Instructor: Prof. Anh Pham
ME2368, (613) 520-2600 ext. 2984
Email: a.pham@carleton.ca
Office hours: TBD
Meeting time: 8:35-11:25 Thursdays
Meeting place: ME4499
Tutorial (by TAs): TB 342 2:35 – 3:55 Mondays

Teaching Assistants:

TBD

Grading: Assignments (6-8): 15%
Midterm: 25%
Final exam: 60%

Course objective: To introduce the theory and practice associated with municipal infrastructure related to water treatment and distribution, wastewater collection and treatment, water reuse, and solid waste management.


Lecture material: Lecture slides and important course information will be posted on CULearn. It is important that you receive and read e-mail messages concerning the course. Also, to lessen the environmental footprint of the course, some supplementary course materials will only be posted on CULearn and not distributed in print.

Assignments: Approximately 8 assignments will be given throughout the course. The assignments will be a combination of reading materials, calculation problems, review articles etc.

Late policy: The assignments should be turned in by the due date. Please drop your work in the dropbox located on the 3rd floor in the hallway between blocks 3 and 4 of ME. If you cannot meet a deadline, please make arrangements with the professor before the assignment deadline; otherwise a mark of zero will be assigned. 50% of the grade will be deducted from the homework that was turned in late unless you can provide appropriate documentation.
References:


Academic Accommodation: Students may need special arrangements to meet academic obligations during the term. For an accommodation request, the processes are described below.

Pregnancy obligation: Write to me with any requests for academic accommodations during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: http://carleton.ca/equity/

Religious obligation: Write to me with any requests for academic accommodations during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: http://carleton.ca/equity/

Academic Accommodations for Students with Disabilities: The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (if applicable) at http://carleton.ca/pmc/students/dates-and-deadlines/

You can visit the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at http://www2.carleton.ca/equity/

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**Approximate weekly outline**

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<th>Week</th>
<th>Date</th>
<th>Topics</th>
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<tbody>
<tr>
<td>1</td>
<td>Sept. 7</td>
<td>Course overview. Review of some chemistry concepts</td>
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| 2    | Sept. 14 | Physical Processes  
Material balance, Reactor models                                    |
| 3    | Sept. 21 | Drinking water treatment I – Intake, coagulation & flocculation  
Drinking water treatment II – Filtration and Membrane               |
| 4    | Sept. 28 | Drinking water treatment III – Disinfection  
Advanced oxidation + water distribution                                 |
| 5    | Oct. 5  | Pipeline corrosion and prevention  
Drinking water quality: emerging issues                                |
| 6    | Oct. 12 | Wastewater treatment I  
Wastewater treatment II – biological (secondary) treatment             |
| 7    | Oct. 19 | In class midterm                                                       |
|      | Oct. 26 | Fall Break – no class                                                  |
| 8    | Nov. 2  | Environmental Assessment (by Andre Bourque, CH2M)                       |
| 9    | Nov. 9  | Wastewater treatment III – biological (secondary) treatment +  
nitrogen and phosphorus removal                                      |
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<th>Date</th>
<th>Topic</th>
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<tr>
<td>10</td>
<td>Nov. 16</td>
<td>City of Ottawa Combined Sewage Storage Tunnel project (by Pascal Pitre – CH2M Hill)</td>
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<tr>
<td>11</td>
<td>Nov. 23</td>
<td>Wastewater treatment V – natural treatment systems + other issues related to WWT</td>
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<td>Wastewater reuse I</td>
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<tr>
<td>12</td>
<td>Nov. 30</td>
<td>Wastewater reuse II</td>
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<td>Desalination</td>
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<td>13</td>
<td>Dec. 7</td>
<td>Municipal solid waste</td>
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<td>Hazardous waste management and site remediation</td>
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<td>Review</td>
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