Chemistry of Natural Waters – FAMA 5421
Department of Life Sciences
Spring 2020

A. COURSE INFORMATION
   Course number/section: FAMA 5421.001
   Class meeting time: Wednesday 5:00-7:20 P.M.
   Class location: CS-115
   Lab meeting time: Wednesday 7:30-9:50 P.M.
   Lab location: CS-240
   Course Website: https://bb9.tamucc.edu/ (Blackboard Sign In page)

B. INSTRUCTOR INFORMATION
   Instructor: John Scarpa, Ph.D.
   Office location: Tidal Hall 339
   Office hours: T, R, & F 8:00-10:00 AM and by appointment
   Telephone: (361) 825-2369
   e-mail: John.Scarpa@tamucc.edu
   Appointments: Made at least 24 hrs in advance in class, by phone or e-mail

C. COURSE DESCRIPTION
   Catalog Course Description
   The examination of water as an environmental medium and how it may be monitored and managed for maximizing the growth and survival of various aquatic species. Offered spring semester of even-numbered years.

   Extended Course Description
   This course identifies important chemical concepts as they apply to the aquatic environment, emphasizing their use in management of aquatic culture systems. Lectures will focus on physical and chemical properties of water, and cycles of major nutrients such as C, N, P, and S. Other topics covered will include management of water quality in various culture systems. Knowledge gained in formal lectures will be tested by interpretation of term field trials.

D. PREREQUISITES AND COREQUISITES
   Prerequisites
   CHEM 1411 – General Chemistry I or equivalent

   Corequisites
   SMTE 0093 – Chemistry Laboratory Safety Seminar

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES
   Required Textbook(s) – None.
Optional Textbook(s) or Other References
The following books are suggested for supplemental reading and can be found at the library:


Supplies - Should possess lab coat and protective eye-wear for working with chemicals and other potentially hazardous substances (e.g., systems) during labs.

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.

By the end of this course, students should be able to:
1. Describe how various chemicals affect aquatic life and how these chemicals move and “cycle” through the environment.
2. Evaluate change in the chemical environment of specific study sites.

G. INSTRUCTIONAL METHODS AND ACTIVITIES
Class lectures will be delivered through PowerPoint presentations. Presentations will contain embedded videos and pictures (where appropriate) to enhance learning opportunities. Students are expected to participate in class and laboratory discussions.
H. MAJOR COURSE REQUIREMENTS AND GRADING

The learning outcomes stated earlier will be assessed through a variety of methods as noted in the following table.

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture Exam1 (unit)</td>
<td>23</td>
</tr>
<tr>
<td>Lecture Exam 2 (unit)</td>
<td>23</td>
</tr>
<tr>
<td>Project paper</td>
<td>22.5</td>
</tr>
<tr>
<td>Project presentation</td>
<td>7.5</td>
</tr>
<tr>
<td>Final Exam (comprehensive)*</td>
<td>24</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

*NOTE: Entry to the classroom will be closed on the day of final exam soon as the first student to complete an exam has left the room. Students absent or arriving after room closure will receive a zero for the exam.

**Grading:** There will be a total of three (3) written exams. Exams may be composed of any, or all, of the following: multiple choice, matching, fill in the blank, problem solving and short essay. The final exam is a comprehensive exam. All exams count toward your class grade. No exam grade will be dropped. No make-up exams will be given. If an exam is missed with proper prior notification, the test may be taken as soon as possible after the exam date, but no later than the following class day. If the exam is not taken a grade of zero (0) will be entered. No extra credit assignments will be given. There will be a class project that occurs outside of the normal classroom meeting time lab, which will be graded through participation and a project paper and class presentation due at the end of the semester (style will be discussed in class).

Your final grade is based on the accumulation of points according to the proportions listed in the table above. The lab segment of the course generates 30 points from the project paper (22.5) and presentation (7.5). The project report will follow the format: title page, introduction (background and relevance), methods and materials, results, discussion. The text of the project paper should be double space. Use of tables and graphs in the paper is greatly encouraged. The presentation should be done in PowerPoint and will be an overview of your project paper. The presentation should be ~20 minutes in length followed by ~10 minutes for questions from the class/instructor.

The grading scale is: A=89-100%, B=79-88%, C=69-78%, D=59-68%, and F=0-58%. All grades will be rounded to the nearest whole number, therefore, a grade of 88.50% would be rounded to 89% (A) and a grade of 88.49% would be an 88% (B). Last day to drop class is 10 April or to withdraw from the university is 5 May. This must be done by the student.
## I. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>CLASS DATE</th>
<th>TOPIC</th>
<th>READINGS / ASSIGNMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 22</td>
<td>Lecture: Syllabus, overview of physical properties of water Lab: Safety overview, discussion of project, potential topics</td>
<td><a href="https://srac.tamu.edu/">https://srac.tamu.edu/</a></td>
</tr>
<tr>
<td>Jan. 29</td>
<td>Lecture: Overview of chemical properties of water Lab: Training on equipment to be used for the term project</td>
<td></td>
</tr>
<tr>
<td>Feb. 5</td>
<td>Lecture: Nutrient cycles (carbon, nitrogen, phosphorus and sulfur) Lab: Set-up of projects in the field</td>
<td></td>
</tr>
<tr>
<td>Feb. 12</td>
<td>Lecture: Nitrogenous compounds (measurement and control in aquatic systems) Lab: Data assimilation (Aquaculture America 2020)</td>
<td>SRAC 0462, 0463, 4603</td>
</tr>
<tr>
<td>Feb. 19</td>
<td>First Exam (Covers all material up to this point)</td>
<td></td>
</tr>
<tr>
<td>Feb. 26</td>
<td>Lecture: Dissolved oxygen (measurement/control/affects on aquatic life) Lab: Data assimilation</td>
<td>SRAC 0464, 0468, 4601</td>
</tr>
<tr>
<td>Mar. 4</td>
<td>Lecture: Heavy metals/toxic compounds (bioaccumulation) Lab: Data assimilation</td>
<td>SRAC 4600, 4605</td>
</tr>
<tr>
<td>Mar. 11</td>
<td>Spring Break (No Class / No Lab)</td>
<td></td>
</tr>
<tr>
<td>Mar. 18</td>
<td>Lecture: Primary productivity in aquaculture ponds and lakes Lab: Data assimilation</td>
<td>SRAC 0466, 4602</td>
</tr>
<tr>
<td>Mar. 25</td>
<td>Lecture: Pond fertilization Lab: Data assimilation</td>
<td>SRAC 0469</td>
</tr>
<tr>
<td>April 1</td>
<td>Second Exam (Covers all material covered since exam 1) (National Shellfisheries Association)</td>
<td></td>
</tr>
<tr>
<td>Apr. 8</td>
<td>Lecture: Pond sediments Lab: Data assimilation</td>
<td>SRAC 0460, 4604</td>
</tr>
<tr>
<td>Apr. 15</td>
<td>Lecture: C:N ratio/development of bioflocs Lab: Data assimilation</td>
<td>SRAC 0467, 4503</td>
</tr>
<tr>
<td>Apr. 22</td>
<td>Lecture: Pond water quality management Lab: Data assimilation</td>
<td>SRAC 4606</td>
</tr>
<tr>
<td>Apr. 29</td>
<td>Class makeup</td>
<td></td>
</tr>
<tr>
<td>May 6</td>
<td>Lecture: Project presentations Lab: Project presentations</td>
<td></td>
</tr>
<tr>
<td>May 13</td>
<td>Final Exam, comprehensive (4:30-7:00 PM, Note earlier start time)</td>
<td></td>
</tr>
</tbody>
</table>

**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**
Each student’s individual career experiences provide valuable perspective to their peers. Therefore, it is critical that you attend class regularly to be a partner in this enhanced learning environment. At each class meeting, attendance will be noted. It is each student’s responsibility to contact the instructor directly (phone or e-mail), in advance, if class will be missed. The instructor will not accept late work without valid reasons.

Students with a university approved scheduled absence (athletics, military duty, etc.) must contact the instructor well in advance (>72 hrs) of a scheduled absence. Exams may be taken early in those specific cases. Students who do not arrange to take exams ahead of time will not be eligible for this special consideration. A written excuse from the university department involved is required.

Students are encouraged to contact the instructor anytime they are not achieving their intended level of success, prior to taking any other action. Students who need to withdraw must complete an official form and submit it consistent with college policy no later than the official published date. “Incomplete” grades are awarded only when an emergency prevents a student from completing a minor portion of the course assignments. Active participation is a part of your grade. It includes (1) asking questions; (2) answering questions with supportive evidence; (3) responding to other student’s comments, etc. Students are expected to be on time for class, to address others with respect, and to project an attentive and concerned demeanor.

**Late Work and Make-up Exams**
All exams count toward your class grade. No exam grade will be dropped. No make-up exams will be given. If an exam is missed with proper prior notification, the test may be taken as soon as possible after the exam date, but no later than the following class day. If the exam is not taken a grade of zero (0) will be entered.

**Extra Credit**
No extra credit assignments will be given.

**Cell Phone Use**
The use of cell phones and other personal electronic devices (PEDs) are prohibited during class. All cell phones must be turned off during the class period. If you are emergency personnel (i.e., EMT, fire, or police) you may set your device to vibrate. Any student who uses a cell phone to make or answer a call, send and read text messages or e-mails (other than TAMUCC emergency messages), or any other use of a personal electronic device during class may have that device confiscated and be asked to leave class, which will be considered an absence for that class. No student has the right to disturb the teaching and learning process. Voice recording of lectures is allowed, but no video/photography are allowed during class, except with instructor permission.
Laptop Use
Laptop computers and tablets may be used in the classroom for taking notes, as long as they are not a nuisance to other students. However, laptops shall not be used for items as noted above for cell phones or PEDs.

Food in Class
There is NO food allowed in the classroom or lab and there is NO eating or drinking in the classroom and lab.

Missed Exam
If an exam is missed with proper prior notification, the test may be taken as soon as possible after the exam date, but no later than the following class day. If the exam is not taken by then a grade of zero (0) will be entered. If the final is missed without proper prior notification and arrangement, a grade of zero will be entered for the final exam.

Participation
Two or more absences, with the exception of death in the nuclear family, sick child/spouse, or personal sickness may result in a failing grade at the discretion of the instructor. You must contact the instructor by phone message or e-mail before class to let the instructor know of your absence.

Other
Plagiarism and Cheating will not be tolerated.

Plagiarism: The Merriam-Webster Dictionary defines plagiarism as "To pass off as one’s own words or ideas of another."
Plagiarism involves:

- Submitting another person's work as one's own
- Submitting work from any source that is not properly acknowledged by footnote, bibliography, or reference within a paper
- Submitting work pieced together from phrases and/or sentences from various sources without acknowledgement
- Submitting work with another person's phrase(s) rearranged without acknowledgement
- Submitting work that uses any phrase, sentence, or stylistic mannerism without acknowledgement
- Omitting quotation marks from any directly quoted material
- Failure to use three dots (...) to indicate omission of one or more words
- Any other actions deemed to be plagiarism by the faculty

Cheating is defined as:

- Copying to any extent the work of another student
- Intentionally assisting another student during an examination
- Having access to material related to an examination during an examination
- Possessing or having access to unauthorized copies of an examination
- Departing from any stated examination conditions
*Cheating or other academic dishonesty for exams and assignments will not be tolerated and will result in a Failing (F) grade for the class and suspension.
K. 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. 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**
  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)**
  The grade of W will be assigned to any student officially dropping a course. Please consult with the instructor before you decide to drop to be sure it is the best thing to do. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Should dropping the course be the best course of action, visit the Office of the University Registrar for the Course Drop Form that must submitted. No student is eligible to receive a W without completing the official drop process by this deadline. Please consult the Academic Calendar ([http://www.tamucc.edu/academics/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.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
  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 or to http://disabilityservices.tamucc.edu/.

- 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.

L. 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.

- **Methods of Achieving Success**
  Achieving success in this course will require a time commitment outside of class that averages three to six hours per week for reading and studying. Students benefit from actively participating in care of the aquaponic system, classroom discussion, and lab demonstrations and activities.

**GENERAL DISCLAIMER**

The instructor reserves the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. The instructor will announce such changes in a timely manner during regularly scheduled lecture or lab periods.