



SCIE 3001 - Science II: Earth and Life Science 1

ECOSYSTEM ASSIGNMENT - 20%

In class activity - 5%

Recording of activity - 15%

Instructions:

- Work in groups of four.
- Each group must do four activities.
- Discuss the questions in your group.
- Discussion will be guided by your lecturer.
- Each person should record the data and make notes on their discussion. This is necessary for your participation mark. You must be present and take an active part in all activities to receive your participation mark of the activity.
- Participation individual - 5%. (Marked by your lecturer through observation using a checklist in the laboratory and examination of your personal recordings).
- Each person will write up a report on **ONE** activity - 15 % (Marked by the lecturer in the group report. Rubrics for marking on page 5).
- The group will submit a folder with the four activities. The names of the person responsible for the recording of the activity, their Student ID Number, phone contact and email must be put on the cover page of the report.

Activity	Name	Student ID Number	Phone	Email
Activity 1				
Activity 2				
Activity 3				
Activity 4				

- Mr. Kishore Lal prefers **ONLY** a soft copy of the lesson, please use the following protocols when submitting:
 - Use Microsoft Word to prepare the document.
 - Include all your drawings in the appropriate places in the text.
 - Name of file: **Group leader's name Scarborough Campus SCIE3001 Ecosystem Assignment.**
 - Group leader submits report to Mr. Kishore Lal by email to sanshore@gmail.com and copy to other members of the group. Failure to observe these protocols may result in loss of marks.
- Other lecturers may issue different protocols for submission of the assignment.

Research in Preparation for the Activity.

- Do an Internet search for "Oil Spills" AND "Trinidad"
- Choose five (5) sources.
- Include at least one of each the following: (a) newspaper; (b) government; (c) environmental organization (d) The Environmental Management Authority (EMA)
- Look at my [PowerPoint presentation on Oil Spills](#)



Inquiry Question: What are the most effective method used in the cleanup of oil spills?

Instructions:

- Carry out the following activity in groups of four.
- Each group is responsible for providing the materials below.
- The hands-on activity is to be done in class.
- About 150 ml vegetable oil, drinking glass (beaker), teaspoon, fork, food colouring, five (5) tooth picks cut into 3 equal pieces, strips of cardboard 1 cm X 3 cm, two (2) large identical transparent plastic or glass bowl with water, cotton balls, squares paper towels smaller than 3cm², three (3) drinking straws cut into 2 cm long pieces, thread, old newspapers, 5 ml liquid detergent, One (1) medicine dropper.
- Preparation of materials
 - **Prepare a control**
 - Mix about 20 - 25 ml (about 4 to 5 teaspoons) of vegetable oil with about five drops of food colouring in the drinking glass
 - Stir up the mixture vigorously with the fork. They will not totally mix.
 - Carefully pour the dyed oil into the center of one transparent bowl with water and float 3 pieces of the toothpick in the middle of the oil spill
 - Leave this undisturbed throughout your activities
 - **Each activity requires a separate preparation of:**
 - Mix about 20 - 25 ml (about 4 to 5 teaspoons) of vegetable oil with about five drops of food colouring in the drinking glass
 - Stir up the mixture vigorously with the fork. They will not totally mix.

Activity 1 - Simulate cleanup efforts by absorbers

- **How to carry out the investigation:**
 - Make a prediction of your method's effectiveness (1-10) with 10 being most effective
 - Carefully pour the dyed oil into the center of the transparent bowl with water and float 3 pieces of the toothpick in the middle of the oil spill
 - Try to remove the oil before it reaches the sides of their container with the cotton balls, squares paper towels smaller than 3cm².
 - Record your method's effectiveness (1-10) with 10 being most effective
- **How to Present your results:** Record your observations in a tabulated form

Type of Material	Prediction Effectiveness (1-10)	Actual Effectiveness (1-10)	Observations / Remarks
Cotton balls			
Paper towels			



Activity 2 - Simulate cleanup efforts by booms

- **How to carry out the investigation:**
 - Make a prediction of your method's effectiveness (1-10) with 10 being most effective.
 - Make a boom of pieces of drinking straws with a thread passing through them to hold them together OR cardboard strips tied together.
 - Carefully pour the dyed oil into the center of the transparent bowl with water and float 3 pieces of the toothpick in the middle of the oil spill
 - Try to block the oil before it reaches the sides of their container with your boom.
 - Record your method's effectiveness (1-10) with 10 being most effective.

- **How to Present your results:** Record your observations in a tabulated form

Type of Material	Prediction Effectiveness (1-10)	Actual Effectiveness (1-10)	Observations / Remarks
boom			

Activity 3 - Simulate cleanup efforts by Skimmers

- **How to carry out the investigation:**
 - Make a prediction of your method's effectiveness (1-10) with 10 being most effective.
 - Use the spoon to try to skim off the oil before it reaches the sides of their container.
 - Record your method's effectiveness (1-10) with 10 being most effective.

- **How to Present your results:** Record your observations in a tabulated form

Method	Prediction Effectiveness (1-10)	Actual Effectiveness (1-10)	Observations / Remarks

Activity 4 - Simulate cleanup efforts by Dispersants

- **How to carry out the investigation:**
 - Make a prediction of your method's effectiveness (1-10) with 10 being most effective.
 - Use the medicine dropper to try to disperse the oil
 - Record your results with time
 - Record your method's effectiveness (1-10) with 10 being most effective.

- **How to Present your results:** Record your observations in a tabulated form



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Time	Prediction Effectiveness (1-10)	Actual Effectiveness (1-10)	Observations / Remarks

- **Prepare your individual reports using the headings in the rubric below:**
 1. **Title:** Simulate cleanup efforts by _____ as a Science Teaching Activity.
 2. **Concept:** The properties of the material used in oil spill cleanup determines the method's effectiveness.
 3. **Aim -** Objective of the investigation based on the inquiry question.
 4. **Apparatus-** detailed list of materials and equipment including drawings
 5. **Method/Procedure -** Make your method as brief, but as complete logical and sequential as possible. Use past tense. You can use diagrams to support your description.
 6. **Results/Data -** Record the results in an appropriately labelled table.
 7. **Analysis of data:**
 - From your results, explain how the physical property of the material affects its effectiveness in the method used.
 8. **Conclusion:** Make a logical statement on effectiveness of the method you used.
 9. **Discussion -** Use the following questions / statements to guide your discussions:
 - What do the toothpicks simulate in the activity?
 - Describe the effectiveness of the materials / method used.
 - What would cause the oil to spread in the ocean?
 - What do you think happens to oil which you were unable to remove (remains in the ocean)?
 - Discuss the effect of the chemicals in the oil which dissolved in the water.

**Rubric for Ecosystem Assignment**

Heading	Criteria:		Mark	Awarded mark
Aim	Appropriate	1	1	
Apparatus	Appropriate	1	1	
Method	All steps are present	2	3	
	Some steps are present	1		
	Sequential order and clear language	1		
Results/Data	All pertinent data recorded	2	3	
	Some data recorded	1		
	Data organized in a table	1		
Analysis of data	Detailed analysis	2	2	
	Trivial analysis	1		
Conclusion	Logical	1	2	
	Based on data collected	1		
Discussion	Very detailed coherent and logical discussion with all questions discussed in detail	3	3	
	Some detail in a coherent and logical discussion with some questions discussed in detail	2		
	Little d discussion with few questions discussed in detail	1		
Participation	Recording of data in notebook for all 4 activities	2	5	
	Recording of discussion	1		
	Recordings are organized	1		
	Attendance	1		
Subtotal			20	
15 % of Course mark = Subtotal X $\frac{3}{4}$			15	