TEXAS A&M UNIVERSITY-CORPUS CHRISTI
COLLEGE OF SCIENCE & ENGINEERING
DEPARTMENT OF LIFE SCIENCES

BIOL 4444 SYLLABUS – SPRING 2015

I. COURSE: 
BIOL 4444 - Estuarine Organisms 4 sem. hrs (3:3)
Lecture: Tues-Thurs 11-12:15
Lab: Tues or Thurs 12:30-3:30, CS 235

II. FACULTY: Kim Withers, NRC 3205, 825-5907; Office Hours 8-10:30 Tuesday, Thursday, email Kim.Withers@tamucc.edu

III. COURSE DESCRIPTION
Ecology and life history of macro- and microscopic organisms that inhabit estuarine systems. Ecology of estuarine systems. Extensive fieldwork and individual study required. Prerequisite: Invertebrate Zoology (BIOL 3413) or equivalent or permission of instructor.

IV. TEXTBOOKS & EQUIPMENT REQUIRED
1. Ecology of Coastal Waters – K. H. Mann
2. Set of taxonomic keys of marine and estuarine organisms (available in the TAMU-CC Bookstore)
4. Tunnell et al. 2014. Texas seashells: a field guide
5. Hard-soled scuba booties, old tennis shoes, or waders for field trips
6. Indelible ink pen
7. Plastic shoe box (for carrying/storing specimens)
8. lidded 5-gallon bucket

V. COURSE OBJECTIVES
To study the ecology and organisms of estuarine systems along the Texas Gulf Coast, focusing on local habitats and communities through laboratory work and reading and discussion of current and classic estuarine literature. Extensive, in-depth study of the taxonomy and natural history of the polychaetes, molluscs, decapod crustaceans inhabiting local estuaries is the primary focus of the course.

VI. STUDENT LEARNING OUTCOMES
At the end of the course students will:
1. Understand the processes and dynamics of estuarine ecosystems and communities
2. Be able to apply the proper tools and methods to correctly identify important estuarine invertebrates
3. Know and be able to identify common and uncommon estuarine invertebrates
4. Apply their knowledge to describe an estuarine community from samples and physical data they collect in the field
5. Analyze data and report it in a presentation
VII. COURSE REQUIREMENTS & GRADING CRITERIA

Grades will be assigned on exams (e.g., lab practicals, quizzes) as percentages, i.e., the number of correct responses divided by the total number of possible responses for PASSING GRADES ONLY. Writing assignments (e.g., project reports) will be assigned letter grades (e.g., A+, C- etc.) that will be converted to percentages based on the scale below. ALL FAILING GRADES (i.e. F’s or percentages <60%) or missed assignments will be counted as ZEROs. The final grade will be determined based on the AVERAGE OF THE PERCENTAGES including any/all ZEROs. This grading scheme is designed to ensure that you must pass most assignments to receive a passing grade in the course.

<table>
<thead>
<tr>
<th>Letter</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>98</td>
</tr>
<tr>
<td>A</td>
<td>95</td>
</tr>
<tr>
<td>A-</td>
<td>92</td>
</tr>
<tr>
<td>B+</td>
<td>88</td>
</tr>
<tr>
<td>B</td>
<td>85</td>
</tr>
<tr>
<td>B-</td>
<td>82</td>
</tr>
<tr>
<td>C+</td>
<td>78</td>
</tr>
<tr>
<td>C</td>
<td>75</td>
</tr>
<tr>
<td>C-</td>
<td>72</td>
</tr>
<tr>
<td>D+</td>
<td>68</td>
</tr>
<tr>
<td>D</td>
<td>65</td>
</tr>
<tr>
<td>D-</td>
<td>62</td>
</tr>
<tr>
<td>F</td>
<td>0</td>
</tr>
</tbody>
</table>

The grading elements are:

<table>
<thead>
<tr>
<th>Element</th>
<th>Student Learning Outcome</th>
<th># of assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case Study Questions/Quizzes</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Readings Quizzes</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Lab Practicals</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Key Test</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Polychaete Collection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field Trip Participation/Sample Washing</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Field Study Data Compilation (individual)</td>
<td>2, 3, 4</td>
<td>1</td>
</tr>
<tr>
<td>Field Study Research Presentation, incl. extended abstract &amp; bibliography (group)</td>
<td>4, 5</td>
<td>1</td>
</tr>
</tbody>
</table>

There will be NO MAKEUPS for the lab practicals, quizzes, or key tests. Late assignments will be penalized by loss of 1 letter grade per day late; after 3 days, no credit (i.e., a zero) will be given.

VIII. CASE STUDY QUESTIONS OR QUIZZES

Three case studies will be presented during the course. These case studies will be focused on important paradigms in estuarine ecology or the emergent properties of estuaries through the interpretation of data. Students will be expected to come to class prepared – that means reading the provided case background material, including reading assignments from the textbook and/or current literature. Depending on the case, students will either answer questions about the case to turn in or take a quiz over the case.
IX. READINGS QUIZZES

Up to 4 quizzes over readings from the textbook will occur during the semester. Reading assignments will be made periodically (announced in class and via blackboard) and quizzes will follow 1 week later. Quizzes may be given online.

X. FIELD TRIP

Participation in one field trip is REQUIRED. During the field trips we will collect samples that will provide the data for your field study research presentation. You will be able to use any polychaetes you collect for the project in your individual polychaete collection. We will make a detailed plan for the field trip(s) the class day prior to the trip.

In general:
1. Be on time, or you will be left behind – I will take attendance.
2. Be prepared to get wet and muddy
3. Have a field notebook and writing utensils, weather appropriate gear, booties or other “wet” shoes, snorkel (?), drinking water &/or lunch, tweezers & probes
4. If you don’t go on the trip, you will not get credit for anything related to the field trip.

XI. FIELD STUDY RESEARCH PRESENTATION

During the field trip we will collect field data on the habitat (e.g., substrate type, salinity etc.) and benthic samples that will provide actual data that you will describe, analyze, and present to the class. Projects will involve comparisons between areas and/or among habitats.

You will be required to work up benthic samples in the lab (sorting, identification of organisms and counting) and do some data analysis, including, but not limited to, extrapolation of invertebrate species abundances to density (numbers per square meter), calculation of diversity and evenness indices, and calculation of percent cover or another suitable measure of habitat coverage for bottom type or vegetation data. Data should be presented in graphical and/or tabular form.

The following is the taxonomic level to which organisms will need to be identified for the research paper:

<table>
<thead>
<tr>
<th>Polychaetes: Family</th>
<th>Crabs: Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oligochaetes: Class</td>
<td>Shrimp: Species</td>
</tr>
<tr>
<td>Amphipods: Order</td>
<td>Nemerteans: Phylum</td>
</tr>
<tr>
<td>Isopods: Order</td>
<td>Hemichordates: Phylum</td>
</tr>
<tr>
<td>Bivalves: Species</td>
<td>Phoronids: Phylum</td>
</tr>
<tr>
<td>Gastropods: Species</td>
<td>Insects: Order (when possible)</td>
</tr>
</tbody>
</table>

Data description, analyses, and research presentations will be group efforts. Each group will be required to turn in a written summary of the data that is described and its analysis, and a bibliography of references used. Each individual in the group will turn in group presentation score sheet (see the attached Group Presentation Score Sheet). Presentations will be limited to 20 minutes. At the end of the presentation I will ask each group member a single question, “oral exam” style, that will be incorporated into my assessment of each group member. My grade will count twice, and the average of the grades assigned to group members by the members of the group will count once. These three grades will be averaged to determine the final grade for each group member.
Each presentation will consist of the following elements and each group member should present one at least one element (depending on the size of the group but groups will be limited to 4 people as much as possible).

1. Introduction – a brief overview of the habitat, its role and importance in estuarine dynamics, and its linkages with other habitats.
2. Study Area/Methods – the characteristics of the study area and the field, laboratory, and analysis (e.g., calculations etc.) that were used
3. Results – the results of your analysis, including the densities of organisms at an appropriate taxonomic level, the diversity of the habitat etc.
4. Discussion – the relevance of your data analysis and its context within the broader scope of literature about the habitat. It should also include a comparison to similar data from local, regional, or cosmopolitan examples of the habitat.

XII. TAXONOMIC AUTHORITY FOR LAB PRACTICALS

In this course, the Taxonomic Authority for all levels of taxonomy and all organisms is the Integrated Taxonomic Information System (ITIS): http://www.itis.gov/. Please remember that when species is asked for on a lab practical you must give BOTH genus and species, since the specific epithet CAN NEVER stand alone.

For lab practicals, you must know (= have committed to memory) the following levels of taxonomy for each group:

Polychaetes: Phylum, Class, Subclass, Order (when applicable), Suborder (when applicable), Family, Genus species

Mollusca: Phylum, Class, Subclass (when applicable), Order, Family, Genus species

Crustacea:

- **Crabs**: Phylum, Subphylum, Class, Subclass, Superorder, Order, Suborder, Infraorder, Family, Genus species
- **Shrimp**: Phylum, Subphylum, Class, Subclass, Superorder, Order, Suborder, Infraorder (when applicable), Family, Genus species

XIII. INDIVIDUAL POLYCHAETE COLLECTION

1. 10 polychaete species from a minimum of 5 families. Each person must identify their own polychaetes.
2. Have me (or one of my lab assistants) check off correct identifications on collection sheet as you identify. We will ask you to show us the key characters, so be sure you’ve done your own work.
3. A minimum of 1 INTACT, COMPLETE specimens of each species, more is better since you’ll probably tear up a couple identifying them and I may need to tear up one to make sure you’re right. Specimens of the same species need not come from the same location.
4. Labeled in the following format using indelible, carbon-based ink; put your name and the date on the other side.

   Family:
   Genus species

5. You will need to provide a typewritten catalog with your specimens containing label information with your check-off collection sheet attached.
Academic Integrity/Plagiarism

University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.

Dropping a Class

I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with me before you decide to drop to be sure it is the best thing to do. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Because of the compressed schedule for Augustmester, there is no last day to drop a class with an automatic grade of “W” this term.

Statement of Civility

Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

Grade Appeals (College of Science and Engineering Version)

As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://www.tamucc.edu/provost/university_rules/index.html, and the College of Science and Engineering Grade Appeals webpage (http://sci.tamucc.edu/students/GradeAppeal.html). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

Disabilities Accommodations

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Corpus Christi Hall 116.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.