

Ocean 11

Introduction

Classroom Requirements

Attendance is of utmost importance.
Daily assignments must be completed.
Good behaviour and respect are required.
No pop or chips.... Water is OK.

Student Learning Profile

This profile is based on the basic tenet that success in a subject comes from the sharing of information and the concern for learning between the student and the teacher:

NAME _____ STUDENT NO. _____ SUBJECTS _____ CREDITS TO DATE _____

LEARNING

How do you learn best in subject area?
How can I facilitate your learning style in the subject? (Please address how you feel about the subject in your comment.)

HOME STUDY

How much time is allowed for home study on an average evening?

SUBJECT AREA

ATTENDANCE PATTERN

How many classes did you miss in this subject area last school term?
Do you expect to miss school time this year?

HEALTH CONCERNS

Are there any health concerns to be considered in the school setting?

AFTER SCHOOL COMMITMENTS

Part-time work: Yes ___ No ___
Hours per week: _____

SCHOOL INVOLVEMENT/COMMUNITY INVOLVEMENT

Please list activities and time commitment.

Course Evaluation

Course Evaluation

Tests	60%
Assignments	20%
Projects	20%
	<u>100%</u>
First Part of Semester	<u>35%</u>
Second Part of Semester	<u>35%</u>
Final Exam	<u>30%</u>

Course Agreement

Students must take full responsibility for missed classes.

It is the task of the student to keep all work up to date.
This includes homework, assignments, notes, and labs.

Students must write all tests during the year.

When a student misses a test due to an excusable absence, the following procedure will be followed:

- Write the test on the first day the student returns to class or...
- An alternate arrangement may be made with the teacher, providing that teacher is consulted the first day that the student returns to class.

I HAVE READ THE ABOVE AND I AGREE TO GIVE MY BEST EFFORT IN FULFILLING THE REQUIREMENTS OF THIS OCEAN11 COURSE.

Name: _____ Date: _____

Course Background

Oceans 11 was conceived, developed and implemented in celebration of the International Year of the Ocean.
The Oceans 11 curriculum is a joint project of the Nova Scotia Department of Education and Culture and the federal Department of Fisheries and Oceans.

Course Outline



Structure and Motion

This module addresses the topic of structure and motion of the oceans from a global perspective, integrated with meaningful local examples.

The Marine Biome

This module is an exploration of the marine biome from a broad perspective. Connections between and within the natural environment, including human interactions are emphasized through various activities.

Aquaculture - Farming the Ocean

The viability of an aquaculture project depends on three basic factors: the physical and social environment of the site, the methodologies used, and the business plan that supports the development. This module involves students in an examination of all three of these factors.

The Fisheries Resource

This module is divided into 5 main sections: Introduction to the Fisheries System, Resource Biology, Fisheries Dynamics, Fisheries and Fisheries Management and Sustainability.

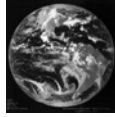
Lesson One

"Perspective" means being able to view things in terms of their relative importance or relationship to one another.

An oceanic perspective lets you see this misnamed planet in a new light and helps you plan for its future.

Earth is a unique planet, possibly one of a few in the galaxy that has water.

From space Earth is brilliantly blue, white in places with clouds and ice, sometimes swirling with storms.



At its surface, the ocean is in constant motion with powerful currents that stretch for thousands of miles and towering waves.

Beneath the ocean's surface, lie hidden mountain ranges, vast trenches tens of thousands of feet deep, immense hot springs, and huge volcanoes spewing molten rock in massive eruptions.



You will see that water, continents, seafloors, sunlight, storms, seaweeds, and society are connected in subtle and beautiful ways.

A Light-hearted Look at the Ocean

The Walrus and the Carpenter

- Lewis Carroll

THE WALRUS AND THE CARPENTER

The sun was shining on the sea,
Shining with all his might;
He did his very best to make
The fishwafers smooth and bright--
And this was odd, because it was
The middle of the night.

The moon was shining sultrily,
Because she thought the sun
Had got no business to be there
After the day was done--
'Tis very odd of him," she said,
'To come and spoil the fun.'

The sea was wet as wet could be;
The sands were dry as dry.
You could not see a cloud, because
No cloud was in the sky;
No birds were flying overhead--
There were no birds to fly.

The Walrus and the Carpenter
Were walking close at hand;
They wept like anything to see
Such quantities of sand.
'If this were only cleared away,'
They said, 'it would be grand!'

'Tis seven mounds with seven mope
Sleep it for half a year;
Do you suppose,' the Walrus said,
'That they could get it clear?'
'I doubt it,' said the Carpenter,
And shed a bitter tear.

'Oysters, come and walk with us!'
The Walrus did beseech.
'A pleasant walk, a pleasant talk,
Along the briny beach;
We cannot do with more than four,
To give a hand to each.'

The eldest Oyster looked at him,
But never a word he said;
The eldest Oyster winked his eye,
And shook his heavy head--
Meaning to say he did not choose
To leave the oyster-bed.

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But four young Oysters hurried up,
 All eager for the treat;
 Their coats were brushed, their faces washed,
 Their shoes were clean and neat—
 And this was odd, because, you know,
 They hadn't any feet.

Four other Oysters followed them,
 And yet another four;
 And thick and fast they came at last,
 And men, and maids, and misters—
 All hopping through the frothy waves,
 And scrambling to the shore.

The Walrus and the Carpenter
 Walked on a mile or so,
 And then they rested on a rock
 Conveniently low—
 And all the little Oysters stood
 And waited in a row.

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"The time has come," the Walrus said,
 To talk of many things:
 Of shoes—and slippers—
 Of cabbage—and kingly—
 And why the sea is boiling hot—
 And whether pigs have wings."

"But wait a bit!" the Oysters cried,
 Before we have our chat;
 For some of us are out of breath,
 And all of us are fat!"
 "No hurry!" said the Carpenter;
 They thanked him much for that.

"A loaf of bread," the Walrus said,
 Is what we chiefly need;
 Pepper and vinegar besides
 Are very good indeed—
 Now if you're ready Oysters dear
 We can begin to feed."

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"But not on us!" the Oysters cried,
 Turning a little blue;
 "After such kindness, that would be
 A dismal thing to do!"
 "The night is fine," the Walrus said,
 "Do you admire the view?"

"It was so kind of you to come!"
 And you are very nice!"
 The Carpenter said nothing but
 "Cut us another slice!"
 I wish you were not quite so deaf—
 I've had to ask you twice!"

"It seems a shame," the Walrus said,
 "To play them such a trick,
 After we've brought them out so far,
 And made them trot so quick!"
 The Carpenter said nothing but
 "The butter's spread too thick!"

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"I weep for you!" the Walrus said,
 "I deeply sympathize."
 With sobs and tears he sorted out
 Three of the largest size,
 Holding his pocket-handkerchief
 Before his streaming eyes.

"O Oysters," said the Carpenter,
 "You've had a pleasant meal!
 Shall we be trotting home again?"
 But answer came there none—
 And this was scarcely odd, because
 They'd eaten every one.

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Handout

A Sea Dirge

Using the handout,
 make a list of what the poet dislikes about the sea.

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The Ocean 11 course is a **science**.

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Who were the first scientists?

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The Greeks:
 Aristotle
 Pythagoras
 Archimedes
 Euclid

Why is Aristotle remembered today?

Why is Pythagoras remembered today?

Aristotle kept records.

He carried out an experiment to learn what happens inside a hen's egg.

He took 21 eggs which were laid on the same day and cracked one open each day for 21 days.

He wrote descriptions and drew diagrams of what he found.

He is called "the father of biology".

Pythagoras kept records.

He stated that "the square on the hypotenuse is equal to the sum of the squares on the other two sides of a right triangle."

This is called **Pythagoras' Theorem**.

What are some sciences?



Why do we still use Greek and Latin words for scientific terms?

We use Greek and Latin words for scientific terms because:

1. The first scientists with written records were Greeks and Romans.
2. The scientific terms can be used worldwide.

Oceanography

Oceanographers work to understand the ocean, its various environments and how they function.

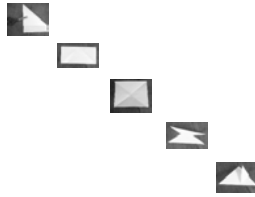
Oceanography embraces all that is currently known about the ocean environment, so that we can enjoy and harness the resources of the ocean without endangering it ourselves.

Using ships, submersibles, and satellites, scientists collect the information that is required to understand fundamental ocean processes.

They study physical processes such as the motions of currents and waves, chemical processes such as the exchange of oxygen with the atmosphere, geological processes such as the formation of beaches, and biological processes such as photosynthesis.

Lesson Two

Paper Kettle Experiment



Scientific Method

- Hypothesis:** An educated guess
- Object:** What you want to find out.
- Materials:** What you use.
- Diagram:** Picture of the material set-up.
- Method:** What you do.
- Observations:** What your senses tell you.
- Conclusions:** What you find out.

Using the proper headings, prepare a lab write-up for the Paper Kettle Experiment.

Lesson Three

Heating Water in a Paper Kettle

Object: To find out what happens when water is heated in a paper kettle.

Materials: paper, candle, matches, water

Diagram(s):



Method: A square piece of paper was folded to make a paper kettle. A small amount of water was added and heated in the candle flame.

Observations: It was observed that the water gradually got warmer. The paper close to the candle became black in colour. However, the paper did not burn.

Observations are what your five senses tell you.

Conclusions: The water heated without burning the paper, because water kept the paper below its kindling temperature. The black colour of the paper came from the carbon in the candle.

Water has a high heat capacity.
This means that water will absorb a lot of heat before becoming warm.

Video: Blue Planet



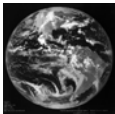
Lesson Four

Brainstorming

Using markers and large sheets of newsprint paper:

- On one sheet LIST what you think of when you hear the word "ocean".
- On another sheet DRAW what you think of when you hear the word "ocean".

SOME FACTS ABOUT THE OCEAN



- Almost seventy-one percent (71%) of the Earth's surface is covered by water.
- Humans have photographed more of the moon's surface than they have the ocean floor.

- The water on earth is 97% seawater.
- Of this seawater, 50% is found in the Pacific Ocean.
- On earth, water is three times more common than all other substances combined.

•The average depth of the ocean is - 12,000 feet (approximately two miles) – equivalent to almost ten (10) Empire State Buildings stacked one on top of the other.

•The Mariana Trench in the South Pacific is 36,000 feet deep and is the deepest place in the ocean. It is over 6, 000 feet deeper than Mt. Everest is tall.

• Pressure increases by one atmosphere for every 33 feet in depth. We experience one atmosphere at sea level, or 14.7 pounds per square inch (psi). At 12,000 feet depth the pressure is 364 atmospheres (5274 psi). By example, the tires on one's car are inflated to about 32 psi.



Importance of the Ocean

The ocean sustains life on this planet.
It affects and moderates temperature and dramatically influences global climate.
The ocean recycles, and cleans the air that we breathe.
It even absorbs the excess greenhouse gases released by the burning of fossil fuels.
The ocean is a source of many economic resources including food and petroleum.
It provides a means of transportation and is a recreational resource.

Natural Resources
Natural Gas
Minerals
Oil

Aquaculture
Sea Urchins
Tuna
Salmon
Trout
Mussels
Oysters

Medicine
Drugs

Harvesting
Irish Moss
Dulse
Fish
Seals
Whaling

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Transportation

Historically: fish, furs, spices
Growth of Seaports
Commerce: container ships
Immigration
Tourism: cruise ships
Warfare: nuclear submarines
destroyers
convoys

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Scientific Studies

Bathymetric Mapping
Hydrography
Surveying
Fisheries Research

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Climate

Weather
Moderates Temperature
Effects Currents
Effects Habitats of Sea Life
Effects of Migration Patterns of Sea Life

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Ecotourism

Visiting Historic Places - Lousbourg
Viewing Scenery - Cabot Trail
Treasure Hunting
Recreation: Sailing
Swimming
Scuba diving
Hiking

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Oil

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Bathymetric Mapping
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Assignment

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Write at least 150 words on the topic:
Why is the Ocean Important?

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Next Topic: Ecotourism

