Invertebrate Zoology, BIOL 3414
Dr. David W. Hicks
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Fall 2017
Lecture: 10:50-12:05 TR, BLHSB 1.702
Lab: 1:40-4:20 R, BLHSB 1.802

Textbook and/or Resource Material

Course Description and Prerequisites
Lecture: The lecture portion of the course will emphasize the adaptive evolutionary radiation between and within phyla that has produced the wide variety of presently living invertebrate species. Topics include natural history, form, function, physiology, ecology, reproduction, development, classification, systematics and evolution of invertebrate animals. Invertebrates make up >95% of all animal species and perhaps 99% of all animal biomass. A basic knowledge of invertebrate animal life is, therefore, a required foundation for almost any area of advanced zoological study or research. This course will be designed to provide that foundation.

Lab: Laboratory exercises are intended to introduce students to the wide diversity of form and function that exists among invertebrate animals while at the same time allowing them to understand the homologies of structures which unite species within taxonomic groups. Comparative study of a wide variety of type specimens in each laboratory period will be stressed. Students will be asked to record their observations in a laboratory notebook.

Learning Objectives/Outcomes for the Course
Having passed this course, students will be able to recall/recognize major invertebrate animal taxa and their respective functional body architecture, life history, and ecology; classify invertebrate animal groups based upon homologies; interpret phylogenetic trees (cladograms); and distinguish among the variety of structures that have evolved to meet common life functions (e.g., gas exchange, excretion, growth and reproduction) in invertebrate species.

Learning Objectives for Core Curriculum Requirements
This course is an elective course in the BS Biology and BS Marine Biology curricula. Through a standardized manner, student learning (Critical Thinking Skills, Communication Skills, Empirical and Quantitative Skills, Teamwork, Social Responsibility, and Personal Responsibility) while at UTRGV will be assessed.

Grading Policies
State the course grading policy. Include graded assignments, weighting, and how late work will be treated. All UTRGV’s grading policy is to use straight letter grades (A, B, C, D, or F).

Lecture: There will be three lecture examinations: two mid-semester examinations and a final examination. Each lecture exam will account for 20% (60% of course grade). Exams will consist of a combination of essay and multiple choice questions.

Lab: Laboratory grades are assigned based upon periodically assigned laboratory drawing hand-ins, three lab practicals, and the laboratory notebook (40% of course grade).

Laboratory Notebook: During each laboratory session, students will be assigned a number of tasks, including drawing of laboratory specimens and of material on slides or observations of behavior of living material. While digital photography has replaced traditional line-art drawings in many biology texts and lab books, the old law of microscopy still applies: You only have really seen what you have drawn. Drawing enhances the quality of your observations and deepens your acquaintance with observed specimens. All assigned material should be kept in a three-ring, D-ring, notebook to be handed in for grading at the end of the semester. The laboratory notebook will account for up to 150 points towards the final laboratory grade.
The notebook grade is developed in equal parts from the level of coverage of required and optional exercises and the quality of the work the student demonstrates in the notebook. The coverage component is based on how much of the laboratory exercises a student completes during the course of the semester. If a student completes all required exercises (indicated by an asterisk in front of the exercise number), has labeled all required structures in their diagrams of specimens (indicated by bold letters in each exercise's instructions) and has recorded all required behavioral observations, they will receive a grade of ‘A’ for coverage. If a student places additional work in the notebook, including optional laboratory exercises, diagrams and observations, and other work they have completed outside of normal laboratory instructions (i.e., study guides, drawings of other organisms, notes, etc.), they will receive additional credit which can make up for deficiencies in required exercises.

The quality of work component will come from the instructor’s assessment of how much care was taken in completing each exercise. The quality of drawings of specimens will be inspected as will the level to which they were labeled. This is particularly important in nonrequired specimen drawings in which the anatomical structures are not listed in the laboratory instructions and must be determined independently by the student from their lecture, and laboratory texts.

*Laboratory Report Drawings:* Periodically, students will be asked to provide a drawing of an observed specimen or structure before leaving the laboratory (6 reports total). These laboratory reports will be graded for accuracy of representation of anatomical detail and completeness of labeling of structures. Each laboratory report will be worth up to 10 points (60 points possible).

*Laboratory Examinations:* There are three laboratory examinations in which students will be required to answer questions related to taxonomy and functionally anatomy. Each laboratory examination will be worth up to 50 points (150 points possible).

Note: Students will earn points on exams and laboratory assignments towards a final grade out of 360 points. Grades on exams will be given both as a total out of 100% and out of the total points earned on a given exam towards the 360 point final grade. Scores on all other laboratory assignments (report drawings and notebook) will reflect the number of points earned.

<table>
<thead>
<tr>
<th>Task</th>
<th>Points</th>
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<tbody>
<tr>
<td>Laboratory Reports (6 at 10 pts each)</td>
<td>60</td>
</tr>
<tr>
<td>Laboratory Examinations (3 at 50 pts each)</td>
<td>150</td>
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<tr>
<td>Laboratory Notebook</td>
<td>150</td>
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<tr>
<td>Total Points</td>
<td>360</td>
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*Lecture Topic Outline*

- Introduction (Chapters 1-2)
- Phylum Porifera (Chapter 6)
- Mesozoan Phyla (Chapter 6-Placozoa)*
- Phylum Cnidaria (Chapter 7; Chapter 4)
- Phylum Ctenophora (Chapter 8)
- Body Cavity Evolution and Development (Chapter 5)
- Phylum Platyhelminthes (Chapter 9 & 10)
- Four Enigmatic Protostome Phyla (Chapter 11)
  - Phylum Chaetognatha
  - Phylum Rhombozoa*
  - Phylum Orthonecida*
  - Phylum Gastrotricha*
- Phylum Nemertea (Chapter 12)*
- Phylum Mollusca (Chapter 13)
- Phylum Annelida (Chapter 14)
- Two Enigmatic Spiralian Phyla (Chapter 15)*
Phylum Entoprocta
Phylum Cycliophora

The Gnathifera (Chapter 16)*
    Phylum Gnathostomulida
    Phylum Rotifera
    Phylum Acanthocephala
    Phylum Micrognathozoa

The Lophophorates (Chapter 17)*
    Phylum Phoronida
    Phylum Bryozoa
    Phylum Brachiopoda

The Nematoidea (Chapter 18)*
    Phylum Nematoda
    Phylum Nematomorpha

The Scalidophora (Chapter 19)*
    Phylum Kinorhyncha
    Phylum Priapula
    Phylum Loricifera

Emergence of Arthropods (Chapter 20)
    Phylum Onychophora
    Phylum Tardigrada
    Phylum Arthropoda:
        Subphylum Trilobitomorpha

Phylum Arthropoda
    Subphylum Crustacea (Chapter 21)
    Subphylum Hexapoda (Chapter 22)*
    Subphylum Myriapoda (Chapter 23)*
    Subphylum Cheliceriformes (Chapter 24)*

Phylum Echinodermata (Chapter 25)
Phylum Hemichordata (Chapter 26)
Phylum Chordata (invertebrate chordates; Chapter 27)

* Chapters not covered in lecture but will be assigned for extra credit

Calendar of Activities
Include in this section a table or list that provides information for students regarding important dates, assignments or activities. The UTRGV academic calendar can be found at https://my.utrgv.edu/home at the bottom of the screen, prior to login. Some important dates for Fall 2017 include:

August 28    First day of classes
August 31    Last day to add a course or register for fall 2017
September 4  Labor Day – NO classes
November 15   Last day to drop a course; will count toward the 6-drop rule
November 23 – 26    Thanksgiving Holiday – NO classes
December 6    Last day of classes
December 7    Study Day – NO class
December 8 -14  Fall 2017 Final Exams
December 15-16 Commencement Ceremonies

Make-up exams
Only valid, documented excuses will be accepted for missing a lecture examination. Without a valid excuse for missing an examination, a student will be assigned a grade of 0% for that examination. Make up exams will be all essay questions and must be taken within one week of missing an examination.
STUDENTS WITH DISABILITIES: Required on all syllabi. Do not modify.
Students with a documented disability (physical, psychological, learning, or other disability which affects academic performance) who would like to receive academic accommodations should contact Student Accessibility Services (SAS) as soon as possible to schedule an appointment to initiate services. Accommodations can be arranged through SAS at any time, but are not retroactive. Students who suffer a broken bone, severe injury or undergo surgery during the semester are eligible for temporary services. Brownsville Campus: Student Accessibility Services is located in Cortez Hall Room 129 and can be contacted by phone at (956) 882-7374 (Voice) or via email at ability@utrgv.edu. Edinburg Campus: Student Accessibility Services is located in 108 University Center and can be contacted by phone at (956) 665-7005 (Voice), (956) 665-3840 (Fax), or via email at ability@utrgv.edu.

MANDATORY COURSE EVALUATION PERIOD: Required on all syllabi. Do not modify.
Students are required to complete an ONLINE evaluation of this course, accessed through your UTRGV account (http://my.utrgv.edu); you will be contacted through email with further instructions. Students who complete their evaluations will have priority access to their grades. Online evaluations will be available:
Fall 2017 Module 1 Oct. 5 – Oct. 11
Fall 2017 Module 2 Nov. 29 – Dec. 5
Fall 2017 (full semester) Nov. 15 – Dec. 6

ATTENDANCE: Recommended on all syllabi; may be modified by the instructor as long as it is not inconsistent with UTRGV policy.
Students are expected to attend all scheduled classes and may be dropped from the course for excessive absences. UTRGV’s attendance policy excuses students from attending class if they are participating in officially sponsored university activities, such as athletics; for observance of religious holy days; or for military service. Students should contact the instructor in advance of the excused absence and arrange to make up missed work or examinations.

SCHOLASTIC INTEGRITY: Recommended on all syllabi.
As members of a community dedicated to Honesty, Integrity and Respect, students are reminded that those who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and expulsion from the University. Scholastic dishonesty includes but is not limited to: cheating, plagiarism (including self-plagiarism), and collusion; submission for credit of any work or materials that are attributable in whole or in part to another person; taking an examination for another person; any act designed to give unfair advantage to a student; or the attempt to commit such acts. Since scholastic dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced (Board of Regents Rules and Regulations and UTRGV Academic Integrity Guidelines). All scholastic dishonesty incidents will be reported to the Dean of Students.

SEXUAL HARASSMENT, DISCRIMINATION, and VIOLENCE: Required on all syllabi. Do not modify.
In accordance with UT System regulations, your instructor is a “Responsible Employee” for reporting purposes under Title IX regulations and so must report any instance, occurring during a student’s time in college, of sexual assault, stalking, dating violence, domestic violence, or sexual harassment about which she/he becomes aware during this course through writing, discussion, or personal disclosure. More information can be found at www.utrgv.edu/equity, including confidential resources available on campus. The faculty and staff of UTRGV actively strive to provide a learning, working, and living environment that promotes personal integrity, civility, and mutual respect that is free from sexual misconduct and discrimination.

COURSE DROPS: Recommended on all syllabi; may be modified by the instructor as long as it is not inconsistent with UTRGV policy.
According to UTRGV policy, students may drop any class without penalty earning a grade of DR until the official drop date. Following that date, students must be assigned a letter grade and can no longer drop the class. Students considering dropping the class should be aware of the “3-peat rule” and the “6-drop” rule so they can recognize how dropped classes may affect their academic success. The 6-drop rule refers to Texas law that dictates that undergraduate students may not drop more than six courses during their undergraduate career. Courses dropped at other Texas public higher education institutions will count toward the six-course drop limit. The 3-peat rule refers to additional fees charged to students who take the same class for the third time.