**BIO 125: MARINE BIOLOGY, Spring 2019, Dr. Michelle Kowalewski**

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Office Hours: Tues & Thurs 10:00-11:00, or by appointment

Course Website: login to SBCC pipeline & go to Canvas

**Note:** Lecture and reading dates may change if there is a need to adapt to our needs and progress as a class. Changes will be posted in **Canvas** & announced in class – it is your responsibility to stay informed.

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| **Week of:** | **LAB: EBS 210****Tues or Thursday****2:30 – 5:35pm**  | **Lecture # (Date)** | **LECTURE: EBS 301****Tu &Th 12:45-2:05pm** | **Reading Homework****Castro Huber 10th ed.****(9th ed in parentheses if pages differ from 10th)** |
| Jan 14 | 1. Plankton (lab & docks) | 1 (1/15) | Course Intro; Ocean Environment | Ch 3: 40-56 |
| 2 (1/17) | Bio Basics; Phytoplankton | Ch 4: 64-76; Ch5: 93-100 |
| Jan 21 | 2. Classification & Algae**Lab Quiz 1** (on Lab 1) | 3 (1/22) | **Quiz 1; *Resources wkst due***Zooplankton; Pelagic Adaptations | Ch 6: 102-107 (102-106)Ch15: 336-352(332-348) |
| 4 (1/24) | Natural Selection & Evolution | Ch 4: 76-84 |
| Jan 28 | 3. Sponges & Cnidarians (lab); **CF Topic Due****Lab Quiz 2 (**on Lab 2) | 5 (1/29) | **Quiz 2;** Sponges; Cnidarians | Ch 7: 117-124 (115-122) |
| 6 (1/31) | Coral Reefs | Ch 14: all |
| Feb 4 | 4. Docks (Bryozoans & Tunicates) (lab & docks); CF 1; **Lab Quiz 3** | 7 (2/5) | **Quiz 3:** Coral Reef Ecology | C11: 264-268 (262-266) |
| 8 (2/7) | Molluscs I (snails) | Ch 7: 130-137(127-134) |
| Feb 11 | 5. Molluscs; CF 2**Lab Quiz 4** (Lab 3 & 4) | 9 (2/12) | Molluscs II (octopus, etc.) |  |
| \*\*(2/14) | **EXAM 1** |  |
| Feb 18 | 6. **FIELD TRIP:** (Carpinteria) Rocky Intertidal Zones | 10 (2/19) | TidesIntertidal Adaptations | Ch 3: 57-62Ch11: 246-263(244-261) |
| 11 (2/21) | Arthropods (crabs, etc.) | Ch 7:137-143(134-139) |
| Feb 25 | 7. Echinoderms & Arthropods (lab); CF 3**Lab Quiz 5** (Labs 5 & 6) | 12 (2/26) | **Quiz 4;**Echinoderms (stars, etc) | Ch 7:143-147(141-145) |
| 13 (2/28) | Soft sediment ecosystems; Worms I (flatworms) | Ch13: 289-300(287-297)Ch. 7: 125-130(123-127) |
| Mar 4 | 8. **Field trip:** Carpinteria Salt Marsh | 14 (3/5) | **Quiz 5;** Annelid Worms | Ch. 7: 125-130(123-127) |
| 15 (3/7) | Estuaries | Ch12 (all) |
| Mar 11  | 9. Kelp Holdfasts (lab); CF 4**Lab Quiz 6** (Lab 7) | 16 (3/12) | **Quiz 6;** Mangroves |  |
| 17 (3/14) | Kelp Forests | Ch13: 300-9(298-305) |
| Mar 18 | 10. **FIELD TRIP**: (Devereux)Rocky Intertidal Diversity | 18 (3/19) | Seagrass Beds | Ch 6: all |
| \*\* (3/21) | **EXAM 2** |  |
| Mar 25- 30 **SPRING BREAK** |
| Apr 1 | 11. Sandy Beach (Leadbetter); CF 5 | 19 (4/2) | Phylum Chordata; Tunicates; Marine Reptiles | Ch 7: 143(140), 148-151 (145-149); Ch9: 179-184 |
| 20 (4/4) | Sea & Shore Birds | Ch9: 184-188 (182-186) |
| Apr 8 | 12. Data analysis (lab);**Lab Quiz 7** (Labs 10 & 11) | 21(4/9) | **Quiz 7;** Climate Change | 233-245(231-243) |
| 22 (4/11) | Cartilagenous Fish (sharks) | Ch8: 153-158(151-156) |
| Apr 15 | 13. Fishes (lab); CF 6**LAB RPT DUE**  | 23 (4/16) | **Quiz 8;** Boney Fishes | Ch8: 158-168(156-166) |
| 24 (4/18) | Fish Biology & Behavior | Ch8: 168-178(166-176) |
| Apr 22 | 14. Mammals & Birds (lab & Leadbetter); CF 7**Lab Quiz 8** (Lab 13) | 25 (4/23) | **Quiz 9;** Marine Mammals | Ch9: 188-200 (190-202) |
| 26 (4/25) | Marine Mammal Bio. & Behavior | Ch9: 200-222 (202-212) |
| Apr 29 | 15. **Presentations;** Review (lab)**; Lab Quiz 9** (Lab 14) | 27 (4/30) | Marine Resources | Ch 17: 297-404 |
| 28 (5/2) | Marine Conservation | Ch 18: all |
| **May 15** | **EXAM 3 & FINAL EXAM** | **TUESday May 7, EBS 301 11am-1pm \*\*\*NOTE TIME\*\*\*** |

**REQUIRED MATERIALS:**

**1. Textbook:** Marine Biology, by Castro & Hubert, 11th edition (earlier, later, or on-line versions may be used, but note that page numbers for readings may differ – you will need to be sure you are reading the correct sections). A copy will be available to read in the SBCC library.

**2. Lab Manual:** Paddack & Anderson, Marine Biology, (Spring 2019 edition). Available in the SBCC bookstore or print your own from the class Canvas site.

**Welcome to Marine Biology!**

This course is an introduction to the amazing world that awaits you just offshore. You will learn about the ocean as a habitat and the animals that live within it. This course serves non-science majors, but biology majors will also gain much from the material. My goal is to help you understand the basic principles of science and apply them toward understanding how organisms live in the ocean. Along the way, you may also discover a lifelong appreciation of biology and ecology and see how interesting the world is through the eyes of a scientist.

*This course satisfies SBCC general education requirement in Natural Sciences & is transferable to UC and CSU as a general education laboratory science course. This course does not apply toward the SBCC Biology major.*

**Course Objectives:**

The major course objective is to familiarize the student with marine plants, algae and animals, their basic structure, feeding habits, reproductive modes, and interactions with each other and their environment.

In lecture students will learn to:

1. Define the major ecological principles operating in marine communities.

2. Recognize marine plankton as the base of most marine food webs.

3. Identify the major groups of marine organisms.

4. Compare the major littoral habitats, the species of marine organisms commonly found in each one, and their adaptations to the habitat.

In lab students will learn to:

1. Recognize common littoral marine organisms of the West Coast of North America and understand the roles they play in specific marine ecosystems.

2. Specify the major marine physical and biological forces at work in littoral zones.

By the end of the course students will learn to identify the complex and diverse littoral organisms in the marine environment of the West Coast of North America, specify the ecological adaptations inherent in the success of marine organisms, and interpret the marine ecosystem as a major life zone of Earth.

**Student Learning Outcomes**

1. Diversity: List the nine major animal groups (phyla) and four major marine plant/algae groups (phyla) found in the oceans and explain the differences between them.

2. Ecology: Distinguish between marine and terrestrial systems using the major principles of ecology.

3. Lab: Identify common marine organisms from temperate inshore habitats including rocky shores and sandy beaches.

**GRADING** will be determined by the total percentage earned in the course. There is one letter grade for this 4 unit class (lecture and lab together) which will be based upon your percentage of points earned out of a possible total points using the following scale. A student who shows strong effort and/or improvement in the course may be bumped up into the next higher level at my discretion. Grades for each assignment will be posted in Canvas.

 **Remember, Grades are earned, not given.**

A+: >95% B+: 87-88% C+: 77-79% D+: 67-69%

A: 90-96% B: 82-86% C: 70-76% D: 60-66%

A-: 89% B-: 78-81% F: <60%

Points are earned as follows. Note that there are **985 points** in the class. There are 20 extra points embedded, so if you miss 1 lab quiz & 1 lecture quiz for any reason, it will not hurt your grade (unless you fail to learn this material for the exams). If you do them all, these will be extra credit points.

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| **Lecture Activities** | **Total Pts** | **% of grade** | **Lab Activities** | **Total Pts** | **% of grade** |
| Lecture Quizzes (9 at 10 pts each – drop lowest) |  80 | 8% | Lab Exercises (15 at 15 pts ea) | 225 | 23% |
| Learning Resources worksheet | 15 | 1.5% | Lab Quizzes (9 at 10 pts each – drop lowest) |  80 | 8% |
| Exam 1 | 100 | 10% | Lab Report |  55 | 6% |
| Exam 2 | 100 | 10% | Creature Feature topic (on time) |  5 | 0.5% |
| Exam 3 | 100 | 10% | Creature Feature Outline | 10 | 1% |
| Lecture Final | 100 | 10% | Creature Feature | 100 | 10% |

**NOTE: 10% per day late will be deducted from grades for all late assignments**

**Accommodations for Students with Disabilities:**

Disability Services and Programs for Students (DSPS) coordinates all academic accommodations for students with documented disabilities at Santa Barbara City College. If you have or think you might have a disability that impacts your educational experience in this class, contact DSPS to determine your eligibility for accommodations.

DSPS is located in the Student Services (SS) Building, Room 160.  Their phone number is 805-730-4164.

If you have already registered with DSPS, please submit your accommodation requests via the ***‘DSPS Online Services Student Portal’***as soon as possible. This needs to be done each semester. *If you have any questions or concerns about your accommodations, please make an appointment with a DSPS Counselor.*

Complete this process in a timely manner to allow adequate time to provide accommodations.

Your role in this class:

Congratulations on taking the initiative to learn a fascinating subject! This will be a class that will have you interacting directly with the things we are studying, and with each other. I will try my best to teach you and give you a real feel for Marine Biology. Whether you ever take another biology class or not, I hope you will learn a lot about the ocean so that you will always have a deeper understanding and appreciation for it through your life.

We will provide great tools for you to learn, but it is ultimately YOU who is responsible for your knowledge. If you need extra help, come to my office or make an appointment. I am here for YOU and will work as hard as you do to help you succeed.

**Participation:**  A key element of the sciences is to be inquisitive and interactive with your subject and your peers. Your participation is therefore an important part of your learning, and so is a part of your grade. All science classes build on the foundations laid in each lecture, so it is important that you ***do not get behind***.

Do not be afraid to ask questions or to seek help in understanding from your instructor or your peers – discussion & debate are important aspects of science. Because you are here to learn, **I strongly encourage you to raise your and ask questions or present ideas during lecture**. If you don’t understand something, it is most likely that someone else in the class shares your confusion. The easiest way to resolve your misunderstanding is to speak up. If you have any suggestions or comments about my lectures, the text, or other material related to the class please feel free to speak to me so that we can make this class the best learning environment possible.

Respect your fellow classmates and instructor: Electronic devices such as cell phones, laptops, mp3s, Ipads, Tablets, Kindles, etc may ONLY be used for class purposes (ie, taking notes). Please be aware that use of these devices can be distracting to yourself and your classmates. It is obvious when you are not engaged with the class. Any student who causes any disruption, such as using the above items improperly or talking out of turn, will be given a single warning and points will be deducted from participation grade. If the disruption continues in that or any of the following classes, the student can be removed from the class and will not be able to return until meeting with the Academic Dean.

**Tardiness** is not good for you or your classmates. Please be on time! I will start lecture and lab on time (you will find it confusing and difficult by coming in late as well as disturbing to others).

**If you miss more than 3 consecutive lectures or 2 labs you are subject to being dropped.**

**Course Communication & Materials:**

**Class website:** Course documents, including the syllabus, lecture outlines and study guides will be posted on your Canvas site**.** This will be an indispensible resource for you during this course – visit it frequently!!

If you have not already done so, log into and familiarize yourself with Pipeline. I communicate with you via Pipeline email &b Canvas, so you check your school email (Pipeline) regularly for updates, reminders, or schedule changes. Best to get the Canvas app on your phone & turn notifications on.

To log into Pipeline: Go to the SBCC homepage ([www.sbcc.edu](http://www.sbcc.edu)) and click on “Pipeline”. On the upper bar, click on the ‘Canvas’ button – in Canvas, click on BIOL-100.

If you have difficulty accessing or using Pipeline, contact the Online Help Desk at online@sbcc.edu (805 965-0581 x2949) or visit the Cyber Center.

**Study Guides** will be posted in Canvas after each lecture. These will include images of any slides shown during class and a list of questions (posted as a Word doc that you can download). Although these questions will not be graded, I advise you to treat them like homework and set 2-3 hours aside after each lecture to answer the questions. This will keep you on top of the material and allow you to be sure you understand. If you are unable to answer a question, ask for clarification in the next lecture or come to office hours or the tutor. Lecture quizzes and exams will consist only of these questions.

**Notebooks and organization**

Making a reliable record of observations and events is an essential skill in science, as well as most other professions. Taking notes is an important skill. Scientific studies have proven that we learn more by hand-writing notes. Be sure to have a notebook dedicated for this course to include notes you take during lecture and from your readings. Many drawings, figures, and anecdotes that I present in lecture will not appear in the posted lecture notes (and this is intentional!), but this material will figure prominently on exams and quizzes.

Although I will not directly grade your personal notebooks and organization of lecture notes (though I may for extra credit!), these are critical for success – you will not perform highly if you are unorganized.

**Lecture Quizzes** There are 9 scheduled quizzes during lecture. Scheduled quizzes are closed book and will be a combination of multiple choice & short answer. Lecture quizzes may be given at any time during lecture. Quizzes can **only** be made-up with a documented absence (e.g., a doctor’s note). There is one extra quiz, so if you miss or fail one, it will not hurt your grade. Your lowest quiz score will count as extra credit.

**Exams** will be a combination of Scantron & short answer. Each mid-term will cover material up to the test. The final exam will be half material from the last third of the class (midterm 3) and the other half cumulative.

**No exit/re-entry allowed during exams**, so be sure that you use the restroom prior to the exam.

You must bring a #2 pencil and 100 question Scantron form to each exam.

NOTE THE TIME OF THE FINAL (11-1) differs from the regularly scheduled lecture time!

* **Make-up exams and quizzes will ONLY be given in cases of documented emergencies.**

**ASSIGNMENTS**:

**Reading Homework:** Text readings will support the lecture material. To help you understand, interact, and ask questions, reading assignments for each class should be read **BEFORE** lecture.

A copy of the text is on reserve at the library – you can check it out to read in the library.

Readings support the class material but additional material WILL be presented in lectures. Therefore, if you are absent, it is important that you get class notes from a classmate.

**learning resources worksheet:** This assignment will be given in class within the 1st week of classes. It is a homework assignment that will help you be the best student you can.

**Time managemet assignment:** This assignment will be given in class within the 2nd week of classes. It is a homework assignment that will help you stay on top of your school work.

**CREATURE FEATURE** : Details are in your lab manual, but here is a brief overview:

* An in-depth, formal presentation on biology and/or ecology research of a particular marine organism.
* Your presentation will occur in your lab at an assigned date during the semester. You must select your organism & date of presentation by Week 2 - only one student can write on each topic so sign up early.
* You will use published scientific studies and other credible scientific sources to research your organism.
* **10 days prior to your presentation**, you must submit an outline & annotated bibliography of your research so far, including at least 4 credible scientific sources.
* You will present your work to you lab as an oral 8 minute presentation. This will provide you with valuable presentation skills as well as allow you to hear about each other’s research.
* Format instruction sheet, rubric, and in-class pointers are included in your lab manual - “Projects” tab.
* Be sure to **practice** your talk at least a few times before you present to the class. Form study groups to give each other pointers and to become comfortable presenting.

**Lab Quizzes**- will be given during the first 10 minutes of each lab in which they are scheduled. They will cover lab material from the previous labs as well as test your preparedness for the lab you are about to do (read over your labs BEFORE class!). Students who are late will not have time extended for quizzes. Quizzes can **only** be made-up with a documented absence (e.g., a doctor’s note). There is one extra quiz, so if you miss or fail one, it will not hurt your grade. Your lowest quiz score will count as extra credit.

**Lab Exercises**-– Your lab notebook has all of the labs you will do (with the exception of week #1, which will be passed out in the first lab). It is your responsibility to bring your lab notebook to class. Students who forget their printed labs (and are not able to bring a copy to class) will receive no higher than a C on their lab. Lab exercises are to be completed during the laboratory period and turned in before leaving. These will be graded (each worth 15 points) and returned either during that lab or the following week. Each completed lab exercise should be kept in the lab notebook along with the course exams, quizzes, and journal reports.

If you miss a lab, you are still responsible for the material. If you cannot make it up in another lab, be sure to go over the lab with a peer in class, fill it out entirely, and see me in office hours to go over it.

**Lab REPORT** –This 5 page lab report of your Sandy Beach Lab will follow the format of a scientific article. You will work in a team of 2-4 people for this. Your team will decide one question that your data can address and use that as a theme for your paper (use the questions & discussion points located with each section above). All of the details are in your lab manual.

**Extra Credit** opportunities, such as scientific presentations, will be offered throughout the semester.

All extra credit opportunities will have no cost, or a no cost option will be available.

Here are a few opportunities:

1. News Flash: Share a recent news article about the ocean environment, marine organisms, or policies/issues regarding the ocean. Time will be provided for this at the beginning of each lecture (except exam days). To do this, be sure to read and understand the article fully – provide a concise but thorough summary of what you read and tell us where you got this information. You may do up to 4 of these (3 points each).
2. Attend a marine biology lecture/presentation/discussion or Beach Clean-up (worth 5 points each)

For any lecture/presentation you attend, you must hand in **within 1 week**:

1. the notes you took during the lecture/activity
2. a brief summary of the lecture/presentation (2 paragraphs)
3. a paragraph (at least 1 paragraph) of your thoughts/reaction/questions from it.

Study Tips

The key to getting a great grade is the amount and quality of work that you put into this class.

I will do everything I can to help you in this course, but your grade is ultimately up to you.

* The very best way to study is to attempt to teach the material to someone else. Listening to and understanding information is *completely different* than being able to reproduce it or use it under pressure without your notes!
* Budget into your schedule at least *3 hours* of study and reading time for every 1 hour of lecture time. That’s a *minimum* of 7 hours every week, exclusive of exam and lab preparation!
* Read the assigned material casually *before* lecture, and then very carefully read the relevant sections a second time after the lecture. If you don’t understand something at that point, ask me.
* Take notes on your post-lecture reading, and incorporate these notes into your lecture notes. Re-write all your notes, cleaning up and re-organizing them as you do.
* Write tests for yourself to *evaluate* and *use* the material; take your tests later to practice doing well on exams.
* Join or form a study group. You’re more likely to study if it’s scheduled and others are depending on you. Plus, in a study group, you have people to whom you can teach the material. (See first bullet point.)

**Your success:** I want you to do well in this course. Please email or come see me if you have any questions or problems with the course, assignments, anything to do with your experience here at SBCC, or if you just want to chat. It is my job to help you succeed. If I am not able to help you, I will try to put you in touch with someone who can. Also, don’t think that you should wait until a problem arises to come see me or talk to me. Come anytime, no question is too small – students that attend class regularly and keep an open line of communication with the instructor typically perform better in the course. You should take advantage of opportunities to talk with your professors – we’re here to help you learn!

**Academic Honesty**

 Academic dishonesty (including plagiarism) will not be tolerated in this course. SBCC has a strict policy on academic honesty and I have zero tolerance for any act of academic dishonesty. Academic dishonesty includes but is not limited to: (1) Cheating on an exam or quiz (e.g. looking at or copying form somebody else’s exam, talking during an exam, using cell phones or texting, bringing prepared “cheat sheets”, using translators or dictionaries); (2) Copying someone else’s work or answers in worksheets, lab exercises, etc. (3) Plagiarism (failing to properly cite material produced by others, or intentionally turning in work that is characterized as one’s own). ***All work submitted must be your own.***