COVID-19 & Environmental Chemistry

Your short and long-term health as well as that of your family and friends is more important than any arbitrary requirement that you attend a class in person during our ongoing COVID-19 pandemic. Therefore, even if conditions allow, attendance for Environmental Chemistry in-person lectures in the fall of 2020 is optional. All lectures and associated materials will be available online through the course learning management system, Schoology (see section E) to every student in the course.

The decision as to whether or not we will have in-person lectures is at the sole discretion of the professor, Dr. Conkle and will at a minimum meet any guidance or rules established by TAMUCC. Based on the current spread of COVID-19 in Nueces County and anticipation by health experts that a second wave will occur at some point in the fall, I do not anticipate that we will have many in-person lectures this semester. However, I will closely monitor daily numbers in our community and regularly update you to the possibility of having the optional in-person lectures. My criteria for even beginning to consider an in-person class would be a 7-day average daily new infection rate of <50 people for Nueces County and a 7-day average for % positive tests at <6%. These criteria are subject to change as we learn more about COVID-19 and its spread.

For in-person lectures any students that attend are required to wear a mask at all times and physically distance themselves within the classroom at the maximum distance between themselves and others, but not less than 6 ft. There will be some flexibility during labs regarding physical distancing. If you choose not to comply with these requirements, which jeopardizes the health of your colleagues, myself and our families and friends, you will be immediately asked to leave. If you have an underlying health reason for not being able to wear a mask, you must contact Dr. Conkle at least a week prior to the start of the semester to discuss your situation and the potential need for a doctors note.

As an alternative to meeting in a classroom, I am exploring options for having lectures and lab meetings outside where person to person spread of COVID-19 is less likely. If we were able to have outdoor meeting, you will still be required to wear masks and physically distance as if we were in a classroom.

At any time during the semester if you have questions or concerns about your safety or the safety of students in the course please let me know and we can discuss.

COVID-19 HEALTH IMPACTS
Our knowledge of this virus is constantly evolving, so I wanted to share some of the latest understanding of the virus’ impacts that could occur in victims of all ages if they are infected.
While we know that while death is the worst outcome (~1% mortality of known infections), there are other long-term, potentially life-long problems that occur. Additionally, if you are taking this class it is likely that you are in an age-group that is less likely to die from the virus, but that does not mean that if you survive this virus would not cause significant harm in the short and long-term. Because much focus in the media and among people I know are focused on death, you should be aware of the non-lethal, but life-altering impacts occurring in people of all ages:

- **Heart Damage**: Can occur in up to 20% of patients (LINKS: Johns Hopkins, Harvard)
- **Brain Damage**: strokes, seizures, nerve damage, dysfunction, etc. (LINKS: Reuters, BBC)
- **Diabetes** - LINK: Nature
- **Other Long-Term Issues** - LINKS: HOUSTON CHRONICLE, UC Berkeley, VOX
- **Young COVID-19 Survivors** - LINKS: CNN, The Hill, Science

A. COURSE INFORMATION

<table>
<thead>
<tr>
<th>COURSE number/section:</th>
<th>CHEM 5417.001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class meeting time:</td>
<td>Tuesday &amp; Thursday 2 to 3:15</td>
</tr>
<tr>
<td>Class location:</td>
<td>101 Center for Science (CS-101)</td>
</tr>
<tr>
<td>Course website:</td>
<td>TBD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LAB number/section:</th>
<th>CHEM 5417.101</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab meeting time:</td>
<td>Tuesday 3:30 to 6:20</td>
</tr>
<tr>
<td>Lab Location:</td>
<td>221 Center for Science (CS-221)</td>
</tr>
</tbody>
</table>

B. INSTRUCTOR INFORMATION

- **Instructor**: Dr. Jeremy L. Conkle
- **Office location**: 103 Harte Research Institute
- **Office hours**: T-TH 12 – 2 pm & TH 3:30-4:30
- **Telephone**: 361.825.2862
- **e-mail**: jeremy.conkle@tamucc.edu
- **Appointments**: Arrange via brief email, call or Schoology

C. COURSE DESCRIPTION

*Catalog Course Description*

A study of the impact of chemistry on the environment, including topics of air pollution, water pollution, and beneficial chemical modifications of the environment. Laboratory devoted to field techniques of sampling, sample preservation, and analytical techniques applied to the environment.

*Extended Course Description*
This course will evaluate our environment from a chemistry perspective in relation to the 5 spheres: hydrosphere, atmosphere, geosphere, biosphere and anthrosphere. Topics will explore the chemistry of the natural environment and the modifications to that environment brought about by human activities. This will include readings in recent peer-reviewed literature on environmental issues. A laboratory is also included with this course.

D. PREREQUISITES AND COREQUISITES

Prerequisites: General Chemistry: CHEM 1411, 1412; Corequisites: SMTE 0093

E. LEARNING MANAGEMENT SYSTEM

Schoology: https://www.schoology.com
Course Access Code: D5H2-5R6D-7X3RK
Schoology is a learning management system (LMS) that is similar to Blackboard, but simplified and with a more modern user interface, making it easier to use. All course materials, including the syllabus, lectures, videos, assignments and grades are accessible through Schoology. Homework 1 is an online assignment that must be completed and submitted within Schoology.

F. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Required Textbook

Other Reference
Hanrahan. Key Concepts in Environmental Chemistry. 2012. Elsevier [Digital copy can be found on Schoology]

G. 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 Environmental Chemistry and understand its role in their daily lives. They will specifically be able to:

1. Identify the 5 environmental spheres and explain their interconnectedness
2. Explain the role humans play in shaping our environment and cite numerous examples.
3. Discuss the fundamentals of chemistry in the hydrosphere and how humans impact these processes but also use them to their benefit.
4. Synthesize the concept of the geosphere with the ways in which humans utilize, shape and contaminate it.
5. Integrate knowledge of atmospheric processes with the actions of humans to discuss our influence on weather, climate and biota.
6. Critique published manuscripts and translate their results into text easily understood by the general public.
7. Conduct a comprehensive experiment that includes project design, method development, sample/data collection, sample processing, data analysis, report writing and orally presenting results.

H. INSTRUCTIONAL METHODS AND ACTIVITIES

Due to the ongoing COVID-19 pandemic this class will use a mixture of instructional methods that include videos of recorded lectures and/or in-person lectures (See text on first page of this syllabus). The methods used will vary depending on infection rates in our community. You will receive regular notifications via email regarding upcoming classes and the instructional methods for that material.

The lecture portion of this course will consist of a lecture, where the professor will present information through various media. Students, individually or as a group, will participate in lectures by answering questions verbally/on a tablet/on the whiteboard, discussing various topics with classmates and taking online quizzes/surveys using their smartphone/tablet/laptop in an effort to synthesize course materials in a way that leads to a deeper understanding of environmental chemistry. Some portions of the class will be taught with a “flipped” model, where students must review materials (videos/quizzes/readings) from the book or online prior to class so that they are prepared for hands-on learning exercises during the corresponding lecture period. Graded assignments during the course include 3 peer reviewed article reviews/discussions and one press release. There will also be several problem sets that are not a part of your grade, but they are critical to learning environmental chemistry subject matter. Grading of some assignments will be partially performed by your classmates and all assignments will be discussed in class. Requirements for the lab portion of the class will be discussed in greater detail during the first lab period.

I. MAJOR COURSE REQUIREMENTS AND GRADING

Grading for this course is based on the 10-point scale. The professor reserves the right to adjust this grading scale, however it would only shift in favor of the students. Your total grade in this class consists of the classroom (75%) and lab grades (25%).
Course Grades. The classroom portion will have 2 semester exams and a final that account for 80% of your classroom grade. Journal article reviews/discussions (3) accounting for 15% and a press release the remaining 5%. Graduate students will have additional questions on exams and assignments that require a deeper knowledge of the subject matter compared to undergraduates.

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of CLASS GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Article Reviews (x3), 5% each</td>
<td>15</td>
</tr>
<tr>
<td>Press Release</td>
<td>5</td>
</tr>
<tr>
<td>Exams 25% (x2), 30% (Final)</td>
<td>80</td>
</tr>
</tbody>
</table>

Lab Grades. Grades for the lab portion of the course are explained in the table below. Peer review of each group takes place at the end of the semester, after final reports are submitted and presentations given. This feedback determines the grade you receive from your peers, but it also influences the score allocated by Dr. Conkle. Therefore, actual grades for the lab portion of the class cannot be provided until the end of the semester.

<table>
<thead>
<tr>
<th>RESEARCH PROJECT</th>
<th>% of LAB GRADE</th>
<th>CATEGORY GRADING BREAKDOWN (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development &amp; Implementation</td>
<td>20</td>
<td>Dr. Conkle 80</td>
</tr>
</tbody>
</table>
J. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>DATE (DAY)</th>
<th>TOPIC</th>
<th>CH. #</th>
<th>ASSIGNMENTS DUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/20 (TH)</td>
<td>Syllabus, Intro, Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>08/25 (T)*</td>
<td>Env. Chem &amp; the 5 Spheres</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>08/27 (TH)</td>
<td>Hydrosphere &amp; Water Chemistry</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>09/01 (T)</td>
<td>Hydrosphere &amp; Water Chemistry</td>
<td>2</td>
<td>Gen. Env. Chem.</td>
</tr>
<tr>
<td>09/03 (TH)</td>
<td>Ox-Redox in Aq. Chem.</td>
<td>3</td>
<td>Redox Video - Schoology</td>
</tr>
<tr>
<td>09/08 (T)</td>
<td>Ox-Redox in Aq. Chem.</td>
<td>3</td>
<td>Redox</td>
</tr>
<tr>
<td>09/10 (TH)</td>
<td>Phase Interactions in Aquatic Chem.</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>09/15 (T)</td>
<td>1st Article Discussion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>09/17 (TH)</td>
<td>EXAM 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>09/22 (T)</td>
<td>Press Release Lecture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>09/24 (TH)</td>
<td>Aquatic Microbial Biochemistry</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>09/29 (T)</td>
<td>Aquatic Microbial Biochemistry</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
TEXAS A&M UNIVERSITY – CORPUS CHRISTI

COLLEGE OF SCIENCE AND ENGINEERING

10/01 (TH) Water Pollutants & Pollution 6
10/06 (T) Water Pollutants & Pollution 6 Local Env. Chemistry
10/08 (TH) World Water Crisis & Climate Change 7 Press Release (Lab)
10/13 (T) Geosphere & Geochem. 14 Water Chemistry
10/15 (TH) Geosphere & Geochem. 14
10/20 (T) Soil: Earth’s Lifeline 15 Geosphere & Soil
10/22 (TH) Soil: Earth’s Lifeline 15
10/27 (T) 2nd Article Discussion
10/29 (TH) EXAM 2
11/03 (T) Atmosphere & Atm. Chem. 8
11/05 (TH)** Atmosphere & Atm. Chem. 8
11/10 (T) Particles in the Atmosphere 9
11/12 (TH) Air Pollutants 10 & 11
11/17 (T) The Endangered Global Atm. 13 Atmospheric Chemistry
11/19 (TH) The Endangered Global Atm. 13
11/24 (T) 3rd Article Discussion
11/26 (TH) THANKSGIVING BREAK
12/01 (T) FINAL EXAM 1:45 to 4:15 [CS-101]

*Must register for class by 08/26 (Wednesday)
** 11/05 (Thursday) last day to drop a class
Note: Changes in this schedule may be necessary and will be announced to the class by the Instructor.

LAB SCHEDULE

<table>
<thead>
<tr>
<th>DATE</th>
<th>TOPIC</th>
<th>ASSIGNMENTS DUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>08/20</td>
<td>Environmental Chemistry Basics</td>
<td>Form Groups</td>
</tr>
<tr>
<td></td>
<td>Lab Introduction</td>
<td></td>
</tr>
<tr>
<td>08/27</td>
<td>Research Skills (30 min)</td>
<td>Basic Calculations</td>
</tr>
<tr>
<td></td>
<td>Field Sampling &amp; Lab Capabilities</td>
<td>Research Abstract</td>
</tr>
<tr>
<td>09/03</td>
<td>Discuss Research Outlines</td>
<td>Research Outline</td>
</tr>
</tbody>
</table>

7
K. COURSE POLICIES

COVID-19
Face Coverings— TAMUCC-Face Coverings (cloth face covering, surgical mask, etc.) must be properly worn in all non-private spaces including classrooms, teaching laboratories, common spaces such as lobbies and hallways, public study spaces, libraries, academic resource and support offices, and outdoor spaces where 6 feet of physical distancing is difficult to reliably maintain. Extra masks will be made available if needed.

Attendance/Tardiness
Your short and long-term health as well as that of your family and friends is more important than any arbitrary requirement that you attend a class in person during our ongoing COVID-19 pandemic. Therefore, even if conditions allow, attendance for Environmental Chemistry in-person lectures in the fall of 2020 is optional. All lectures and associated materials will be available online through the course learning management system, Schoology (see section E).

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.

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
There is no tolerance for receiving, sending, talking or texting on a cell phone. If you have an emergency and must use your phone, please leave the classroom.
Laptop/Tablet 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.

Missed Exam
Under many circumstances I am happy to work with you if you have a scheduling conflict with an exam. However you should me as soon as you know you will be missing the exam, preferably weeks to days in advance. If you are absent without notifying me prior to the exam, I am less tolerant and require documentation explaining why you missed the exam. While circumstances may vary, make-up exams are typically administered within 1-2 days of the original exam at 7 am

Participation
Participation will include, but is not limited to engaging in discussion, problem solving, asking questions and most importantly not being disruptive. Participations will be particularly important on the 2 days when we will be reviewing journal articles (see Section I for dates).

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.

L. GRADING RUBRICS
Rubrics are available on Schoology for the Press Release assignment as well as the final lab report. These rubrics may be used to guide your efforts on these assignments.

M. COLLEGE AND UNIVERSITY POLICIES

Academic Integrity (University)
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.

Classroom/Professional Behavior
Texas A&M University-Corpus Christi, as an academic community, requires that each
individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor's ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

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.

Deadline for Dropping a Course with a Grade of W (University)
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 your academic advisor, the Financial Aid Office, and me, before you decide to drop this course. 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. Please consult the Academic Calendar (http://www.tamucc.edu/academics/calendar/) for the last day to drop a course.

Grade Appeals (College of Science and Engineering)
As stated in University Procedure 13.02.99.C0.03, 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 required 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.C0.03, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://academicaffairs.tamucc.edu/rules_procedures/assets/13.02.99.c0.03_student_grade_appeals.pdf. 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 http://disabilityservices.tamucc.edu/.
Disability Services
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 (361) 825-5816 or visit Disability Services 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. http://disabilityservices.tamucc.edu/

Civil Rights Complaints
Texas A&M University-Corpus Christi is committed to fostering a culture of caring and respect that is free from discrimination, relationship violence and sexual misconduct, and ensuring that all affected students have access to services. For information on reporting Civil Rights complaints, options and support resources (including pregnancy support accommodations) or university policies and procedures, please contact the University Title IX Coordinator, Sam Ramirez (Samuel.ramirez@tamucc.edu) or Deputy Title IX Coordinator, Rosie Ruiz (Rosie.Ruiz@tamucc.edu) x5826, or visit website at Title IX/Sexual Assault/Pregnancy.

Limits to Confidentiality. Essays, journals, and other materials submitted for this class are generally considered confidential pursuant to the University’s student record policies. However, students should be aware that University employees, including instructors, are not able to maintain confidentiality when it conflicts with their responsibility to report alleged or suspected civil rights discrimination that is observed by or made known to an employee in the course and scope of their employment. As the instructor, I must report allegations of civil rights discrimination, including sexual assault, relationship violence, stalking, or sexual harassment to the Title IX Coordinator if you share it with me.

These reports will trigger contact with you from the Civil Rights/Title IX Compliance office who will inform you of your options and resources regarding the incident that you have shared. If you would like to talk about these incidents in a confidential setting, you are encouraged to make an appointment with counselors in the University Counseling Center.

Statement of Academic Continuity
In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting
each student.

N. OTHER INFORMATION

Academic Advising

The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

O. 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.