

# **Marine Biology**

**2022-2023**

**Tuesday/Thursday, 2:00 p.m. Eastern Time**

Instructor: Katherine Grace

Email: [katherine.wildes.grace@gmail.com](mailto:katherine.wildes.grace@gmail.com)

## **I. Rationale:**

The purpose of this course is to provide students with a foundational understanding of life in the earth's oceans. Although the course will necessarily touch on certain aspects of the chemical and physical properties of the ocean, the focus will be on living things which make their home in or near the ocean.

## **II. Course Aims and Outcomes:**

This course aims to give middle school students a thorough introduction to the various kinds of life within earth's oceans while simultaneously engendering a sense of wonder and curiosity about creation. We will be covering a wide variety of topics!

By the end of this course, students will be able to:

- Describe ocean characteristics
- Compare ocean zones
- Describe tides and intertidal zones
- Understand the six characteristics of living things
- Identify and classify marine life
- Compare marine life and terrestrial life
- Describe human impact on ocean habitats
- Describe issues relating to conservation
- Summarize the history of ocean exploration
- Understand how scientific inquiry works
- Perform experiments, record observations, and draw conclusions

### III. Format and Procedures:

The class meets online. We will be using Edmodo and Zoom to host our class sessions, and **each class will be recorded**. Please be on time to class! Students learn best when they are able to discuss and engage with the material, when they can teach others about the subject, and when the teacher is not lecturing them. As such, I will be assigning readings to students and asking them to present on different topics (don't worry; these presentations are short and easy!).

We meet two days each week, and generally, Tuesdays will be days on which to discuss readings, present new information, ask questions, wrestle with vocabulary items, and clarify anything that is unclear from the previous week.

On Thursdays, we'll do experiments and activities! I know that performing a new experiment every week can be challenging. I will ask students and parents to look through the list of experiments at the beginning of the year and choose those that they would be willing to lead. This means that the student will gather all necessary materials for their assigned experiment, perhaps run through it ahead of time, and then perform (demonstrate) the experiment for their classmates live on a Thursday. This will give all of us an opportunity to participate in the experiment process while also lightening the burden on each individual student/family. Each student will lead at least one experiment throughout the year. **Please note:** students are ALWAYS encouraged to perform the weekly experiments and are not limited to doing only the experiments that you are assigned to lead. Science is much more fun when you can get your hands a little dirty!

We have several different types of assignments, including readings, class discussions, presentations, projects, labs, tests, and quizzes. Here's what I expect from the major categories:

- **Science notebook:** This is where you will keep a record of everything you do to support and demonstrate your learning. I encourage you to make this notebook as thorough, complete, neat, and organized as possible. You may write in it by hand or type your entries. A physical notebook is best! Science journals tend to get a little bit messy, so I encourage you to divide it into sections, one for each lesson, and keep everything from each lesson together in one section. Use it to record:
  - facts and interesting things that you find in reading and presentations
  - observations from experiments
  - vocabulary words
  - test and quiz scores along with a little note about what the test/quiz tells you about how you're doing (for example, you could celebrate a perfect score, or write down answers you got wrong and correct them)
  - summaries of class discussions

- questions to ask at the next class meeting,
- anything else that you think is important!

Every time that you do something for this class, you should write what you did in your notebook. Every week, I will ask that you submit anything you've added to your notebook. Submissions can be pictures, scans, file uploads – anything that shows evidence that you've added new items from the week.

- **Classwork, discussions, and presentations:** You need to read any assigned readings BEFORE you come to class. Our class time is a chance to answer questions, clear any confusion, and listen to student presentations about the material. I will not be lecturing you, so your learning really depends on how much effort you put into the class!

Classroom behavior will play a major part in how much we all learn from this class.

- **Respect**

- I expect you to behave respectfully to me and everyone else in our class. Christ tells us that we should treat our fellow humans, even those we don't like, as we want other people to treat us, and this should guide our behavior. Our goal in science is to communicate and discuss our findings, observations, and conclusions with each other, to share our wonder and curiosity, to make sure everyone in our class has the opportunity to say something, and to help everyone in our class understand what we're discussing. If there are any behaviors that I need you to stop, I will tell you once. After that, I expect that you will work hard to correct yourself. If it continues to be a problem, I will contact your parents.

- **Attendance:**

I expect you to be present and on time for each class. We will begin each class promptly at 2:00 p.m. with a short prayer. If you are late to class and you may need to wait a moment before I can allow you access to the meeting. Please be patient. I realize that sometimes, you will be absent from class. Sometimes, it's just unavoidable, and that's ok. I do not base your grade on how many times you attend class, but on how fully present you are during each class.

- **Participation:**

During class, you should have your camera on, and you should be fully focused on the class, not on another window, activity, or device. If you turn your camera off, or if you're obviously distracted, you will not receive full participation points for the day. To receive full participation points, you must make a meaningful contribution to each class. This means that you could answer a question that I

ask, you could ask a question for the presenting student, you could answer a question that someone else asks, make a helpful comment on the material we're learning, share something interesting that you've found while working outside of our class time, or even offering a specific compliment on your fellow students' presentations. Anything that adds meaning to our discussion will count; if it doesn't add meaning, you're not participating. For example, you can say, "I really liked the way you organized the facts in your presentation. It made it really easy for me to understand!" to receive participation points, but not "yeah..."

- **Eating and drinking during class:** If you need to eat or drink something during class, that's ok! If your schedule is full and my class is the only time you can eat lunch, that's all right! I ask, however, that you please keep your eating as minimally distracting as possible. Also, please remember: liquids and electronics don't mix; I recommend a spill-proof water bottle.
  
- **Quizzes, Tests, and Projects:** I will give small quizzes related to reading during class; these will count as participation points. Reading quizzes will help you see if you're retaining what you read! I'll give other quizzes in the middle of each unit to help you see if you're on track, and there will be a small test at the end of each unit. Tests and quizzes should be completed without referencing your notes, science notebook, or textbook. Remember that the goal for these types of assessments is to discover how much of the material you've learned, not to show how good you are at looking things up. Projects are more complex assessments which require you to synthesize what you've learned. If you're still looking up basic things while working on a project, it will take you a long time! How you feel when you're working on a project might give you a good indication of how well you're learning.

#### **IV. My Assumptions**

I assume that you want to learn about marine life, that you are at least a little curious about a major portion of creation which humans cannot easily access, that you wish to satisfy your curiosity, and that you will therefore complete your assignments without too much difficulty. I acknowledge that you may be bored with some portions of this course, as everyone has their own particular likes and dislikes, and I ask that you think of any boredom you encounter as an opportunity to learn how to get through something that's difficult.

Science is best learned in a hands-on method, and we will do as many projects as possible! The bulk of work in the study of science lies in recording information and observations over a period of time. I want you to experience what it's like to keep a record of your observations, and to that extent, you will be keeping a science notebook to record much of the content of this course.

Science advances when scientists share their observations and information with each other, and therefore you will also be expected to participate in discussions with your classmates.

## V. Course Requirements:

1. Prerequisites:
  - a. **Reading:** Your student should be reading at a middle school level in order to benefit most from this course. Students will be asked to read the text, summarize readings, and draw conclusions. I encourage students to read the text independently, as this is a good skill, but reading it aloud to them is perfectly acceptable. The goal is for students to learn science, however this needs to happen for your student.
  - b. **Science:** I do not expect students to have a great deal of experience or familiarity with science yet. This is a very foundational course, and I will cover the concepts of scientific inquiry and procedures with students. I do assume that students have had practice in observing and exploring the created world which surrounds them, and I assume that students have some natural curiosity about parts of creation that they cannot see or touch.
  - c. **History:** We will be learning a little bit about things that have happened in the past, and the student should be familiar with using and understanding a timeline.
  - d. **Math:** A 5th grade understanding of basic mathematical concepts is sufficient for this course. We will be recording observations, measuring, and creating simple graphs.
2. Class attendance and participation policy: Students must attend each class and be fully present and engaged to receive full participation points for the year.
3. Required materials
  - a. **Required text:** The Good and the Beautiful Marine Biology
  - b. **Background readings:** I will post any additional readings on Edmodo
  - c. **Science notebook:** I recommend a 3-ring binder with dividers and a ready supply of notebook paper. A spiral notebook can also work. Keep in mind that the student will be adding to the notebook throughout the year. Adding materials to a 3-ring binder is usually easier than adding them to a spiral notebook, but some students prefer the notebook. Talk to your child about what will work best. It's ok for your student to switch methods at any point if they find that something isn't working for them.
  - d. **Lab supplies:** There is a list of materials used in the labs in the front of the text, but once the students have been assigned to individual experiments, I will update this list for you.

## VI. Expectations for Parents

- Set aside a calm, quiet, distraction-free space for your child(ren) to work every day.
- Ensure virtual learning equipment is available and charged.
- Establish routines and expectations and a basic schedule for completing classwork.
- Help students ‘own’ their learning.
- Check Edmodo for communications from teachers and help students print off resources that are provided.
- Stay abreast of teacher feedback in the form of grades or other messages.
- Proctor tests, quizzes, or other assessments as scheduled by the teacher. Parents ensure academic integrity because they are on the “live” side of the screen.
- Communicate with teachers regularly via email or Edmodo regarding any questions or issues that arise.
- If your child is having trouble completing work, email teachers to schedule a time for an online meeting.
- Provide the materials, dedicated space, and supervision for any experiments that your child is assigned to do or wishes to do on their own.
- **Special note:** I would ask that you please print out the textbook. I know it’s a lot of paper and ink, or an expensive print job if someone else does this for you, but it is much easier to read, navigate, and complete activities if you have this printed out. The text may be printed double-sided. Please look at the activity pages before you print them; some need to be single-sided, and some need to be double.

## VII. Grading Procedures

Grades will be weighted on the following scale:

(40%) Participation: Classwork, discussions, and presentations

(40%) Notebook: Homework assignments, lab reports, recording what you do for your learning

(20%) Assessments: Tests, quizzes, and projects.

Participation is essential in science courses. Students who do not complete assigned reading, do not prepare presentations, and do not complete in-class assignments are not able to participate fully in the course. These types of assignments are time-sensitive due to the fact that once the class period is over, it is no longer possible to participate. Therefore, classwork, discussion, and presentations cannot be accepted late. Excessive absences will adversely affect your participation grade.

I expect at-home assignments, such as experiment reports and notebook entries, to be submitted on time, as these assignments supplement and complement the material currently being studied. If a student is struggling with an assignment, they may submit them for full credit no later than two weeks past the deadline. Beyond two weeks, the class will have moved on to a new topic, and late assignments will not be accepted. Please note that in the case of repeated late submissions, I will contact you to find out what's happening to prevent you from completing your work, and how I can help you succeed in turning these in on time.

Exceptions will be made at the instructor's discretion in special circumstances.

Assessments are made via tests, quizzes, and projects. Some students are fantastic test-takers, and some students are fantastic project-preparers. I do not believe that a single score on either a test or a project is representative of a student's overall subject mastery. These assessments should not cause anxiety, fear, or stress; if you are keeping up with class participation and regularly updating your science notebook, you are learning the material and will pass the class. Assessments are good tools for revealing gaps in knowledge. If you do very poorly on an assessment and wish to raise your score, you can look up the material that you did not master and resubmit the assessment to me once. I will not accept an assessment resubmitted a third time. These assessments do not make up a terribly large portion of the grade, and it's ok for you to do poorly on one or two so that you can learn whether you're working efficiently enough to master the material.

This course is a fairly thorough but foundational study of life in the oceans. You should expect to put in more time than you may have done for elementary school, but you should not have trouble keeping up with the workload. If you are finding the coursework difficult to manage, please contact me immediately!

## **VIII. Academic Integrity**

Each student in this course is expected to abide by the Cornell University Code of Academic Integrity. Any work submitted by a student in this course for academic credit will be the student's own work. An exception to this policy is any work that is part of a group project; however, for a group project, each group member must contribute in a meaningful way.

You are encouraged to study together and to discuss information and concepts covered in lecture and the sections with other students. One great way to assess what you know is to teach the idea to a peer! You may also work together on problem sets and give "consulting" help to or receive "consulting" help from your peers. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in any form (e.g. email, Word doc, Google doc, hard copy). Assignments that have been previously submitted in another course may not be submitted for this course.

Should copying occur, both the student who copied work from another student and the student who gave material to be copied will both automatically receive a zero for the assignment. Penalty for violation of this Code can also be extended to include failure of the course.

During examinations, you must do your own work. Neither talking nor discussion is permitted during the examinations, nor may you compare papers, copy from others, or collaborate in any way. Any collaborative behavior during the examinations will result in failure of the exam and may lead to failure of the course.

## IX. Tentative Course Schedule

Below is the list of major topics and associated readings and activities we plan to cover this year. Please note that this is tentative, and we may add, remove, or move topics, so check our Edmodo calendar frequently for updates!

<b>Topics</b>	<b>Readings to be discussed</b>	<b>Experiment, activities, and projects</b>
Scientific Inquiry and Method	Provided by the teacher	Peanut Butter and Jelly Sandwich experiment
Ocean characteristics	TGTB Marine Biology, Lesson 1	Ocean Currents, How Salt Affects Buoyancy,
Oceanic Zones	TGTB Marine Biology, Lesson 2	Ocean Zones and Sunlight
Tides and Intertidal Zones	TGTB Marine Biology, Lesson 3	Create Your Own Ocean Shore with Tide Pools
Marine Life	TGTB Marine Biology, Lesson 4	Ocean Life Classification (activity)
Coral Reefs	TGTB Marine Biology, Lesson 5	Coral and Picture (activity)
Marine Invertebrates	TGTB Marine Biology, Lessons 6 and 7	Marine Invertebrates Booklet (activity); Echinoderms Activity
Marine Reptiles	TGTB Marine Biology, Lesson 8	Sea Turtles vs. Turtles (activity)
Fish	TGTB Marine Biology, Lesson 9	Fish Body Parts Activity; Fish vs. Not Fish (activity)
Sharks	TGTB Marine Biology, Lesson 10	Shark's Sense of Smell Experiment; Shark Body

		Parts Activity
Marine Mammals	TGTB Marine Biology, Lesson 11 and 12	How Do Ocean Animals Stay Warm experiment; How Do Baleen Whales Eat experiment; Echolocation Activity
Marine Birds	TGTB Marine Biology, Lesson 13	Seabird Feeding Activity; Animal Reports
Ocean Exploration	TGTB Marine Biology, Lesson 14	History of Ocean Exploration Banner Timeline Activity; Ocean Exploration Activity