CIEG 430 / 630 Water Quality Modeling (3 credits)

Spring 2008

<table>
<thead>
<tr>
<th>Class</th>
<th>Thursday 4-7 PM</th>
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<td>Location</td>
<td>Pearson Hall (Studio B)</td>
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</table>
| Instructor  | Dr. Dominic M. Di Toro  
dditoro@udel.edu |
| Office Hours| Thursday 1-3 PM or by appointment  
DuPont 356 |
| Teaching Assistant | Marinna Lepp  
mlepp@UDel.Edu  
DuPont 356 |

**Course Requirements**

Grading will be based on two take home open book exams (25 pts each), each covering one-half of the course material and homework (50 pts). Homework will be assigned on a weekly basis and are due one week later. They will be graded, and must be handed in on time at the beginning of class. Failure to do so will result in a deduction for each late homework. Assignments must be done neatly using Excel as explained in class or they will not be accepted. Grade Scale: A (100-90); A- (89-85); B+ (84-80); B (79-75); B- (74-70); C+ (69-65); C (64-60); F (<59)

**Course Lectures**

Class will meet from 4 PM to 7 PM. Two lectures will be given each day

**Course Schedule**

The classes will follow the textbook, with the following sections from the textbook being covered.

-1-
LECTURE    Date    SURFACE WATER QUALITY MODELING

PART I: COMPLETELY-MIXED SYSTEMS.

1    14-Feb-08    1 Introduction.
2    21-Feb-08    2 Reaction Kinetics.
3    28-Feb-08    4 Particular Solutions.
   28-Feb-08    5 Feedforward Systems of Reactors.

PART VII: TOXIC SUBSTANCES.

4    6-Mar-08    40 Introduction to Toxic Substance Modeling.
   6-Mar-08    41 Mass-transfer Mechanisms: Sorption and Volatilization.
5    13-Mar-08    Toxic Substances in Completely Mixed Volume
6    20-Mar-08    Toxic Substances in Completely Mixed Volume - Sediments

PART II: INCOMPLETELY-MIXED SYSTEMS.

7    27-Mar-08    8 Diffusion.

10-Apr-08    MID-TERM EXAM

8    10-Apr-08    15. Estuaries
   10-Apr-08    10. Time Variable Solutions
9    17-Apr-08    11. Numerical Methods
   17-Apr-08    12. Numerical Methods

PART IV: DISSOLVED OXYGEN AND BACTERIA

10    24-Apr-08    19. BOD and Oxygen Saturation.
   24-Apr-08    20. Gas Transfer and Oxygen Reaeration.
11    1-May-08    21. Streeter-Phelps: Point Sources.
   1-May-08    22. Streeter-Phelps: Distributed Sources.
   1-May-08    23. Nitrogen.
12    8-May-08    24. Photosynthesis/Respiration.
   8-May-08    25. Sediment Oxygen Demand.

15-May-08    FINAL EXAM

29-May-08    Examination deadline