the end of class, students will be able to create scientific arguments based on evidence

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Next Generation Science Standards

Performance Expectations
MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem. **MS-LS2-4**. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. **4-LS1-1**. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
- Constructing Explanations and Designing Solutions - Engaging in Argument from Evidence - Obtaining, Evaluating, and Communicating Information	**LS1.A:** Structure and Function **LS2.C:** Ecosystem Dynamics, Functioning, and Resilience	Cause and Effect Stability and Change

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California Common Core State Standards

ELA/Literacy

RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts. (MS-LS2-1),(MS-LS2-2),(MS-LS2-4)

WHST.6-8.9 Draw evidence from literary or informational texts to support analysis, reflection, and research. (MS-LS2-2),(MS-LS2-4)

SL.6.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly. (MS-LS2-2)

SL.6.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation. (MS-LS2-2)

Communities

Objective- By the end of class, students will be able to be able to explain why each member of a community is important to its success.

California Common Core State Standards

SL.6.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
SL.6.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.

California Content Standards, Health Education

Grade 5

5.1.P Use a decision-making process to determine personal choices that promote personal, environmental, and community health.
1.7.G Recognize that everyone has the right to establish personal boundaries.

Grade 6

8.1.S Support injury prevention at school, at home, and in the community
8.2.S Promote a bully-free school and community environment.
4.3.M Demonstrate ways to communicate respect for diversity.
7.3.M Practice appropriate ways to respect and include others who are different from oneself.
8.1.M Encourage a school environment that is respectful of individual differences.
8.2.M Object appropriately to teasing or bullying of peers that is based on personal characteristics and perceived sexual orientation.

Creek Ecology

Objective- By the end of class, students will be able to explain if the creek is healthy or unhealthy using evidence.

Next Generation Science Standards

Performance Expectations

5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect Earth's resources and environment.
MS-ESS2-4. Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.
MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

Science and Engineering Practices	**Disciplinary Core Ideas**	**Crosscutting Concepts**
- Analyzing and Interpreting Data - Constructing Explanations and Designing Solutions - Engaging in Argument from Evidence - Developing and Using Models - Obtaining, Evaluating, and Communicating Information	**LS2.A:** Interdependent Relationships in Ecosystems **LS2.B:** Cycle of Matter and Energy Transfer in Ecosystems **LS2.C:** Ecosystem Dynamics, Functioning, and Resilience **LS4.D:** Biodiversity and Humans **ETS1.B:** Developing Possible Solutions **ESS3.C:** Human Impacts on Earth Systems	Patterns Cause and Effect Energy and Matter Stability and Change --- *Connections to Engineering, Technology, and Applications of Science* Influence of Science, Engineering, and Technology on Society and the Natural World

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California Common Core State Standards

ELA/Literacy

W.5.9 Draw evidence from literary or informational texts to support analysis, reflection, and research. (5-ESS3-1)
SL.6.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly. (MS-LS2-2)
SL.6.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation. (MS-LS2-2)

FitQuest

Objective- Students will be able to reflect on their physical, nutritional, and mindful practices.

California Common Core State Standards

ELA/Literacy

SL.6.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.

SL.6.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.

California Content Standards, Health Education

Grade 5

1.8.N Describe the benefits of eating a nutritionally balanced diet consistent with current research-based dietary guidelines.

1.9.N Explain how good health is influenced by healthy eating and being physically active.

1.10.N Describe how physical activity, rest, and sleep are related

8.1.N Encourage and promote healthy eating and increased physical activity opportunities at school and in the community

Grade 6

1.1.M Describe the signs, causes, and health effects of stress, loss, and depression.

1.4.M Describe the importance of being aware of one's emotions

7.2.M Practice strategies to manage stress.

8.1.M Encourage a school environment that is respectful of individual differences.

8.2.M Object appropriately to teasing or bullying of peers that is based on personal characteristics and perceived sexual orientation.

Grades 7&8

1.1.N Describe the short- and long-term impact of nutritional choices on health.

1.2.N Identify nutrients and their relationships to health.

1.7.N Describe the benefits of eating a variety of foods high in iron, calcium, and fiber

1.15.N Explain that incorporating daily moderate or vigorous physical activity into one's life does not require a structured exercise plan or special equipment.

5.2.N Identify recreational activities that increase physical activity.

1.1.M Explain positive social behaviors (e.g., helping others, being respectful to others, cooperation, consideration).

1.2.M Identify a variety of nonviolent ways to respond when angry or upset.

8.1 M Promote a positive and respectful school environment.

Forest Ecology

Objective- By the end of this class, students will be able to explain why plant communities differ based on available resources.

Next Generation Science Standards

Performance Expectations
MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. **MS-LS2-4.** Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. **MS-LS1-5.** Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
- Constructing Explanations and Designing Solutions - Engaging in Argument from Evidence - Obtaining, Evaluating, and Communicating Information	**LS1.B:** Growth and Development of Organisms **LS2.A:** Interdependent Relationships in Ecosystems	Cause and Effect Stability and Change

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California Common Core State Standards

ELA/Literacy

SL.6.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly. (MS-LS2-2)

SL.6.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details;use appropriate eye contact, adequate volume, and clear pronunciation. (MS-LS2-2)

Garden

Objective- By the end of class, students will be able to create a model of matter cycling.

Next Generation Science Standards

Performance Expectations
5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. **MS-LS2-3.** Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. **5-PS3-1.** Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
-Develop a model to describe phenomena. -Science explanations describe the mechanisms for natural events.	**LS1.C: Organization for Matter and Energy Flow in Organisms** **LS2.A: Interdependent Relationships in Ecosystems** **LS2.B: Cycles of Matter and Energy Transfer in Ecosystems** **PS3.D: Energy in Chemical Processes and Everyday Life**	**Systems and System Models** **Energy and Matter**

California Common Core State Standards

ELA/Literacy

SL.6.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.

SL.6.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.

Nature Awareness

Objective- By the end of class, students will know how to gain a deeper connection and appreciation for nature by using each one of their senses to observe the world around them.

California Common Core State Standards

ELA/Literacy

SL.6.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly. (MS-LS2-2)

SL.6.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation. (MS-LS2-2)

California Content Standards, Health Education

Grade 5

8.1.P Encourage others to minimize pollution in the environment

1.6.P Explain that all individuals have a responsibility to protect and preserve the environment.

Grades 7&8

2.2.P Analyze how environmental pollutants, including noise pollution, affect health.

8.3.P Demonstrate ways to accept responsibility for conserving natural resources.

Nature Investigation and Exploration

Objective- By the end of class, students will be able to use science practices to create explanations about natural phenomena.

Next Generation Science Standards

Performance Expectations
MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. **MS-LS2-4**. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. **MS-LS2-5.** Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
- Constructing Explanations - Engaging in Argument from Evidence - Obtaining, Evaluating, and Communicating Information	**LS2.A:** Interdependent Relationships in Ecosystems **LS2.B:** Cycle of Matter and Energy Transfer in Ecosystems **LS2.C:** Ecosystem Dynamics, Functioning, and Resilience **LS4.D:** Biodiversity and Humans **ETS1.B:** Developing Possible Solutions	Patterns Cause and Effect Energy and Matter

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California Common Core State Standards

ELA/Literacy

SL.6.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly. (MS-LS2-2)

SL.6.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation. (MS-LS2-2)

Soil-ology (Pedology)

Objective- By the end of class, students will be able to explain the differences between soil samples, erosion categories and rock formations.

Next Generation Science Standards

Performance Expectations

4-ESS2-1. Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.
5-ESS2-1 Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/ or atmosphere interact.
MS-ESS1-4. Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.
MS-ESS2-1. Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.
MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
- Analyzing and Interpreting Data - Constructing Explanations and Designing Solutions - Engaging in Argument from Evidence - Developing and Using Models - Obtaining, Evaluating, and Communicating Information	**ESS1.C: The History of Planet Earth** **ESS2.A:** Earth's Materials and Systems **ESS3.B:** Natural Hazards	Patterns Cause and Effect Stability and Change *Connections to Engineering, Technology, and Applications of Science* Influence of Science, Engineering, and Technology on Society and the Natural World Systems and system models **Scale, Proportion, and Quantity**

California Common Core State Standards

ELA/Literacy

SL.6.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly. (MS-LS2-2)
SL.6.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation. (MS-LS2-2)
W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic. (4-ESS2-1)

Survival

Objective- By the end of class, students will be able to design a survival shelter based on the available materials.

Next Generation Science Standards

Performance Expectations

3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and
constraints on materials, time, or cost.
3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the
criteria and constraints of the problem.
MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution,taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria
and constraints of the problem.

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
- Constructing Explanations and Designing Solutions - Engaging in Argument from Evidence - Developing and Using Models - Obtaining, Evaluating, and Communicating Information	**ETS1.A:** Defining and Delimiting Engineering Problems **ETS1.B:** Developing Possible Solutions **ETS1.C:** Optimizing the Design Solution	**Cause and Effect**

California Common Core State Standards

ELA/Literacy

RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). (MS-ETS1-3)
RST.6-8.9 Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic. (MS-ETS1-2),(MS-ETS1-3)
WHST.6-8.7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related,focused questions that allow for multiple avenues of exploration. (MS-ETS1-2)