

**BIOL 464- Biology of Marine Mammals- Fall 2024** CRN42959 (4 credits)  
Alejandro Acevedo-Gutiérrez (he/him/his); (360) 650-3653, [aceveda@wwu.edu](mailto:aceveda@wwu.edu)

**Meeting:** SL 210 (SMATE Bldg.); MWF 13:00-14:20                      **Communications:** Canvas

**Office Hours:** BI 309: to be announced during summer and by appointment (email me)

### Course Aims

- 1) You will construct your knowledge on the evolution, physiology, ecology and conservation of marine mammals.
- 2) You will continue developing scientist skills: finding appropriate sources of information; synthesizing and evaluating knowledge; thinking analytically; communicating ideas concisely and effectively; collaborating with others to integrate knowledge into a coherent body of work; and becoming familiar with marine mammal scientists.
- 3) You will work synchronously in a Collaborative Online International Learning (COIL) setting [BLUE] with Mexican students from Universidad Autónoma de Baja California Sur—who will take *Conservation Biology* with Dr. Sergio Francisco Flores Ramírez—to develop skills that will allow you to engage effectively across cultures beyond your time at Western and to enrich your biological knowledge by developing a joint presentation from two different perspectives on a pre-assigned conservation topic affecting marine mammal research and conservation.

To fulfill these aims, you will:

- Be engaged in activities to understand the most relevant information and current research.
- Work in randomly-assigned groups to construct your own knowledge by solving problems.
- Work in pre-assigned groups with Mexican students to develop skills and characteristics that support effective and appropriate interaction in a variety of cultural contexts (*intercultural knowledge and competence*).
- Give a joint presentation to the USA and Mexico class demonstrating *intercultural knowledge and competence* while evaluating a conservation issue from two different perspectives.

To succeed in this class (and in life) you will need a **strategic mindset**: effort, perseverance, and continually asking yourself how you can improve. I strongly encourage you to read about this mindset on Canvas\Files\Resources.

### Class Format

Before class: read posted material on canvas and answer 5-min quiz on canvas;

Class time: work with randomly-assigned classmates in groups and participate in whole-class discussions.

Class time: work with pre-assigned classmates from USA and Mexico in groups to develop *intercultural knowledge and competence* while preparing a conservation presentation from two different perspectives.

*Given that the class is collaborative, discursive, and relies on your active participation, attendance is mandatory (three missed classes will result in the loss of a grade) and assignments will not be accepted after the due date.*

Read about the justification for the class format in the three articles about teaching science: Canvas\Files\Resources.

### Reading

Class notes on canvas: Files summarizing the topic that you should read before each class, scientific papers.

Textbook (optional for the class; recommended if you plan to continue in the field)

Berta A, Sumich JL, Kovacs KM. 2015. *Marine Mammals. Evolutionary Biology*. 3<sup>rd</sup> edn. San Diego: Elsevier.

On reserve as e-books: Berta A et al. 2005. *Marine Mammals Evolutionary Biology*. 2nd ed. Elsevier. (Some outdated notions, but still useful.) and Würsig B et al. 2018. *Encyclopedia of Marine Mammals*. 3rd ed. Academic.

### Evaluation and Grading

Attendance throughout the quarter	5 %
Mid-term exam (Nov 15th)	20 %
Final exam (Dec 12th)	20 %
Quizzes via canvas (throughout)	10 %
Participation, includes completing ungraded assignments: -Individual self-assessments (Oct 7th and 21st, Dec 6th)	3 %

### COIL Assignments:

Group presentation (Tue 5 <sup>th</sup> or Thu 7th)	20 %
Individual reflection (Tue 5 <sup>th</sup> or Thu 7th)	15 %
Participation, includes completing ungraded assignments: -Individual introduction photos (Oct 18th) -Individual self-evaluations (Oct 14th and 30th, Nov 18th) -Meeting with me to review your group presentation (Nov 1 <sup>st</sup> through 4th)	7 %

*Mid-term exam.* Individual. Evolution and Physiology. Take-home.

*Final exam.* Individual. Ecology. Closed book, in person.

Assignments can be submitted to my email address or via canvas.

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<b>Course Aim</b>	<b>Learning Objective</b>	<b>Indicators of Performance</b> (assessment for learning)	<b>Evaluators of Performance</b> (summative assessment)
Knowledge of marine mammal biology  <i>Addresses Department Student Learning Outcome 1</i>	You will understand the evolutionary relationships, morphological innovations and biogeography of marine mammals.	-Whiteboards; discussions; presentations; self-assessment. -Quizzes.	-Mid-term exam
	You will understand the physiological adaptations of marine mammals to survive in the aquatic environment.	-Whiteboards; discussions; presentations; self-assessment. -Quizzes.	-Mid-term exam
	You will understand how marine mammals influence and are influenced by their environment.	-Whiteboards; discussions; presentations; self-assessment. -Quizzes.	-Final exam
	You will understand the factors threatening marine mammals and affecting their conservation in USA and México.	-Class activities with Mexican students: discussions, whiteboards; group reflection.	-Group presentation -Individual reflection
Development of science process skills  <i>Addresses Department Student Learning Outcome 2</i>	You will gather, synthesize, and critically evaluate knowledge.	-Whiteboards; discussions; self-assessment. -Class activities with Mexican students: discussions, whiteboards; group reflection.	-Group presentation -Individual reflection
	You will think analytically.	-Whiteboards; discussions; self-assessment. -Class activities with Mexican students: discussions, whiteboards; group reflection.	-Group presentation -Individual reflection
	You will communicate ideas concisely and effectively in both written and oral forms.	-Whiteboards; discussions; self-assessment. -Class activities with Mexican students: discussions, whiteboards; group reflection.	-Group presentation -Individual reflection
	You will work in collaboration with others to integrate knowledge into a coherent body of work.	-Whiteboards; discussions; presentations. -Class activities with Mexican students; group reflection.	-Attendance and participation
	You will develop their own ideas and opinions	-Whiteboards; discussions; presentations. -Class activities with Mexican students.	-Group presentation -Individual reflection
Development of skills and characteristics that support effective and appropriate interaction in a variety of cultural contexts <i>(intercultural knowledge and competence)</i>	You will demonstrate sophisticated understanding of the complexity of elements important to members of another culture.	-Class activities with Mexican students: discussions, whiteboards; self-evaluation; group reflection.	-Group presentation -Individual reflection
	You will act in a supportive manner that recognizes the feelings of another cultural group.	-Class activities with Mexican students: discussions, whiteboards; self-evaluation; group reflection.	-Group presentation -Individual reflection
	You will answer complex questions about other cultures that reflect multiple cultural perspectives.	-Class activities with Mexican students: discussions, whiteboards; self-evaluation; group reflection.	-Group presentation -Individual reflection

**GRADING SCALE**

100% ≥ A > 95%  
95% ≥ A- > 90%

90% ≥ B+ > 87%  
87% ≥ B > 84%

84% ≥ B- > 80%  
80% ≥ C+ > 77%

77% ≥ C > 74%  
74% ≥ C- > 70%

70% ≥ D+ > 67%  
67% ≥ D > 64%

64% ≥ D- > 60%  
60% ≥ F > 50%

### INSTRUCTOR RESPONSIBILITIES

I am responsible for teaching you about marine mammals and the process of science. You should expect the following from me:

1. Clarification of learning objectives and criteria needed to succeed in the class: sharing learning objectives for the day and examples of prior student assignments.
2. Innovative learning activities that allow you to construct and expand your understanding of marine mammal biology and the process of science, and elicit evidence of learning: collaborative activities, white-boarding, classroom discussions, critical-thinking questions, and training assignments.
3. A supportive learning environment and instructor that cares deeply about whether you learn the material, stimulates your interest and motivates you: positive, engaging, and friendly classroom atmosphere; and constructive, timely and productive feedback on your work.
4. Opportunities for you to become a learning resource to one another: reviewing the work of classmates.
5. Opportunities to monitor your own learning and become aware of your understanding: self-assessment of the learning objectives and big ideas of the class.

Shared responsibilities in the classroom:

	Where the learner is going	Where the learner is	How to get there
Teacher	1. Clarification of learning objectives and criteria needed to succeed in the class, including why it is important to learn it.	2. Engineering innovative learning activities that allow learner to construct knowledge and elicit evidence of learning.	3. Providing a supportive learning environment and constructive feedback that moves learner forward.
Peer	4. Activating students as learning resources for one another, including providing constructive feedback and encouragement.		
Learner	5. Becoming owner of her/his/their own learning, including being motivated, curious and responsible.		

### Inclusiveness and Respect

You are encouraged to speak up and participate during class. Because the class will represent a diversity of individual beliefs, backgrounds, and experiences, each one of us will respect, appreciate, and embrace every other member of this class.

I am firmly committed to diversity and equality in all areas of life. In this class, I will work to promote an inclusive environment where everyone feels safe and welcome. I recognize that discrimination can be direct or indirect and take place at both institutional and personal levels. I believe that such discrimination is unacceptable and I am committed to providing equality of opportunity for all by eliminating any and all discrimination, harassment, bullying, or victimization. The success of this policy relies on the support and understanding of everyone in this class. We all have a responsibility not to be offensive to each other, or to participate in, or condone harassment or discrimination of any kind. Without failing to speak up, we also have the opportunity to think the best of everyone and give one another the benefit of the doubt.

### Equal Opportunity Rights

You have the right to an educational experience that is free from illegal harassment or discrimination on the basis of race, color, creed, religion, national origin, sex, disability, age, veteran status, sexual orientation, gender identity or expression, marital status or genetic information. **If you or someone you know has experienced macro- or micro-aggressions of any kind related to personal identity on campus**, please report any issues to an instructor you feel is an ally, to Dr. Lina Dahlberg current Biology faculty member on the College's Diversity, Equity and Inclusion Committee ([dahlbec@wwu.edu](mailto:dahlbec@wwu.edu)), to one of our CSE and Biology Community Ambassadors (<https://cse.wwu.edu/biology/cses-ambassadors-community-hours>) or using the anonymous form under the Equity and Inclusion tab on the Biology Department homepage (<https://biology.wwu.edu/equity-and-inclusion-issues-biology>). You can also contact the Equal Opportunity Office for additional advice and help (<http://www.wwu.edu/eoo/bias-incident-response.shtml>).

### **Intellectual Honesty**

Science is based on trust. If a scientist states that she carried out a particular study and obtained certain results, the rest of us trust that she did such thing. This is one reason why there is no tolerance for people who are not intellectually honest, and this class will be no exception. <https://wp.wwu.edu/academichonesty/>

*From WWU:* Plagiarism is presenting as one's own in whole or in part the argument, language, creations, conclusions, or scientific data of another without explicit acknowledgement. (Learn more at [Understanding and Avoiding Plagiarism.](#)) Examples include but are not limited to:

- Using another person's written or spoken words.
- Using information from a World Wide Web site, CD-ROM or other electronic sources.
- Using statistics, graphs, charts and facts without acknowledging the source of the ideas.
- Paraphrasing: using someone else's argument without acknowledging the source.

### **Religious Accommodations**

Western provides reasonable accommodation for students to take holidays for reasons of faith or conscience or for organized activities conducted under the auspices of a religious denomination, church, or religious organization. Students seeking such accommodation must provide written notice to their faculty within the first two weeks of the course, citing the specific dates for which they will be absent. “Reasonable accommodation” means that faculty will coordinate with the student on scheduling examinations or other activities necessary for completion of the course or program and includes rescheduling examinations or activities or offering different times for examinations or activities. Additional information about this accommodation can be found in [SB 5166: Providing religious accommodations for postsecondary students.](#)

### **Additional Resources**

*Do you have any concerns about your ability to learn in the classroom or your ability to take assessments in the classroom?* Contact the Disability Access Center for advice, help, and to request accommodation (650-3083 or <https://disability.wwu.edu/>).

*Do you want feedback on your cover letter or resume?* The Career Services Center at Western will gladly review them, compare them with the posting for which you are applying, and provide feedback to you within 48 h: <https://www.wwu.edu/careers/>

*Do you feel unwell or have a health-related question?* Contact the Health Center (650-3400) or visit the website of Student Health (<https://studenthealth.wwu.edu/>)

*Do you have an emotional or psychological concern or question?* Contact the Counseling Center (650-3164) or visit the website of Counseling Services (<http://www.wwu.edu/counseling/>).

*Do you have a safety concern?* Contact the University Police for non-emergency services (650-3555) or visit their website (<http://www.wwu.edu/ps/police/index.shtml>).

*Do you have a family or personal crisis or emergency?* Contact the Office of Student Life (650-3450) or visit their website (<https://osl.wwu.edu/>).

*Do you have concerns related to being an undocumented student?* Contact Student Outreach Services (650-7443) and check the following site: <https://www.wwu.edu/undocumented-students>.

*Do you have financial difficulties?* Go to the Financial Aid Services Center and schedule an appointment with a financial aid counselor (<https://www.finaid.wwu.edu/client-services/pages/>)

Do you identify as a member of the LGBTQ+ Community? Learn about resources and support by visiting <https://lgbtq.wwu.edu/>

*Do you or someone you know need confidential support related to sexual violence?* Contact Survivor Advocacy Services (650-3700 or <https://cwc.wwu.edu/survivorservices>), the Student Health Center, and/or the Counseling Center.

To report sexual violence, please contact University Police, Bellingham Police, and/or the Title IX Coordinator in Western’s Equal Opportunity Office (650-3307). Faculty are required to report sex discrimination, including sexual violence that they learn about to the Title IX Coordinator.

*Are you or someone you know in distress?* Help is available anytime, all the time: 650-3164 or <https://cwc.wwu.edu/suicide-prevention>

I also encourage you to check the syllabi policies for students: <https://syllabi.wwu.edu/>

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CLASS SCHEDULE

COIL work with Mexican students from Universidad Autónoma de Baja California Sur, México.

Week	Date	Topic	Assignments and exams (bold indicates graded assignments or exams)
Sep 1	W 25	<b>Introduction:</b> Class overview.	Explanation of assignments
	F 27	<b>Evolution:</b> Pinnipeds I	Quiz
Oct 2	M 30	Pinnipeds II	Quiz
	W 2	Cetacea I	Quiz
	F 4	Cetacea II	
3	M 7	<b>Physiology:</b> Locomotion I	Quiz / Self-assessment due
	W 9	Locomotion II	Quiz
	F 11	Thermoregulation	Quiz / <b>Groups and project assigned</b>
4	M 14	Diving	Quiz / <b>Self-evaluation due</b>
	W 16	Senses	Quiz
	F 18	Sound Production	Quiz / <b>Introduction photos due</b>
5	M 21	<b>Conservation:</b> COIL Introductions	Mid-term assigned / Self-assessment due
	W 23	<b>Conservation Biology / Marine Mamm</b>	
	F 25	<b>Mexico &amp; USA Mar Mamm Regul</b>	
6 Nov	M 28	<b>Presentation Tips /Group Project Work</b>	
	W 30	<b>Group Project Work</b>	<b>Self-evaluation due</b>
	F 1	<b>Group Project Work</b>	
7	M 4	<b>Group Project Work</b>	<b>Group presentation due (Tue 5)</b>
	W 6	<b>Group Presentations</b>	<b>Group presentation due (Thu 7)</b>
	F 8	<b>Group Presentations</b>	
8	M 11	<b>HOLIDAY !!</b>	
	W 13	<b>Group Reflection</b>	
	F 15	<b>Ecology:</b> Pinniped Foraging	Quiz / <b>Mid-term due</b>
9	M 18	Cetacea Foraging	Quiz / <b>Self-evaluation due</b>
	W 20	Foraging Extrinsic and Intrinsic	Quiz
	F 22	Pinnipedia Reproduction	Quiz
10	M 25	Cetacea Reproduction	Quiz / <b>Individual reflection due</b>
	W 27	<b>HOLIDAY!!</b>	
	F 29	<b>HOLIDAY!!</b>	
11 Dec	M 2	Social Behavior	Quiz
	W 4	Ecosystem Role	Quiz
	F 6	Bioinspiration	Quiz / Self-assessment due
<b>T 10 (15:30-17:30 h)</b>	<b>FINAL EXAM: Ecology.</b>		

*Changes might be made to the syllabus along the course. These changes will be announced in advance.*

IF for some reason the class cannot be taught with the COIL setting, we will use the alternate syllabus shared with you.

## Description of assignments

### -Quizzes (10 points)

Due: Throughout

*Aim:* To learn about marine mammal biology you need to construct your own knowledge from the material you read. To ensure that you read the information before attending the online class sessions you will take a quiz on the assigned material.

*Rationale:* To truly learn and understand concepts you need to engage your mind and senses. An efficient way to be engaged is to participate in activities with other people to solve problems and answer questions. However, to participate in those activities you need to have read material on the topic at hand. Unfortunately, my experience in previous years is that students do not read before coming to class. Quizzes at the beginning of class are my solution to this problem.

*Description:* Before attending class, you will answer a timed (5 min) quiz developed to assess if you read the assigned material or not. The quiz will be individual, available after the prior class and due before class begins.

### GRADING SCALE

4-5 correct answers:	100% of points.
3 correct answers:	75% of points.
0-2 correct answers:	50% of points.

### -Individual self-assessments (ungraded) Due: Oct 7<sup>th</sup> & 21<sup>st</sup>, Dec 6<sup>th</sup> 17:00h PST

*Aim:* To learn about marine mammal biology and develop science process skills by reflecting upon your level of understanding of the learning objectives and big ideas of the class.

*Rationale:* To truly learn and understand concepts you need to take ownership of your own learning. An efficient way to own your learning is by self-evaluating your level of understanding of what you are expected to learn.

*Description:* You will answer to a prompt in class regarding your level of understanding of the big ideas and learning objectives of the class. You will need to indicate whether you understand the ideas and objectives, don't understand them, or are unsure if you understand them or not. If you do not understand or are unsure about an idea or objective, you will describe what is confusing about the idea or objective and what you think may help you understand it.

## COIL Assignments

### -Individual introduction photos (ungraded)

Due: Oct 18<sup>th</sup> 17:00h PST

Details to be announced during summer.

### -Individual self-evaluation (ungraded) Due: Oct 14<sup>th</sup> & 30<sup>th</sup>, Nov 18<sup>th</sup> 17:00h PST

Details to be announced during summer.

### -Meeting to review presentation (ungraded) -Group presentation (20 points)

Due: Nov 1<sup>st</sup> through Nov 4<sup>th</sup>  
Due: Nov 5<sup>th</sup> through Nov 7<sup>th</sup>

Details to be announced during summer.

### -Individual reflection (15 points)

Due: Nov. 25<sup>th</sup> 17:00h PST

Details to be announced during summer.

### OPTIONAL ACTIVITY

1) Whatcom Creek: Towards the second half of November (exact dates to be announced), we will visit Whatcom Creek in downtown Bellingham to observe harbor seals feeding on returning salmon. I will ask students working in the project to be with us so they can share more about this research.



*Transport:* Arrive on your own to Heritage Park.

*Bring:* Outdoor clothing, camera, binoculars, bird guide.

*Meeting:* To be announced.

*Cost:* The only cost will be transport to the site.

This optional activity is a fun and productive opportunity to experience marine mammal research, education, and conservation. **You are not required to attend; your grade will not be affected either way.**