Welcome to Biocore 382 Evolution, Ecology, and Genetics Lab!

Syllabus -Course Goals & Schedule

Biocore Lab Courses Are All About <u>The Process Of Science</u>

You may be familiar with the model for scientific investigations known as the "Scientific Method." The model presents a logical sequence of steps leading from an initial observation to an experiment and interpretation of data. However, few scientists actually carry out investigations according to the rigidly defined linear sequence of steps. What they do is to engage in the following activities:

1. **Making Observations and Generating Testable Questions:** *Making Observations* takes a careful, keen eye and experience in differentiating subtleties and slight differences in whatever you are sensing (visually— or smell, touch, taste too!). Through careful observation, we notice variations and patterns that provide the basis for developing questions and predictions that can be tested or measured in an empirical way.

2. **Formulating Hypotheses Supported by a Rationale:** Forming hypotheses requires stating tentative explanations or answers to your testable question based on background knowledge about the system you are investigating. A hypothesis is not simply an 'educated guess'. It must be supported by a substantive rationale (what we will refer to as a *biological rationale*), have explanatory power, and make a prediction that can be tested.

3. **Designing and Conducting an Investigation:** This process includes planning the methods and procedures for gathering data to answer a question, evaluate a hypothesis, or challenge a theory. You test hypotheses by designing *manipulative experiments* or making careful *systematic observations* that evaluate the actual outcome against the predicted outcome. The type and design of your investigations is based on the questions you ask as an investigator, your knowledge of the study system, AND the general "knowledge" available in the scientific literature. In short, you need to understand the complexity of the system before measuring it.

4. **Analyzing and Interpreting Data:** Investigators attempt to find patterns and provide meaning in a group of data in a particular context. When working with data in this class, we will emphasize the need to explore *sources of variation* within and between comparison groups, and will help you make connections between your data, the concepts and context underlying the project, and the assumptions you are making in your experiment. Interpretation of data should bring you back to your hypothesis, which you can either support or reject. The analysis and interpretation of data will form the basis for inferring explanations about the natural world.

5. **Constructing New Knowledge:** If you reject your hypothesis based on the interpretation of your data, you may conclude that the assumptions you made about the system are not valid or that the way you are thinking about your system is incorrect. *Important Note:* You have not failed or made a mistake if your experiment leads you to reject your hypothesis. Nor have you "proven" your hypothesis true if your data supports your prediction. You have simply supported or accepted your hypothesis—under this specific situation. With more precise measurement, different statistical tests, or repeated experimentation in different environmental conditions with different organisms etc... your data may force you to reject your hypothesis. This should lead you to a new, more sophisticated hypothesis as you increase your knowledge about the system. You might even find that the patterns that you see run counter to what you read in the scientific literature, in your textbooks, or even are in opposition to what your instructors think (gasp!). If that's the case, you have just learned or discovered something new! Now that is exciting and….that is the process of science.

6. **Communicating your Science:** As you question your analysis/ interpretation, or when you talk about or write about your understanding, you expose your ideas to discussion and debate. This is sometimes uncomfortable but is an essential form of feedback, and it helps to clarify fuzziness in

our thinking. Communicating and receiving feedback on your science, and reviewing scientific work of your peers provides essential quality control and expands the knowledge we have collectively as a scientific community. In practice, above and beyond meeting expectations for a grade-- communicating your science clearly and effectively provides a vehicle for sharing and constructing new knowledge with others, and allows the next generation of scientists (AKA next year's Biocore students) to "stand on the shoulders of giants" (Sir Issac Newton).

How this Applies to Biocore 382-Course Goals & Learning Outcomes

As instructors, we are here to help you and to facilitate your learning of biology and your development as a scientist in an active way, but ultimately you bear the responsibility for learning the material, developing skills and taking ownership of your education. We will challenge you to go beyond simple memorization of details, to interconnect concepts, applications and problems; to ask meaningful questions; to test well-developed hypotheses; and to communicate your findings to your instructors and peers within the realm of science. These are lofty goals! We set high standards for you because we expect that you can reach them!

Our overall goals in this course are to:

1. Give you experience applying and expanding upon the concepts discussed in Biocore 381
2. Engage you in the process of science as described above
3. Give you experience working with the tools and procedures of ecology, genetics, and evolutionary biology
4. Improve your scientific communication skills and your capacity to give and receive feedback on your ideas.
5. Improve your capacity to work as a member of a productive, collaborative research team.
6. Give and receive constructive feedback using professional communication and effective interpersonal skills
7. Contribute to an inclusive, safe, socially and ethically responsible research and learning environment

Learning Outcomes
At the end of two (three) semesters of Biocore labs, students should be able to:*

*Students are only required to take two of the three Biocore labs. Many choose to take all three!

1. Make careful, systematic observations
2. Ask testable, relevant, creative scientific questions
3. Search, sort and gather relevant background information from texts and primary literature
4. Make predictions and formulate clear, testable hypotheses
5. Develop protocols that test hypotheses
6. Evaluate assumptions associated with experimental design and the biological system
7. Analyze data and make logical conclusions utilizing statistical reasoning
8. Communicate effectively about science through writing and oral presentations
9. Do productive group work

In the process, we hope you will begin to see your instructors as people who bring special skills and a vast array of experiences to complement the class rather than as authorities who know all the answers. In addition, we hope you can hone your group work skills given that science is not a solitary process but one that relies heavily on collaboration and teamwork.

Four Strategies for Doing Well in Biocore Labs

1. **Be prepared.** Do Pre-lab assignments and read the relevant section of the lab manual carefully ahead of your laboratory meeting time and be sure you understand the question(s) the project is attempting to answer and the approach you will be taking to answer these questions. Careful preparation will save you a great deal of time both during lab and in writing assignments. Pre-lab assignments are designed to help in this process.

2. **Make the most of the time you have in lab.** Collect the necessary data and *make detailed notes* in your lab notebook. In many cases we have allowed time in class for you to begin analyzing and discussing your data, preparing presentations and getting feedback from peers and instructors. Take advantage of this opportunity and resist the temptation to leave early. This is where the most learning takes place.

3. **Start writing your lab papers well before the deadline and pay attention to the many tips from your instructors, in the lab manual, and *Biocore Writing Manual*.** We emphasize writing in this course not only because communicating your ideas is part of the scientific process, but also because writing about a subject helps you understand more clearly and at greater depth. This takes time. During the semester, you will have the opportunity to have your paper reviewed by a peer before turning it in for a grade. This is an excellent opportunity to remedy problems before turning in a final copy. If your peers cannot understand what you have written it is unlikely that your instructor will either.

4. **Cultivate a relationship with your Biocore peers.** Your peers are an incredible resource and have much to offer you in the way of support and advice in this course. These are the people you can depend on for the next three semesters!

Biocore 382: Ecology, Genetics and Evolution Laboratory - Fall 2019 Schedule

Your grade will be based on the assignments listed below. Check (√) assignments are scored simply adequate or inadequate; papers, posters and presentations are graded using rubric criteria described in the *Biocore Writing Manual*.

Week & Date	***Topic***	***Activities***	***Weight*** Due at start of class
1 Sept. 4-6	**Ecology I:** Intro Biocore Prairie	**Disc** None this week **Lab** Field trip to Biocore Prairie (meet at Picnic Point Parking Lot) *Course, People, Prairie Intro √ By the end of lab- Prairie observations & questions to TA ***Note:*** *Tuesday labs sign up to do Field trip to Biocore Prairie on W, R or F*	
2 Sept. 9-13	**Ecology II:** Testable Questions	**Disc** Process of Science & Testable questions in ecology activity diagram ***Sign up to attend a library workshop at Steenbock Library** **Lab** Field work at Biocore Prairie (meet at Biocore Prairie picnic table) **Testable Questions Prelab due before lab** √ By the beginning of lab- Tentative testable questions & relevant abiotic & biotic variable list √ By the end of lab- Tentative testable question/hypothesis for prairie project (1/team)	**4%**
3 Sept. 16-20	**Ecology III:** Propose Experiment & Solicit Feedback	**Disc** Peer Review (PR) and literature review: our expectations *Teams prepare feedback presentation slides (outside of class) *Attend library workshop (times vary) √ Before Disc- Experimental design worksheet due (1/team) **Lab** Informal Feedback Presentations •Focus on biological rationale & hypothesis •Workshop-Sampling, replication, making figures & representing variation **Paper review worksheet (1/pair) &** Group Effort Analysis (GEA) form **due before lab** √ By the end of lab- Materials and schedule sheet (1/team)	**5%**
4 Sept. 23-27	**Ecology IV:** Data Collection	**Disc** Formal Peer Review: Exchange paper drafts with partner and complete review form at least 24h before disc. Meet with peer review partner during discussion to discuss comments **Lab** Field work at Biocore Prairie- Experiment set up and pilot studies **Ecology Research Proposal,** GEA & Authors Response & **Peer Review** due 48 h after disc	**8%** **2%**
5 Sept. 30- Oct 4	**Ecology V:** Representing & Explaining Variation	**Disc** Data entry and intro to Excel; Excel Tutorial; focus on sources of variation ***Hand out Fast Plant seeds and instructions** **Lab** Field work at Biocore Prairie – complete study √ Sign up: Individual conferences with TA for Ecology Paper outside class (varies)	
6 Oct. 7-11 *(Biocore 381 Exam Oct 8)*	**Ecology VI:** Data Analysis, Literature & Scientific Writing	**Disc** Data visualization & presentation & Reading literature for scientific writing **Lab** Data Analysis- focus on variation and patterns; Generate and Present results figures for feedback √By the end of lab- Raw data sheet using data entry template ***Present figures and interpretation for feedback** **Data Analysis Prelab** due before lab √ Individual conferences with TA for Ecology Paper- outside of class (time varies)	**4%**
7 Oct. 14-18	**Genetics I Life Cycles and**	**Disc** Formal Peer Review: Exchange paper drafts with partner and complete review at least 24h before disc; reverse outline and focus on conclusions √Fast Plant growth and flowering data sheet	

	Reproduction: Genetic Variation	**Lab** Life cycles, reproduction, flow of genetic information in plants √ flower, & fruit drawings and observations; concept map of genetic variation **Ecology Final Paper,** GEA**,** Author's response & **Peer Review** due 48 h after disc	**15% 2%**
8 Oct. 21-25	**Genetics II:** Intro to Quantitative and Mendelian Genetics with *Brassica rapa*	**Disc** Group work check-in; GEA feedback; Mid-semester evals **Lab** Intro to *Brassica rapa* (FastPlants), life cycle, plant breeding, phenotypes, Mendelian and quantitative genetics **FastPlants/ Genetics pre-lab** due before lab √ **By the end of lab-** F1 phenotypic measurements (1/team) & Tentative independent variable to investigate	**4%**
9 Oct. 28- Nov 1	**Genetics III:** Proposing and Starting Experiments	**Disc** Teams prepare feedback presentation √ Before Disc- *Brassica rapa* experimental design worksheet (1/team) **Lab** *Brassica rapa* proposal informal feedback session *Begin *Brassica rapa* experiments outside of lab time √ By the end of lab- Materials and schedule sheet (1/team)	
10 Nov 4- 8 *(Biocore 381 exam Nov 4)*	**Genetics IV:** Collecting Preliminary Data	**Disc** Poster writing workshop and informal peer review ✓ Before disc- draft of poster **Lab** Preliminary data collection ✓ By the end of lab- Data Analysis Practice Worksheet ***Brassica* proposal posters (mini-posters)** due Friday Nov. 11	**13%**
11 Nov 11-15	**Genetics V:** Data Analysis **Evolution I**	**Disc** Complete *Brassica* data collection **Lab** Discussion/ Conclusion Activity for *B. rapa*; Generate and Present results figures for feedback Introduction to the Galapagos and finch evolution – field trip to the Zoology Museum	
12 Nov 18-22	**Evolution II:** Using Data to Develop Questions	**Disc** Evolution activity Informal peer review final posters- outside of class **Brassica final posters (1/team)** (mini-posters) & GEA due before disc THANKSGIVING- NO Labs	**15%**
13 Nov. 25-29	**Evolution II:** Using Data to Develop Questions	**Evolution pre-lab** due before disc. **Lab** Introduction to historic data on Galapagos finches; Group Time- work on research question, gather literature, analyze historic data, prepare to share progress in lab √By the end of lab- Tentative research question for evolution grant proposal (1/team)	**4%**
14 Dec 2-6	**Evolution III:** Developing Hypothesis & Rationale	**Disc** Experimental design worksheet Teams prepare feedback presentation **Lab** Finch evolution proposal Powerpoint feedback session	
15 Dec. 9- 11	**Evolution IV:** Presenting Proposal	**Disc** √ Practice presentation in discussion (uTA peer review- time varies) **Lab Formal Grant Proposal Presentations (1/team)** & GEA forms due in lab **Response to Reviewers Essay** *Note: Thursday labs do presentations in special sessions on Tuesday or Wednesday*	**15%** **6%**
Team work, class participation, and check assignments			**3%**

Biocore 382- Ecology, Genetics, Evolution Lab (2 cr.) Honors

Course Description

The laboratory course gives students practical experience working with the concepts introduced in lecture. Activities at the Biocore Prairie restoration site in the UW Lakeshore Nature Preserve is a major focus during the first part of the semester. Later projects deal with genetic analysis of pigment production in *Brassica rapa* Wisconsin Fast Plants, and evolution of the Galapagos finches. This is a writing intensive course and is the first of three lab courses in Biocore that focus on the process and nature of "doing biology" with many opportunities to experience different aspects of scientific research in the laboratory and the field.

Required Resources

1. Biocore 382 Custom Lab Manual- Janet Batzli editor (available on Canvas)
2. Biocore Writing Manual- Janet Batzli and Michelle Harris editors (available for purchase at Student Print and on Canvas in pdf form and through Pressbooks)
3. Canvas URL https://canvas.wisc.edu/courses/104763

Class Meeting Location: All Lab and Discussion Sections meet in 341 Noland unless otherwise noted (weeks 1, 2, 4, 5 meet in Biocore Prairie)

Mode of Instruction: This is a face-to-face laboratory course with one weekly 3-hour lab led by the course chair Dr. Janet Batzli and one weekly 50 min discussion section (required) led by your teaching assistants.

Instructors- Open Door policy--- Come see us!			
	**Janet Batzli (Course Chair and Associate Director, Biocore)** 363 Noland Hall, jcbatzli@wisc.edu, 608-263-1594 website: https://biocore.wisc.edu/people/batzli *Make an appointment or stop by- Open Door!*		
	**Heidi Horn (Postdoctoral Teaching Fellow)** 361 Noland Hall hhorn@wisc.edu		
	**Seth McGee (Lab Manager)** 339 Noland Hall, seth.mcgee@wisc.edu, 608-262-6189 website: https://biocore.wisc.edu/people/mcgee *Make an appointment or stop by- Open Door!*		
Lab	**Disc Time**	**Lab Time**	**Graduate Teaching Assistants/ uTAs**
1 Batzli & McGee	Monday 12:05	TUES AM (8:50-11:50)	Karigynn Hansen/ Dhanya Attipetty
2 Batzli & McGee	Monday 1:20	TUES PM (1:20-4:20)	Maddy Olberg/ Kevin Jones
3 Batzli & McGee	Monday 3:30	WED PM (1:20-4:20)	Nate Richman/ Abbey Stoltenburg
4 Horn & McGee	Tuesday 4:35	THURS AM (8:50-11:50)	John Kane/ Natasha Ignatowski
5 Horn & McGee	Tuesday 5:30	THURS PM (1:20-4:20)	Lena Vincent/ Maggie Guo

Course Guide- How we Do Things
Credit and Instruction
Biocore 382 is a 2-credit Honors laboratory course that includes a 3-hour in-class lab time led by Janet Batzli (Lab 1, 2 ,3) or Heidi Horn (Lab 4 & 5), and Seth McGee, and a required 50-minute discussion section led by your graduate TA. You should plan to spend a minimum of 6 h outside of regular class hours each week to do lab readings (READ Lab Manual!), work on literature searches, project development, some data collection, data analysis, PowerPoint and poster preparation, paper writing, and peer review.

We have a BIG teaching team! That means there is always someone available to help support your learning.

As the course chair, Associate Director and Undergraduate Advisor for Biocore, Janet has an open-door policy or is available by appointment to talk about the course, the Biocore program, and your undergraduate experience more generally. Both Janet and Heidi and will hold additional office hours during particularly busy weeks for consultation on lab projects, writing, data analysis and interpretation. Seth McGee, Biocore Lab Manager, also has an open-door policy and will be available to support your development of projects and provide essential feedback as you gather materials, schedule experiments, learn techniques, and collect data. Graduate TAs will assist you during lab, facilitate discussion sections, send out timely information in weekly emails, and will grade and provide feedback on your written work. Our course instructional team also includes five undergraduate TAs (one for each lab section) who will provide extra support during lab and discussion time, will be particularly helpful with data analysis, use of Excel and Powerpoint, and for help in drafting papers and practicing oral presentations.

We are eager to support your learning in Biocore 382!

Tips for doing well in Biocore 382

- ✓ **Take Notes During Class.** We ask you to bring a lab notebook (carbonless hardcopy or electronic) to class each week and to take notes. Why? The process of notetaking, cartooning, recording observations and data collection, and even doodling is important for memory, formulating ideas, and to question what you know and what you don't know. Whether you chose to take notes electronically or long hand (old fashion pen and paper has been found to be more effective… see research article – "The Pen is Mightier than the Keyboard") – We will sometimes ask you to turn in your observations, questions, data, ideas at the end of class or as a check assignment. Make it a practice to take notes!

- ✓ **Asking questions** is an essential aspect of learning. Asking questions is NOT a sign of weakness but rather an active part of learning, curiosity, and doing science! The act of formulating a question helps you to frame your understanding, and uncover and discuss inconsistencies. Being curious and asking questions help you engage, motivate, and maintain interest by connecting the material to your own mental models. Your questions also help your instructors know what is or isn't clear about the concepts, ideas, questions they are introducing. We want to help you learn! Learning how to ask questions is a skill. Start practicing now!

- ✓ **Time management** Time is a resource that few of us manage well naturally. Learning how to estimate how long it will take to accomplish a task assumes that you know the magnitude of the task. In learning something new, you actually do not know the magnitude of the task until you get started, and therefore the best practices for time management are:

- Look way ahead (in the syllabus), break down tasks into small chunks, make 'to do' lists, organize and prioritize your 'to do' list tasks using a 'learning calendar' within your daily/ monthly planner, and do a little bit of work every day.
- Identify and do a wellness 'recharge' activity that relieves pressure and refocuses. Even a short 'recharge activity' (15-30 min) can release tension and help you refocus energy so you can be productive.
- Studying with classmates and visiting your instructor's/ TA's office hours on a regular basis will keep you on task and caught up.

✓ **Organization and keeping track of grades** Make it part of your daily routine to organize and file your course materials, your notes, update your to do list, review returned assignments and the feedback you received, and record the grades you earned. All of these activities will help you focus on your growth in the process of learning. Note: In Biocore 382, we will not post course grades on Canvas during the semester; however, Canvas calculates a course grade with each assignment done through the Canvas portal. It's your responsibility to calculate your progress and keep track of your scores on assignments. We will provide a tutorial available in Canvas on how to calculate your overall grade as the course progresses. Please do not hesitate to reach out and ask for help if you are having trouble monitoring your course grade and progress.

✓ **Breathing Exercises-** At the beginning of each class meeting, we will be taking a minute (literally, 1 minute) to do a breathing exercise as a class. We will practice breathing, deeply and mindfully, to help gain focus, heighten awareness and concentration, and to ready our minds for learning. Researchers at the Center for Healthy Minds right here on the UW Madison campus, are leaders in the neuroscience of breathing and meditation as beneficial for overall well-being. Additionally, as scientists ourselves, it is logical to reason that deep breathing and focus aids in making careful observations, being curious, thinking critically, making judgement, taking wise action, and doing science more generally (perhaps there is a testable question in there ☺). With that, we ask that you try these guided breathing exercises – be curious! Participation in breathing exercises is completely voluntary, NOT part of your participation grade. If you choose not to participate, please respect and support others interests to do so.

Lab Etiquette

For use of 341 and 334 lab rooms: Access and use of lab rooms outside of class time is a key component of our Biocore learning environment and community, but it comes with responsibility. You may use 341 for group or quiet study when no classes or meetings are in session. Use 334 for doing experiments and meeting with lab research teams. Both 341 and 334 lab rooms have key lock boxes that you will be given access to after the start of the semester. If there is any misuse or suspected misuse of the rooms, if the rooms are not cared for or left untidy or down right dirty, or if equipment/ books/ furniture are out of place or missing we will no longer be able to allow student access to these rooms outside of class time hours. In short, be good Biocore citizens and take care of your lab rooms!

During presentations and discussions: Your presence and participation in class is extremely important for your learning and the establishment of a positive, effective learning environment for everyone (students and instructors). With this in mind, we ask that you DO NOT have your computers open, use electronic devices or study for other courses during our class meeting time.

Group work & Participation Learning to work as a *productive* collaborative member of a team is an essential skill for all professionals and is an important learning goal for Biocore 382. Collaborative team work increases the number of perspectives focused on a complex problem, and it increases creativity and capacity for productive work! Unfortunately, group work can sometimes be unproductive if team members do not value or invest in the team or shared goal or if one or two students dominate over others. We consider collaboration a skill that needs practice to become competent. Throughout the semester you will be assigned to different groups

by your instructors so that you have an opportunity to practice working with different personalities and perspectives. Part of your work as a good team member is your *independent accountability* for the knowledge you gain & the work you do while respecting and encouraging the work of others. Although we expect you to discuss ideas and work through problems and analyses with your teammates, you need to demonstrate your accountability for the project by writing proposals and your first final paper individually- on your own. Note that the first assignment (paper review), the Brassica final poster, and the final evolution presentation are group grades, and so **35%** of your final semester grade results from either "Pair" or "Team" efforts. Your team & class participation grade will be based on the quality of your check assignments, attendance and participation in class discussions and research team efforts. This grade is determined by input from both your instructors and from your teammates' with a 'Group Effort Analysis' (GEA) form and weighted as **3%** of your final semester grade.

Creating an inclusive classroom.

In Biocore, we strive for the utmost equity for all students, TAs, and faculty/ staff, regardless of race, ethnicity, gender, sexual orientation, (dis)ability, socioeconomic status, country of origin, or religious affiliation. Our community and our science depend on engaging and embracing different perspectives and this starts with each of us understanding and recognizing our own biases. It takes a great deal of awareness and self-work to recognize bias. Most of us stumble at times, so we all need to practice.

If you experience or notice bias

Share when you first experience or notice bias. If you are further offended and continue to experience bias, do not hesitate to bring this to your instructor's attention and/or report the case through UW Madison's Bias Incident Reporting system

If you mistakenly say or do something you wish you hadn't—apologize, say 'I'm sorry' and take ownership when you have offended someone, even if it was unintentional.

Discrimination and bias are not OK. Saying nothing perpetuates inequality. Speaking up reminds us of our inclusive classroom goal. It takes everyone to create a safe, supportive and productive learning environment. If even one of us feels stifled or unaccepted, we all lose out.

Collaborators must be listed on all papers and posters submitted individually (highlight author) or by the research team.

Papers & Posters, Feedback and Formal Presentations

As a Writing Intensive/ ComB course, Biocore 382 provides a number of opportunities for you to improve your written and oral communication skills about your science. Written assignments will be done in the form of a scientific research proposal or final paper, poster, or grant proposal and are graded using the rubric criteria described in the *Biocore Writing Manual*. You and your research teams will prepare and present three informal, PowerPoint 'feedback' presentations in the format of a research proposal when you are planning your research projects (similar to what graduate students do in their research labs). These presentations are not graded, but will allow you to receive essential and valuable feedback from your instructors and peers prior to you doing your experiment AND prior to writing a research proposal. Although not graded, feedback presentations are where a great deal of learning happens- for both the presenters and the audience. You and your team will also give one formal presentation at the end of the semester to summarize your evolution grant proposal project. This presentation is graded and requires presenters to focus on both the scientific rigor of the project as well as how it is presented to the audience. (See Biocore Writing Manual for our expectations.)

Peer review

You will have 3 formal opportunities to be a peer reviewer (as well as to have your work reviewed) this semester. Formal peer reviews (listed in the syllabus) are done in discussion and require partners to exchange draft papers at least 24h before discussion to allow time for thorough review. You will turn in a copy of the review you received with each assignment, along with an *author's response form* that briefly explains major

revisions as well as what advice you took and did not take from your reviewer, and why. Your peer review grades will be based on the rubric on p. 40 of the Biocore Writing Manual. Even when not required, we strongly encourage you to use the peer review process before turning in papers or posters.

Late Assignment Policy

Papers & assignments must be handed in at the specified/ place time unless you have contacted your TA *ahead of time* to request an extension due to emergency or extenuating circumstances. Otherwise, we will deduct one grade per day it is late from the grade you would have received (*e.g.*, A->AB for one day late). Note that even an F paper (one week late) counts more than 0 (not handed in at all) when we total the final grades at the end of the semester. Late papers should be given directly to your TA or Instructor (NOT put in a mailbox or submitted electronically). If you know of a religious observance or other commitment this semester that will keep you from attending class, let your TA and Instructor know as soon as possible.

Honor and Honesty, Ethics and Social Responsibility is essential

The validity and accuracy of scientific findings are open to review. Your data are NOT PERSONAL, nor are they correct/incorrect or good/bad. Therefore, data are not to be associated with a personal value judgment. We have had some problems in labs with students fabricating or changing data. We consider this a serious violation not only of the Biocore Honor Code but also of scientific principle more generally. You are not graded on your results but rather on how you analyze your data. **It is absolutely essential that you report your data honestly and accurately.** In addition, we have had several instances where students have copied and pasted segments and whole sections of their classmate's papers, changed the wording/order a little, and claimed the work as their own, either in drafts for peer review and final papers or in pre-lab assignments. Not only is this plagiarism, claiming credit for the intellectual work of others is highly disrespectful and erodes trust within our Biocore learning community. If you find yourself tempted (especially late at night just hours before a paper is due—we've all been there) JUST DON'T DO IT. It is much better to ask for an extension, receive a slightly lowered grade for a late paper, or even receive a zero for a missing assignment than to plagiarize your classmates or someone else's work. You agreed to this when you signed the Biocore Honor Code during the first week of Biocore 381and will be held accountable for violations according to UW Academic Code of Conduct 14.03 http://students.wisc.edu/doso/acadintegrity.html.

How you earn your final grade

We use an absolute grading scale in 382 (**no curves**!)- >90=A; 80-89=B; 70-79=C; 60-69=D. You will be participating in both individual assignments (80%) and group assignments (20%). Assignments, due dates, and assignment weight in percent are detailed in the schedule above. Pre-lab assignments are graded on a point percentage basis. Papers and posters are graded using rubric criteria described in the *Biocore Writing Manual* and reported to you as a letter grade (A+, A, A-, AB, B+, B, B-, BC, C+…). Letter grades are converted to numeric values when final grades are tallied at the end of semester (e.g. AB=89, B+=87, B=85). Check (√) assignments are scored simply adequate or inadequate and contribute to your general 3% participation grade.

Your final percentage score will be converted to a final letter grade as follows:

Final Assignment %	Letter Grade
90-100	A
80-89	B
70-79	C
60-69	D

*For those few individuals that are on the borderline at the end of the semester, we will assign intermediate grades (AB and BC) based on graded assignments and our evaluation for your participation (in both lab AND discussion).