

**DEPARTMENT OF CHEMISTRY  
TRENT UNIVERSITY**

**CHEM/ERSC 2620H: Aquatic Environmental Chemistry  
WINTER  
Peterborough**

|                         |                      |                   |
|-------------------------|----------------------|-------------------|
| <b>Instructor:</b>      | <b>Email:</b>        |                   |
| <b>Office Location:</b> | <b>Office Hours:</b> | <b>Telephone:</b> |

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|-----------------------------------|-----------------------------------|
| <b>Secretary:</b> Laurie Laplante | <b>Email:</b> llaplante@trentu.ca |
| <b>Office Location:</b> CSB D105  | <b>Telephone:</b> 7505            |

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|--------------------------------|-------------------|
| <b>Teaching Assistant:</b> TBA | <b>Email:</b> TBA |
| <b>Teaching Assistant:</b>     | <b>Email:</b>     |

**Course Description:**

The course goal is to expose the main chemical principles that govern environmental processes in rivers, lakes, estuaries and oceans. It includes the chemical composition of aquatic systems and the behavior of aqueous pollutants such as metals and pesticides. Laboratory work will focus on the quantitative measurements of some of the critical parameters affecting water quality.

**Course Pre-requisites:** CHEM1000H and CHEM 1010Y. Recommended CHEM/ERSC 2610H  
Excludes CHEM/ERSC 2600Y (241)

**Course Fees:** n.a.

**Course Format:**

| Type       | Day                   | Time                         | Location             |
|------------|-----------------------|------------------------------|----------------------|
| Lecture    | Tuesday               | 10:00-11:50 am               | SC103                |
| Laboratory | Wednesday<br>Thursday | 1:00-3:50 pm<br>9:00-11:50am | CSB D113<br>CSB D113 |

### **Course Evaluation:**

Normally at least 25% of the grade in a half-year course offered in the regular academic session must be determined and made available by the deadline for withdrawal without academic penalty. For full-year courses at least 25% of the grade must normally be determined and made available before the mid-year review in January.

With the exception of laboratory examinations in the sciences, no in-class tests or final examinations which are worth more than 10% of the final grade may be held during the last two weeks of classes in the Fall or Winter term. In the Summer session the period during which in-class tests and examinations may not be held is the last two weeks for 12-week courses and the last week for 6 week courses.

| <b>Type of Assignment</b> (e.g, test, essay, lab report, etc.) | <b>Weighting</b> | <b>Due Date</b>                      |
|--|------------------|--------------------------------------|
| Assignment #1 (problems)                                       | 5                | Week 03                              |
| Assignment #2 (problems)                                       | 5                | Week 05                              |
| Assignment #3 (problems)                                       | 5                | Week 09                              |
| Assignment #4 (problems)                                       | 5                | Week 11                              |
| Laboratory Report (1 for each lab)                             | 40               | One week after experiment completion |
| Mid Term   | 10               | Week 06                              |
| Final  | 30               | Exam session                         |

## **University Policies**

### **Academic Integrity:**

Academic dishonesty, which includes plagiarism and cheating, is an extremely serious academic offence and carries penalties varying from a 0 grade on an assignment to expulsion from the University. Definitions, penalties, and procedures for dealing with plagiarism and cheating are set out in Trent University's *Academic Integrity Policy*. You have a responsibility to educate yourself – unfamiliarity with the policy is not an excuse. You are strongly encouraged to visit Trent's Academic Integrity website to learn more: [www.trentu.ca/academicintegrity](http://www.trentu.ca/academicintegrity).

### **Access to Instruction:**

It is Trent University's intent to create an inclusive learning environment. If a student has a disability and/or health consideration and feels that he/she may need accommodations to succeed in this course, the student should contact the Disability Services Office (Blackburn Hall, Suite 132, 748-1281, [disabilityservices@trentu.ca](mailto:disabilityservices@trentu.ca)) as soon as possible. Complete text can be found under Access to Instruction in the Academic Calendar.

**Required Texts:**

vanLoon G.W. and Duffy, S.J. (2005) Environmental Chemistry- A Global Perspective. Oxford Press

**Recommended Texts:**

Baird, C. and Cann, M. (2008) Environmental Chemistry. W. H. Freeman and Company

**MyLearning:**

All communication regarding the course will be through announcements in the lectures or through Trent's MyLearning. The instructor will post lecture notes on MyLearning after each lecture.

**Schedule of Topics/Readings:**

| Week # | Topic(s)  | Assignments   |
|--------|---|---------------|
| 1      | Hydrosphere. Distribution of chemical species (Chap09)                                |               |
| 2      | Complexation (Chap10)   | Assignment#01 |
| 3      | Redox Processes (Chap10)  |               |
| 4      | Acid Base in natural waters (Chap11)  | Assignment#02 |
| 5      | Dissolved gases in natural water. Henry's law (Chap11)                                |               |
| 6      | <b>Mid Term</b>   |               |
| 7      | Metals in the hydrosphere (Chap 13)   |               |
| 8      | Organic matter in water (Chap 12)   | Assignment#03 |
| 9      | Surface Processes (Chap14)  |               |
| 10     | Microbiological processes (Chap 15)   | Assignment#04 |
| 11     | Drinking water. Water treatment (Chap16)<br>Visit of the Peterborough Treatment Plant |               |

**Department and/or Course Policies:**

There will be **four** assignments and **eight** lab reports weighted equally. The assignments and lab reports will be due in one week from the date of issue. Penalty for late assignments and lab reports is 20% per day and per weekend/holidays.

**Chemistry Department Policy on Completion of Course Work:**

The Department of Chemistry considers that completion of all components of a course is necessary for a student to be given credit in that course. Therefore, it is the policy of the Department that a student must complete, and hand in if applicable, all material associated with each component of the course. This applies equally to work that is handed in or completed too late to earn any marks in the course, in conjunction with the policy of the course instructor on lateness.

Students who fail to meet this requirement for reasons that would make it reasonable to assign an "incomplete" mark for the course should consult the instructor well before on which final marks are due for the course in question. In the absence of an incomplete standing being assigned, the student will receive a mark of "0" and an "F" grade in the course.