



# TEXAS A&M UNIVERSITY SAN ANTONIO

## Syllabus

Invertebrate Zoology – BIOL 3401

Lecture Location: CAB 334, TR

Lecture Time: 2:00 – 3:15 PM

Lab Location (R): CAB 310, 3:30 – 6:15 am

Lab Location (F): CAB 310, 11:00 – 1:45 pm

### Course Description and Prerequisites:

This course provides an overview of approximately 20 phyla of invertebrate animals as well as some relevant protozoan groups with an emphasis on marine representatives. Lessons present an introduction to the diversity, morphology, evolution and ecology of each taxon. Labs will supplement the Lecture and cover taxonomy, morphology and anatomy of relevant invertebrate phyla. Prerequisites: BIOL 1307 (Gen Biology II-Biol. Organisms) or BIOL 1309 (Intro to Life Sciences II).

### Course Objectives:

- Enhance your understanding of invertebrate diversity, ecology, physiology and evolution.
- Investigate the diversity of invertebrate body plans (*bauplan*) and their biological functions
- To illustrate applications and utility in the study of invertebrates, case studies will be evaluated to provide an understanding of the invertebrate world and how scientists study the evolutionary relationships among invertebrate taxa.
- Apply knowledge gained from the course to identify and classify invertebrate groups
- Research and analyze current literature in invertebrate zoology and evolution
- Synthesize information from the zoology literature and present an analysis via an article critique and an oral presentation.

### Instructor Information (Lecture)

**Name:** Liz Borda, Ph.D.  
**Office/Lab:** SciTech 311P / 364  
**Email address:** [eborda@tamus.edu](mailto:eborda@tamus.edu)  
**Website:** <https://sites.google.com/site/lizborda/>  
**Office Hours:** Tues/Thurs, 3:30 – 5:00, or by appointment

### Instructor Information (Lab)

**Name:** Sarah Palmeri, M.S.  
**Office:** SciTech 311 suite  
**Email address:** [spalm06@tamus.edu](mailto:spalm06@tamus.edu)  
**Office Hours:** TBD, or by appointment

## Course Resources (Recommended)

### eBook or physical textbook (Library):

*Brusca, Giribet and Moore. 2023. Invertebrates 4th Edition. Oxford University Press.*

### Laboratory Manual:

*Posted weekly on Blackboard*

### Laboratory Notebook:

*Your will need a designated laboratory notebook: bound book, non-spiral or composition book. A binder or Folder will be helpful for printouts.*

## Course Policies

### Course Expectations:

Personal and academic integrity, to be open to new ideas, and to share in a community where individuals from diverse backgrounds and cultures help one another grow intellectually, socially, and personally is always expected throughout the course. The faculty and staff of TAMUSA are here to help; however, students must take responsibility for their own learning. Students should strive for a high level of academic performance and to be responsible, respectful, contributing citizens within the university and in outside communities. Above all, students should develop a love of learning that will last a lifetime, along with a life-long interest in maintaining emotional and physical wellness.

### Course Preparation:

Completion of course lessons, quizzes, and assignments will be crucial for being successful in this course. There is no required textbook for this course, but course lessons, in-class assignments and material posted on Blackboard will provide core content for the course. Additional resources will be posted on Blackboard or made available in the Library, as needed. In general, you should be committing at least 4-6 hours a week on each lesson module, including lab and video assignments.

### Lectures:

Lectures are face-to-face unless specified otherwise in the course schedule or in announcements. Please make note that during class time in-class activities / assignments posted regularly, where attendance and participation are expected to complete assignments in class. For any lecture days that are designated as online, a Zoom link will be provided. For lecture days where the instructor will be unavailable due to travel, a pre-recorded lecture will be provided for that day's lesson review.

### Grading:

If you believe an error was made in grading, please do not hesitate to bring it to my attention as soon as possible. If you find yourself struggling with this course, please talk to the instructor as soon as possible

and do not wait until the end of the semester. You are always welcome to stop by my office or email me to make an appointment to discuss your concerns.

A = 89.5%+      B = 79.5%+      C = 70%+      D = 60%+      F = <60%

**Lecture (75%)**

Exams (x 4)	50% (Averaged across exams)
Lesson Quizzes (x 8)	10%
Invertebrate Fact Sheet	15%

**Lab (25%)**

Lab Quizzes	10%
Lab Attendance/Participation	15%

**Exams and Quizzes:**

There will be four scheduled in-class exams. Lecture exams will generally not be cumulative BUT will build on the understanding of material covered in earlier lessons; the Final Exam will be cumulative. Material covered on lecture exams will include the lesson modules prior to the exam (e.g., Exam 1, Lessons 1 and 2; Exam 2, Lessons 3 and 4, and so on). The format will be multiple choice, matching, true/false, problem solving, and short answer. Quizzes are meant to serve as study guides and to test your knowledge on material being covered. To take your exam, please make sure you have access to a computer/laptop with a webcam (for off campus access). The exams will be timed (75 min) and conducted in the classroom (unless specified otherwise).

**Assignments:**

Learning exercises during class provide you with hands-on opportunities to apply your knowledge and develop critical thinking skills that are prerequisites for practicing science. Completion of all assignments is mandatory.

**Blackboard and Course Communication:**

The instructor will hold virtual office hours by appointment, to be available to answer any questions or conduct minor reviews of course material. Grades will be posted and made accessible through the course's Blackboard site. Students must login regularly to both the Blackboard site and to their TAMUSA email account to keep updated on information or changes related to the class. Each student MUST have an active TAMUSA e-mail account. Messages may be sent student-to-instructor using the Message tab feature in Blackboard. Please allow 24 hours for a response.

If you make no attempt to communicate with the instructor/teaching assistant regarding your reasons for not completing assignments, you will receive a zero/NC.

## **Student Support and University Policies:**

Please refer to **Important Policies and Resources** in separate document available on Blackboard (Syllabus tab), that provides detailed information on academic accommodations, tutoring and writing support, counseling and wellness resources, emergency preparedness, financial aid attendance requirements, student rights and responsibilities, diversity and inclusion expectations, military and religious accommodations, and other essential university policies and services.

## Detailed Schedule

Class schedule is subject to changes

Week of	Topic	Assignments/Activities Due Dates	Lab Topics
Jan 19	<b>What are Invertebrates?</b>	<ul style="list-style-type: none"> <li>• Welcome &amp; Course Overview</li> </ul>	<ul style="list-style-type: none"> <li>• <b>NO LAB</b></li> </ul>
Jan 26	<b>Evolution &amp; Classification</b>	<ul style="list-style-type: none"> <li>• Classification, Phylogenetics</li> <li>• Invertebrate Early Evolution</li> <li>• Protozoa</li> <li>• <b>Assign Invert. Fact Sheet</b></li> <li>• <b>Quiz 1 (Available: Jan 30)</b></li> </ul>	<ul style="list-style-type: none"> <li>• Protozoa</li> </ul>
Feb 2	<b>Exam Week</b>	<ul style="list-style-type: none"> <li>• Exam 1 Review</li> <li>• <b>Feb 5: Exam 1</b></li> </ul>	<ul style="list-style-type: none"> <li>• Porifera</li> <li>• <b>Quiz 1 (Protozoa)</b></li> </ul>
Feb 9		<ul style="list-style-type: none"> <li>• Intro to Metazoa</li> <li>• Porifera, Placozoa</li> <li>• Cnidaria, Ctenophora</li> <li>• <b>Quiz 2 (Available: Feb 13)</b></li> <li>• <b>Quiz 3 (Available: Feb 20)</b></li> </ul>	<ul style="list-style-type: none"> <li>• Cnidaria</li> <li>• <b>Quiz 2 (Porifera)</b></li> </ul>
Feb 16	<b>“Basal” Metazoa I</b>		<ul style="list-style-type: none"> <li>• Mollusca</li> <li>• <b>Quiz 3 (Cnidaria)</b></li> </ul>
Feb 23	<b>Exam Week</b>	<ul style="list-style-type: none"> <li>• Exam 2 Review</li> <li>• <b>Mar 5: Exam 2</b></li> <li>• <b>Mar 1: Invert. Fact Sheet (Draft)</b></li> </ul>	<ul style="list-style-type: none"> <li>• Annelida</li> <li>• <b>Quiz 4 (Mollusca)</b></li> </ul>
Mar 2	<b>Protostomes &amp; Spiralia</b>	<ul style="list-style-type: none"> <li>• Intro to Protostomes &amp; Spiralia</li> <li>• Mollusca</li> <li>• <b>Quiz 4 (Available: Mar 6)</b></li> </ul>	<ul style="list-style-type: none"> <li>• Flatworm behavior</li> <li>• <b>Quiz 5 (Annelida)</b></li> </ul>
Mar 9	<b>SPRING BREAK</b>	<ul style="list-style-type: none"> <li>• <b>NO CLASS</b></li> </ul>	
Mar 16		<ul style="list-style-type: none"> <li>• Chaetognaths, Annelida, Platyhelminthes, Nemertea, Rotifera, Lophophorates</li> </ul>	<ul style="list-style-type: none"> <li>• Platyhelminthes</li> <li>• <b>Quiz 6 (Flatworm)</b></li> </ul>
Mar 23	<b>Spiralia (Cont'd)</b>	<ul style="list-style-type: none"> <li>• Meiofauna/Zooplankton</li> <li>• <b>Quiz 5 (Available: Mar 20)</b></li> <li>• <b>Quiz 6 (Available: Mar 27)</b></li> </ul>	<ul style="list-style-type: none"> <li>• Pseudocoelomates</li> <li>• <b>Quiz 7 (Platyhelminthes)</b></li> </ul>
Mar 30	<b>Exam Week</b>	<ul style="list-style-type: none"> <li>• Exam 3 Review</li> <li>• <b>Apr 2: Exam 3</b></li> <li>• <b>Apr. 5: Invert Factsheet (Peer-Review)</b></li> </ul>	<ul style="list-style-type: none"> <li>• Arthropoda I – Crustaceans</li> <li>• <b>Quiz 8 (Pseudocoelomates)</b></li> </ul>
Apr 6			<ul style="list-style-type: none"> <li>• Arthropoda II – Chelicerata</li> <li>• <b>Quiz 9 (Crustaceans)</b></li> </ul>
Apr 13	<b>Ecdysozoa</b>	<ul style="list-style-type: none"> <li>• Arthropoda</li> <li>• Nematoda</li> <li>• <b>Quiz 7 (Available: Apr 17)</b></li> </ul>	<ul style="list-style-type: none"> <li>• Echinodermata</li> <li>• <b>Quiz 10 (Chelicerata)</b></li> </ul>

Week of	Topic	Assignments/Activities Due Dates	Lab Topics
Apr 20	<b>Deuterostomes</b>	<ul style="list-style-type: none"> <li>• Intro to Deuterostomes</li> <li>• Echinodermata, Hemichordates</li> <li>• Invertebrate chordates</li> <li>• <b>Quiz 8 (Available: April 24)</b></li> </ul>	<ul style="list-style-type: none"> <li>• From Cells to Body Plans: Discovering Animal Organization</li> </ul>
Apr 27	<b>Exam Week</b>	<ul style="list-style-type: none"> <li>• <b>Apr 28: Exam 4</b></li> </ul>	
May 4	<b>Final Project Due</b>	<ul style="list-style-type: none"> <li>• <b>May 5: Invert Fact Sheet Due</b></li> </ul>	