**CEGR 6173 Aquatic Chemistry**

**Lectures:** Tuesdays and Thursdays 11:00 a.m. - 12:15 p.m. EPIC 3226

**Instructor:** Dr. Olya Keen

Office hours: Mondays and Tuesdays 2:00 p.m. - 4:00 p.m. or by appointment EPIC 3171

Contact: [okeen@uncc.edu](mailto:okeen@uncc.edu); 704-687-5048

**Textbook:** Aquatic Chemistry, 3rd ed., Werner Stumm and James J. Morgan, Wiley, ISBN-13: 978-0-471-51185-4

**Topics to be covered:**

1. Introduction to aquatic chemistry
2. Acid-base chemistry (closed and open systems)
3. Complexation/coordinate chemistry
4. Precipitation-dissolution
5. Oxidation-reduction
6. Dissolved organic matter in natural aquatic systems
7. Hydrolysis
8. Direct and indirect photolysis

**Grade distribution:**

Homework 25%

Quizzes 10%

Class participation 5%

Exams (3 total) 60% (20% each)

**Grading:**

The overall grade will not be curved, although grades for individual assignments might.

A: 90.0-100%

B: 80.0-89.9%

C: 70.0-79.9%

F: < 70.0%

**Attendance:**

Attendance is not mandatory in this class and will not be checked. However, it is in your best interests to attend. I use blackboard for teaching, so you would have to count on your friends to take good notes or learn the material on your own, if you choose to skip classes. In addition, quizzes will not be announced in advance.

**Homework:**

Homework will be due a week from the distribution date at the beginning of the class. Late homework is penalized 20% of the grade and will only be accepted with a documentable reason and only until the graded homework is returned. Copying someone else’s work will be considered cheating and will result in a zero grade for the assignment.

**Quizzes:**

Quizzes will not be announced in advance. Their goal is to check your understanding of the most basic concepts taught in the previous lecture or two. So it is recommended that you review the material from the previous lecture before each class.

**Exams:**

Three exams will be administered over the semester. The first will cover topics 1 and 2, the second will cover topics 3 and 4, and the third will cover topics 5-7 and include questions from previous topics as well. The first two exams will be during the normal class time. The third exam will be during the finals time and will therefore be longer and more comprehensive than the first two exams. Final exam time for this class is December 9th, Tuesday, 11:00-1:30. All exams are in-class. They will mainly consist of quantitative problems but may also include multiple choice, short answer and graphical data interpretation. A review session will precede each exam. The exams may be open book or I will provide all the necessary information.

**Student Conduct & Academic Integrity Policy:**

Standards of academic integrity will be enforced in this course. Copying another student’s work, solutions manual or information from references, internet sources or other information is strictly forbidden and will constitute a violation of the UNC Charlotte Code of Student Academic Integrity.

Students are expected to report cases of academic dishonesty they become aware of to the instructor who is responsible for dealing with them. Students have the responsibility to know and observe the requirements of the UNCC Code of Student Academic Integrity which is available from the Dean of Students Office or online at: <http://legal.uncc.edu/policies/up-407>. This code forbids cheating, fabrication or falsification of information, multiple submission of academic work, plagiarism, abuse of academic materials, and complicity in academic dishonestly. ***All acts of academic dishonesty will be reported to the Dean of Students Office and the settlement procedure outlined in the Code will be initiated. Depending on the nature of the offence, first offense will result at a minimum in grade zero on the assignment up to grade F for the class.*** Whatever the penalty, a form that has been signed by both the student and the instructor recording the settlement will be kept for eight years in the Office of the Dean of Students.

**Tentative schedule:**

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| Week 1 | August 19  August 21 | Introduction to the class, chem review  Closed system acid-base chem |  |
| Week 2 | August 26  August 28 | Closed system acid-base chem  Open system acid-base chem | HW 1 assigned |
| Week 3 | September 2  September 4 | Open system acid-base chem  Buffering capacity | HW 1 due, HW 2 assigned |
| Week 4 | September 9  September 11 | Problem solving practice  Redox systems | HW 2 due, HW 3 assigned |
| Week 5 | September 16  September 18 | Redox systems  Problem solving practice | HW 3 due, HW 4 assigned |
| Week 6 | September 23  September 25 | Exam 1 review  Exam 1 | HW 4 due |
| Week 7 | September 30  October 2 | Precipitation-dissolution  Precipitation-dissolution | HW 5 assigned |
| Week 8 | October 7  October 9 | Fall break, no class  Problem solving practice | HW 5 due |
| Week 9 | October 14  October 16 | Complexation  Complexation | HW 6 assigned |
| Week 10 | October 21  October 23 | Problem solving practice  Exam 2 review | HW 6 due |
| Week 11 | October 28  October 30 | Exam 2 (proctored)  Dissolved organic matter |  |
| Week 12 | November 4  November 6 | Dissolved organic matter  Hydrolysis |  |
| Week 13 | November 11  November 13 | Hydrolysis  Photolysis | HW 7 assigned |
| Week 14 | November 18  November 20 | Photolysis  Photolysis | HW 7 due, HW 8 assigned |
| Week 15 | November 25  November 27 | Problem solving practice  Thanksgiving, no class | HW 8 due |
| Week 16 | December 2 | Final exam review |  |