Wetlands & Water Quality – CHEM/ESCI 4490  
Department of Physical & Environmental Sciences  
Spring 2015

A. **COURSE INFORMATION**

Course number/section: CHEM/ESCI 4490  
Class meeting time: Tuesday & Thursday 2:00 to 3:15  
Class location: Engineering 101

B. **INSTRUCTOR INFORMATION**

Instructor: Dr. Jeremy L. Conkle  
Office location: 103 Harte Research Institute  
Office hours: Tuesday 3:15 to 5 & on request  
Telephone: 361.825.2862  
e-mail: jeremy.conkle@tamucc.edu  
Appointments: Brief email or call

C. **COURSE DESCRIPTION**

Introduction to wetland ecosystems (natural, constructed and restored) with an emphasis on the role of wetlands in water quality. Topics include wetland systems, their history and role in society, relationships between biology, geology, ecology, hydrology and chemistry in wetland environments and the use of Lab and field techniques.

D. **PREREQUISITES AND COREQUISITES**

CHEM 1411

E. **REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES**


Optional Textbook(s) or Other References

Teal and Teal Life and Death of a Salt Marsh.  

F. **STUDENT LEARNING OUTCOMES AND ASSESSMENT**

Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this
process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

Upon successful completion of this course, students will be familiar with wetland environments globally and locally. They will be aware of threats to these systems and why they are important to a healthy environment. Specifically, students will be capable of:

1. Identifying a wetland based on vegetation, hydrology and soils
2. Explaining the ecosystem services provided by wetlands
3. Assessing the role of wetlands in our society
4. Discussing the role of oxygen in wetland systems
5. Collecting field samples and measuring water quality parameters

G. INSTRUCTIONAL METHODS AND ACTIVITIES

This course will primarily consist of an interactive lecture, where the professor will present information through various media. Students will be asked to participate in lectures by discussing various topics and attempting to synthesize them in manner that leads to a deeper understanding of wetland environments. There will also be field trips to Oso Bay and various labs on campus to gain experience with sample/data collection, preparation and analysis. Homework assignments will be used to improve your understanding of wetland ecosystems as well as your writing skills and computational abilities. Grading of these assignments will be partially performed by your classmates and all assignments will be discussed/reviewed in class.

H. MAJOR COURSE REQUIREMENTS AND GRADING

This class will have 2 exams and 1 comprehensive final that account for 50% of your overall grade. Homework is 35% of your grade and will consist of 2 short writing assignments designed to make you critically think and concisely write about a wetland topic and 3 wetland problem sets that allow you to use data to assess wetland properties and functions. The last 15% of your grade will be participation. This will include actively engaging in class, but also working with classmates to solve problems and grade homework and discuss problem solving. See section K for Writing and Participation rubrics.

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
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<tbody>
<tr>
<td>Exam 1</td>
<td>15</td>
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<tr>
<td>Exam 2</td>
<td>15</td>
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<tr>
<td>Final Exam</td>
<td>20</td>
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<tr>
<td>Homework*</td>
<td>35</td>
</tr>
<tr>
<td>Participation*</td>
<td>15</td>
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</tbody>
</table>

*See section K for “Writing”

*See section K for “Levels of Participation”
### 1. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>DATE (BY DAY OR WEEK)</th>
<th>TOPIC</th>
<th>CHAPTER(S)</th>
<th>ASSIGNMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/22/15 (TH)</td>
<td>Intro &amp; Wetland Basics</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1/27/15 (T)</td>
<td>Wetland History &amp; Use</td>
<td>1</td>
<td></td>
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<tr>
<td>2/3/15 (T)</td>
<td>Functions &amp; Values, Water Quality</td>
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<tr>
<td>2/5/15 (TH)</td>
<td>Wetland Perceptions</td>
<td></td>
<td>WL Perception Essay Due</td>
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<tr>
<td>2/10/15 (T)</td>
<td>Library Introduction</td>
<td></td>
<td>Guest Speaker</td>
</tr>
<tr>
<td>2/12/15 (TH)</td>
<td>Hydrology</td>
<td>4</td>
<td></td>
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<tr>
<td>2/17/15 (T)</td>
<td>Hydrology Cont.</td>
<td>4</td>
<td>Hydrology Problems</td>
</tr>
<tr>
<td>2/19/15 (TH)</td>
<td>Soils</td>
<td>5,6,7</td>
<td>Hydrology Problems Due</td>
</tr>
<tr>
<td>2/24/15 (T)</td>
<td>Vegetation</td>
<td>6</td>
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<tr>
<td>2/26/15 (TH)*</td>
<td></td>
<td></td>
<td><strong>EXAM 1</strong></td>
</tr>
<tr>
<td>3/3/15 (T)</td>
<td>Redox &amp; Carbon</td>
<td>5,6,7</td>
<td>Balancing Reactions</td>
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<tr>
<td>3/5/15 (TH)</td>
<td>Nitrogen</td>
<td>5,6,7</td>
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</tr>
<tr>
<td>3/10/15 (T)</td>
<td>Balancing Reactions</td>
<td>5,6,7</td>
<td>Balancing Reactions Due</td>
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<tr>
<td>3/12/15 (TH)</td>
<td>Phosphorus</td>
<td>5,6,7</td>
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<tr>
<td>3/17/15 (T)</td>
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<td><strong>SPRING BREAK</strong></td>
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<td>3/19/15 (TH)</td>
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<td></td>
<td><strong>SPRING BREAK</strong></td>
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<td>3/24/15 (T)</td>
<td>Sulfur</td>
<td>5,6,7</td>
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<tr>
<td>3/26/15 (TH)</td>
<td>Treatment Wetlands</td>
<td>8,9,12,13</td>
<td>Homework 3</td>
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<tr>
<td>3/31/15 (T)</td>
<td>Treatment Wetlands Cont.</td>
<td>8,9,12,13</td>
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<tr>
<td>4/2/15 (TH)</td>
<td>Homework 3 &amp; Review</td>
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<td>Homework 3 Due</td>
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<td>4/7/15 (T)</td>
<td></td>
<td></td>
<td><strong>EXAM 2</strong></td>
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<td>4/9/15 (TH)**</td>
<td>Wetland Delineation</td>
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<td>Guest Speaker</td>
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<td>4/14/15 (T)</td>
<td>Field Trip to Oso Bay</td>
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<td>Functions &amp; Values to non-science audience</td>
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<td>4/16/15 (TH)</td>
<td>Threats to Wetlands</td>
<td></td>
<td>10,11</td>
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<tr>
<td>4/21/15 (T)</td>
<td>Functions &amp; Values to a Non-Science Audience</td>
<td></td>
<td>Functions &amp; Values to Non-Science Audience Due</td>
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<tr>
<td>4/23/15 (TH)</td>
<td>Emerging Contaminants in Wetlands</td>
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<tr>
<td>4/28/15 (T)</td>
<td>Lab Methods Day</td>
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<tr>
<td>4/30/15 (TH)</td>
<td>Grad Student Presentation &amp;</td>
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</table>
Discussion

5/5/15 (T)  Grad Student Presentation & Discussion

FINAL EXAM (Comprehensive)

*Must register for class by 1/28/15 (Wednesday)
** 4/10/15 (Friday) last day to drop a class
Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

J. COURSE POLICIES

**Attendance/Tardiness**
All lectures and field trips are mandatory. University policy will determine the consequences for excessive absences.

**Make-up Exams & Late Work**
We will be going over homework in class the day it is due. Therefore, it will only be accepted with a valid Drs. note. Make-up exams also require a Drs. note and will be administered at 7:30 am in the professor’s office within 2 school days of the actual exam.

**Extra Credit**
No extra credit is planned for this course. However, this may change at the discretion of the professor and students will all have equal opportunity for points.

**Cell Phone Use**
NO. There is no tolerance for receiving, sending, talking or texting on a cell phone.

**Laptop Use**
Only for note taking. I will require you to turn off WIFI if it becomes a distraction

**Food in Class**
You may eat or drink so long as it does not become a distraction for other students. However, please refrain from consuming smelly foods. If you bring food that is particularly tasty, please consider bringing enough for everyone.

**Participation**
Required and 15% of your final grade. Participation will include, but is not limited to engaging in classroom discussion, problem solving, asking questions and most importantly not being disruptive.

**Conduct**
During class you may find that your ideas, opinions and past experiences conflict with others or what is presented during lecture. Please be respectful of these alternative views and help to ensure an engaging and courteous classroom atmosphere.
K. GRADING RUBRICS

Levels of Participation

This rubric will be used to determine the “Participation” grade in this class. Participating is a matter of active engagement, rather than passive observation, and is shown through working effectively in diverse groups and teams, as well as through cooperation and respect for others. Participation quality in this course will be evaluated using the features defining the four levels shown below.

Level 1 Participation (Low)

- Little or no advance preparation
- Lets others set and pursue the agenda
- Observes passively and says little or nothing
- Responds to questions
- Gives the impression of wanting to be somewhere else
- Attendance record is haphazard and inconsistent; may be absent or late without notice

Level 2 Participation (Mid-Low)

- Moderately prepared in advance
- Takes some part in setting group goals and agendas
- Participates in discussions, letting others provide the direction
- Occasionally introduces information or asks questions
- If likely to be absent or late, informs others ahead of time and arranges to cover own responsibilities

Level 3 Participation (Mid-High)

- Well prepared in advance
- Takes a large part in setting group goals and agendas
- Actively participates in discussion and asks questions
- Listens actively and shows understanding by paraphrasing or by acknowledging and building on others’ ideas
- Volunteers willingly and carries own share of the group’s responsibilities

Level 4 Participation (High)

- All of the markers of proficient participation, plus:
- Draws out ideas or concerns of others, especially those who have said little
- Re-visits issues or ideas that need more attention
- Helps the group stay on track
- Summarizes group decisions and action assignments
Writing

This rubric is the basis for which each students writing will be judged. Students will write in an understandable and organized fashion to explain their ideas, express their feelings, or support a conclusion.

**Beginner**

- Write an essay or narrative of several paragraphs that they can read aloud understandably.
- Distinguish sentences within paragraphs, capitalizing the first word of a sentence and ending it with terminal punctuation.
- Write paragraphs that develop a main point.
- Produce a text in which paragraphs have a logical relationship to one another.

**Developing**

- Write an essay or narrative that moves toward a clear conclusion or thesis.
- Write paragraphs that usually state and develop a clear point.
- Support claims with evidence that is relevant and reasonable.
- Diagnose some errors in usage, spelling, and grammar, correcting some independently and seeking aid in correcting others.
- Express ideas in specific, concrete language and develop some specific examples.
- Substantially revise a piece of writing to achieve greater clarity, persuasiveness, or vividness.

**Accomplished**

- Develop a clear, significant, and complete thesis statement in an essay or narrative.
- Support claims by presenting credible and persuasive evidence.
- Develop and explain points in clear, specific language, providing concrete referents for key concepts that the audience can easily understand.
- Diagnose errors in spelling, usage, and grammar, correcting most independently and seeking aid in correcting others.

L. COLLEGE AND UNIVERSITY POLICIES

**Academic Integrity (University)**

It is expected that university students will demonstrate a high level of maturity, self-direction, and ability to manage their own affairs. Students are viewed as individuals who possess the qualities of worth, dignity, and the capacity for self-direction in personal behavior.

See Full University Policy at [http://catalog.tamucc.edu/content.php?catoid=10&navoid=313#Academic_Integrity](http://catalog.tamucc.edu/content.php?catoid=10&navoid=313#Academic_Integrity)

**Classroom/Professional Behavior**

**Deadline for Dropping a Course with a Grade of W (University)**

The grade of W will be assigned to any student officially dropping a course by Friday, April 10, 2015. No student is eligible to receive a W without completing the official drop process by this deadline. Visit the Office of the University Registrar for the Course Drop Form that must submitted. After April 10, 2015 a student will not be allowed to drop a course.

**Grade Appeals (College of Science and Engineering)**

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 at 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.

• Disability Services
Disability Services (DS) is the hub for coordinating services and accommodations to ensure accessibility and utilization of all programs for all Texas A&M University-Corpus Christi students with disabilities. Our services are designed to meet the unique educational needs of enrolled students with documented permanent or temporary disabilities. DS provides intake and consultation services to students seeking to register with our office. DS reviews an individual’s documentation of disability and assesses eligibility for services and the determination of reasonable accommodations. For more information visit the Disability Services Office at 116 Corpus Christi Hall or go to http://disabilityservices.tamucc.edu/

GENERAL DISCLAIMER
I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.