

HISI - MODULE OVERVIEW

Module Title Stormwater Diversion and Management LS Team Arcata/SR

Grade level(s): 9-12

# of lessons: 5	Natural Resources <u>X</u> Renewable Energy _____
<p>Big Idea – Student Learning</p> <p>How might you manage stormwater runoff?</p> <ul style="list-style-type: none"> How might you reduce stormwater runoff from driveways/parking lots or rooftops? <p>Prior Knowledge:</p> <ul style="list-style-type: none"> Similarity Area Volume $r : r^2 : r^3$ Dimensional Analysis Logic and Reasoning Collaborative Skills 	<p>Learning Targets – “I Can” Statements</p> <ul style="list-style-type: none"> I can apply similarity to determine the area of campus. I can use technology to determine the total average amount of rainfall on campus I can develop a stormwater management plan for campus.
<p>How are STEM integrated?</p> <p>Science:</p> <ul style="list-style-type: none"> HS-ESS3-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity. HS-ESS3-3. Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity. [<p>Technology:</p> <ul style="list-style-type: none"> Google Earth Calculator with Spreadsheet Ability Digital Presentations 	<p>Community/Place-based connections:</p> <ul style="list-style-type: none"> Looking at adjusting the school campus to divert storm water run-off. Water conservation is relevant, current event. This project has opportunity for conservation as well as management

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<ul style="list-style-type: none"> ● Google Drive; Google Classroom <p>Engineering:</p> <ul style="list-style-type: none"> ● HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants. ● HS-ETS1-2. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering. ● HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts. <p>Mathematics:</p> <ul style="list-style-type: none"> ● Visualize relationships between two-dimensional and three-dimensional objects ● Apply geometric concepts in modeling situations ● Reason quantitatively and use units to solve problems. ● Summarize, represent, and interpret data on a single count or measurement variable 	
<p>What will be some community benefits?</p> <ul style="list-style-type: none"> ● More responsibility for stormwater run-off on our campus and in our community ● Actual implementation to divert and manage stormwater on campus 	<p>STEM College/Career Connections:</p> <ul style="list-style-type: none"> ● Civil Engineering ● Resource/Water Management ● City Planning/Management
<p>Assessment: What evidence of learning will you gather across the module's implementation?</p> <ul style="list-style-type: none"> ● Pre/Post Assessment ● Teacher Observations 	<p>General Outline of the Module:</p> <p>Students will follow a Fermi Problem process to investigate stormwater diversion and management. Students will investigate</p>

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- Graphic Organizers
- Presentations

the following research questions:

- How much water falls on our campus each year?
- How much water goes into storm drains on our campus?
- How much water could potentially be diverted on our campus?

Students work in groups to:

- Estimate amounts that answer the research questions
- Brainstorm what information is needed to solve the problem
- Research online to gather information
- Collect data from certain parts of campus
- Research possible solutions
- Develop a plan to manage stormwater run-off
- Present plan to the class.