**Course title and number:** Adaptations to Aquatic Environments  
**EEMS 6340-01**

**Instructor:** Dr. Md Saydur Rahman, Ph.D. - Assistant Professor  
**Office Location:** LHSC 2.812  
**Office Phone:** 956-882-5041  
**Office Hours:** Tue: 9:00 -11:30 am, 3:00 -5:30 pm  
**Email:** md.rahman@utrgv.edu

**Contract with Instructor:** If you have any questions (e.g., lecture class, exam, grades, textbooks etc.) to the content of this course, please contact me via email (please use your UTRVG email), phone or come to my office. I will be most happy to assist you anytime (time permitting); however, it may be easiest to contact me during office hours.

---

**COURSE INFORMATION**

**Materials – Textbooks, Readings, Supplementary Readings:**

**Textbooks:** Suggested books-  
1. Environmental Physiology of Animals, Authors: Willmer et al., Publisher: Blackwell;  
2. Biochemical Adaptations, Authors: Hochachka & Somero, Oxford University Press;  
3. Elements of Ecology, Authors: Smith & Smith, Publisher: Pearson

**Readings:** Supplemental reading materials or references will be provided.

**Course rationale:** This course will broaden the students’ background and knowledge about the organisms’ responses to aquatic environments.

**Course objectives:**

The overall aim of this course is to provide a graduate level introduction to the environmental physiology and population ecology of aquatic organisms. The first half of the course will concentrate on the functional adaptations and adjustments animals use to cope with the various physiological and environmental challenges to life in aquatic environments, and the second half of the course will concentrate on population responses. The class format will include lecture and discussion sessions. Students will be responsible for conducting the discussion sections. One manuscript will be selected to be read and discussed at each discussion section. Each student is also responsible for writing term papers and giving an oral presentation of it to the class. The term paper should be on a topic that does not directly overlap with the student’s proposed graduate research.

**Learning objectives/outcomes:**

1. Compare and contrast aquatic environments.  
2. Understand strategies enabling organisms to inhabit an aquatic environment.  
3. Discuss strategies enabling organisms’ survival in an aquatic environment under stressful conditions.  
4. Review isolation mechanisms allowing the evolution of organisms in aquatic environments.  
5. Contrast reproduction strategies of aquatic organisms.  
6. Integrate concepts learned in a cohesive document presented as both a scientific manuscript (term paper) and oral presentation (conference style).

The instructor reserves the right to change or modify this syllabus as deemed necessary for the welfare of the class.
**Tentative Schedule and Subject to Change:**

Week 1 (Aug 28): Interactions and Class Introduction
Week 1 (Aug 30): Characteristics of Aquatic Environments
Week 2 (Sep 04): *Labor Day Holiday*
Week 2 (Sep 06): Organism and Its Environment: Adaptation and Natural Selection
Week 3 (Sep 11): Organism and Its Environment: Plant Adaptations to Environment
Week 3 (Sep 13): Organism and Its Environment: Animals Adaptations to Environment
Week 4 (Sep 18): Osmoregulation-I
Week 4 (Sep 20): Osmoregulation-II
Week 5 (Sep 25): Locomotion/Buoyance-I and -II
Week 5 (Sep 27): Nervous/Sensory Systems-I and -II

**Week 6 (Oct 02): Exam-1**

Week 6 (Oct 04): Reproduction-I and -II
Week 7 (Oct 09): Immune Defense System
Week 7 (Oct 11): Extreme Environment-1: Depth/Pressure
Week 8 (Oct 16): Extreme Environment-2: Hypoxia
Week 8 (Oct 18): Extreme Environment-3: Toxic Chemicals
Week 9 (Oct 23): Student Presentation of Term Paper
Week 9 (Oct 25): Student Presentation of Term Paper
Week 10 (Oct 30): Student Presentation of Term Paper

**Week 10 (Nov 01): Exam-2**

Week 11 (Nov 06): Life History and Dispersal
Week 11 (Nov 08): Metabolism and Respiration
Week 12 (Nov 13): Sensory Ecology
Week 12 (Nov 15): Feeding and Digestion
Week 13 (Nov 20): Recruitment
Week 13 (Nov 22): Interspecific Competition
Week 14 (Nov 27): Parasitism and Mutualism
Week 14 (Nov 29): Global Climate Change and Community Structure
Week 15 (Dec 04): Student Presentation of Term Paper
Week 15 (Dec 06): Student Presentation of Term Paper

**Week 16: Final Exam**
**COURSE REQUIREMENTS**

**Instructional Methods:**
Lecture, discussion, and videos

**Activities:**
*Homework Assignments:* Homework may be assigned with specific instructions as well as a due date and time. Late homework will not be accepted. The value (percentage of your final grade) of each homework assignment will be set at the time of the assignment. I reserve the right to modify the schedule and assignments.

**Scheduled Quizzes/Open Questions:**
I reserve the right to administer scheduled quizzes/open questions.

**Expectations:**
- Be punctual and attend every lectures.
- Be attentive and participate in class discussions.
- Be respectful to classmates.
- Complete class assignments on time.
- Be punctual on exam day, complete the monthly exam including a comprehensive FINAL exam.
- Achieve an average grade of ≥60% according to the grading basis (please see below)

**Grade Evaluations:**
The grade will be based on performance in three exams, term papers, presentation(s), and class participation in class discussions.

**Grade Basis:**
1. Monthly exams (Exam 1, Exam 2, Exam 3): 60 points (60%)
2. Attendance/Participation: 10 points (10%)
3. Assignment/Term Paper: 15 points (15%)
4. Presentations: 15 points (15%)

**Total 100 points**
Missing exams will be counted as zeroes in the overall grade computation. I reserve the right to adjust your grade for violation of the minimum expectations.

**Academic Integrity**
Misconduct and plagiarism are violations of the student conduct code. Any suspected cases of academic misconduct will be handled according to UTRGV rules and regulations.

**Absenteeism:**
1. Each student will be placed on subject to a penalty of point off of their final grade for each unexcused absence. A tardy will count as 0.25 point per class of an unexcused absence.
2. Upon exceeding 4 unexcused absences, I reserve the right to administratively drop you from the class.

**Grading Policies:**
The following scale is adhered to strictly.

- 90.0 – 100% = A
- 80.0 - 89.9% = B
- 70.0 - 79.9% = C
- 60.0 – 69.9% = D
- <60.0% = F
Calendar of Activities:
The UTRGV academic calendar can be found at http://my.utrgv.edu at the bottom of the screen, prior to login.
Important dates for Fall 2017 include:

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug 28</td>
<td>Fall classes begin</td>
</tr>
<tr>
<td>Aug 31</td>
<td>Last day to add a class or register for Fall classes</td>
</tr>
<tr>
<td>Sept 1</td>
<td>Last day to withdraw (drop all classes) for a 80% refund</td>
</tr>
<tr>
<td>Sept 4</td>
<td>Labor Day Holiday, no classes</td>
</tr>
<tr>
<td>Sept 11</td>
<td>Last day to withdraw (drop all classes) for a 70% refund</td>
</tr>
<tr>
<td>Sept 13</td>
<td>Census day (last day to drop without it appearing on the transcript)</td>
</tr>
<tr>
<td>Sept 18</td>
<td>Last day to withdraw (drop all classes) for a 50% refund</td>
</tr>
<tr>
<td>Sept 25</td>
<td>Last day to withdraw (drop all classes) for a 25% refund</td>
</tr>
<tr>
<td>Nov 17</td>
<td>Last day to drop (DR grade) a class or withdraw (grade of W)</td>
</tr>
<tr>
<td>Nov 23 - Nov 25</td>
<td>Thanksgiving Holiday, no classes</td>
</tr>
<tr>
<td>Dec 7</td>
<td>Study Day, no classes</td>
</tr>
<tr>
<td>Dec 8 – Dec 14</td>
<td>Final Exams</td>
</tr>
<tr>
<td>Dec 18</td>
<td>Grades due by 3:00 p.m.</td>
</tr>
</tbody>
</table>

COURSE SPECIFIC PROCEDURES AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures:
*Responsible Use of Technology Resources:* It is expected that all students will only use laptop computer, iPAD, and other technology in class. Answering a cell phone, listening to music, texting, or using a laptop computer for unrelated matters to the course may be grounds for dismissal from class and/or other penalties. Students are not allowed to use video, nor audio recording devices of any kind during class time without prior consent of the instructor.

Students with Disabilities:
If you have a documented disability (physical, psychological, learning, or other disability which affects your academic performance) and would like to receive academic accommodations, please inform your instructor and contact Student Accessibility Services to schedule an appointment to initiate services. It is recommended that you schedule an appointment with Student Accessibility Services before classes start. However, accommodations can be provided at any time. **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 accessibility@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 accessibility@utrgv.edu.

Mandatory Course Evaluation Period:
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. Online evaluations will be available Nov. 18 – Dec. 9, 2015. Students who complete their evaluations will have priority access to their grades.

Attendance:
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:
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, 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:
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 in an environment free from sexual misconduct and discrimination.

Course Drops:
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.

I have read and understand the information and UTRVG policies in this syllabus and will abide by those policies. YES_____, NO_____.
If your answer is NO, please explain why or ask any questions:

Your name: ____________________________________________, Student ID: ______________________

Your signature: ________________________________________, Date: __________________________