**CEGR 6243 Physical Processes in Environmental Engineering**

**Lectures:** Mondays and Wednesdays 12:30 – 1:45 p.m. EPIC 3226

**Instructor:** Dr. Olya Keen

Office hours: Mondays and Wednesdays 10:00 a.m.- 12:00 p.m.., EPIC 3171

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

**Textbook:** Add the Water Treatment book here (and the two links)

Chemical Fate and Transport in the Environment, 3rd ed., Hemond and Fechner, ISBN 978-0-12-398256-8

**What you will learn:**

This class focuses on physical transport of environmental contaminants (as opposed to chemical and biological degradation). We will discuss the basics of mass transport in water and air by processes such as advection, diffusion (molecular and turbulent), dispersion, volatilization, adsorption, and ion exchange. The processes will be discussed from the perspective of contaminant fate and transport in the environment, and from the perspective of engineering applications where principles of physical mass transport are used for remediation of contaminated environments and for design of treatment processes for water and air.

**Grade distribution:**

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| Homework | 15% |
| Quizzes | 10% |
| Project report | 20% |
| Project presentation | 10% |
| Exams (3) | 45% (15% 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%

U: <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 and give material beyond what is discussed in the textbook (and which I expect you to know), 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.

**Homework:**

Homework will be due a week from the distribution date at the beginning of the class. Late homework is only 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.

Your homework must be in neat, legible handwriting, with the problems in the same order as they are listed on the assignment, and stapled. I reserve the right to take off points from homework submissions that do not adhere to these standards. All calculations must be shown for partial credit.

**Quizzes:**

Their goal is to check your understanding of the most basic concepts taught in the previous lecture or two. It is recommended that you review the material from the previous lecture before each class. My office hours are set right before the class so you could ask questions if you do not understand something in the material.

**Exam:**

This class will have 3 exams. All exams are in class and are closed books and notes. One page sheet of notes will be permitted for each of the first 2 exams and 3 pages will be permitted for the final. The third and final exam is on May 6th, Wednesday, 11:00-1:30. The final exam is cumulative and will consist of approximately 50% new material and 50% material from prior to exam 2. Exams may consist of multiple choice, short answer and quantitative problems. A review session will precede each exam.

**Project:**

Each student will have an individual topic to research. The topics will need to be of relevance to the class and will need to be approved by me before exam 2. The topics may involve major environmental contamination events from the point of view of contaminant fate and transport, or it may focus on the engineering aspects of physical processes in treatment and remediation. The research project will result in a report (7-10 pages, single spaced) and a 15-20 minute presentation followed by a peer question and answer session. Questions to the peers will be expected and will be part of the presentation grade.

**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.