



**CAMOSUN COLLEGE**  
**School of Trades and Technology**  
**Department of Civil Engineering Technology**

**CIVE 278**  
**Water and Waste Management**  
**Winter 2019**

**COURSE OUTLINE**

*Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.*

**1 Instructor Information**

Instructor	Perry Peterson	
Office hours	See office door	
Location	TEC 105	
Phone	Cell 250 812 2214	Alternative: Office 250 370 4401
E-mail	<a href="mailto:peterpson@camosun.bc.ca">peterpson@camosun.bc.ca</a>	
Website	<a href="http://civil.camosun.bc.ca/student/">http://civil.camosun.bc.ca/student/</a>	

**2 Prerequisites**

- C in CIVE 271
- C in CHEM 180

**3 Hours and Credits**

**Course Activity**

- Lecture (Direct Instruction)

Hours / Week	Instruction – No of Weeks (Q=11; S=14; “P or S” = 7)
5	14

Credits = 4

**4 Short Description**

Students learn the theory and practice of domestic water supply and distribution as well as the collection, treatment and disposal of wastewater. The impact of waste discharges to the environment and the management of solid waste are presented. Water quality concerns and common pathogens in Canada and other parts of the world are also discussed.

**5 Intended Learning Outcomes**

Upon successful completion of this course a student will be able to:

- Describe environmental issues such as water supply and waste management in a civil engineering context.
- Identify common domestic water supply contaminants, their maximum allowable concentrations (MAC) and their effects on human health.
- Describe the public health and environmental effects of wastewater discharges.

- Describe water and wastewater treatment options for removal of common contaminants and possible reuse of treated wastewater.
- Relate applicable laws and regulations to water supply and effluent discharges.
- Describe options for the treatment, disposal and beneficial reuse of sewage sludge.
- Describe disposal of treated effluent with respect to legal and technical requirements.
- Select components and design small on-site wastewater treatment and disposal.
- Predict flow patterns and hydraulically size components of a water or wastewater treatment plant.
- Describe of common methods of odour control and other operational considerations within wastewater collection and treatment systems.
- Identify components of an engineered landfill
- Discuss waste reduction programs and developments in energy recovery initiatives.

## 6 Course Content and Schedule

Global issues relating to engineering practice, environmental issues, law, and ethics are presented in terms of water and wastewater management practice. The course uses a combination of activities - Lectures, Interactive Activities & Discussions, Case Studies, and Field Trips – to provide a framework for the learner. These will offer opportunities for the learner to consider, discuss and describe the role of the Civil Engineering Technologist as a member of the water and wastewater project team. Engaged classroom participation is key to the successful outcomes of this course.

<i>Week</i>	<i>Topic</i>
1	Course intro, common mineral contaminants; Case studies: Bangladesh, Flint
2	Introduction to waterborne microbiology, common pathogens, groundwater; Case studies: Elmira, Walkerton, North Battleford
3	Introduction to municipal water treatment: disinfection and filtering; Case study: London Cholera Epidemic
4	Particulate removal, metals and hardness removal
5	Introduction to water distribution system design
6	Water rights and water resource planning; Case studies: Aral Sea, Dead Sea and Cochabamba Dams and Reservoirs;
7	<b>Reading Week</b>
8	Review; Midterm Exam
9	Intro to sewage, preliminary and primary treatment; Case study: London Sewer System
10	Secondary treatment, tertiary treatment
11	Sludge processing, sewage testing
12	On-site treatment, odour control, disposal; Case Study: Victoria Sewage Outfall
13	Introduction to solid waste management, engineered sanitary landfill
14	Review
15	Exam Week
Field Trip Thursdays - To Be Announced: <ul style="list-style-type: none"> <li>• CRD Sooke Lake Reservoir</li> <li>• CRD Water Quality Control Lab</li> <li>• CRD Core Area Sewage Treatment</li> <li>• CRD Hartland Landfill Facility</li> </ul>	

## 7 Basis of Student Assessment

<i>Component</i>	<i>Weighting %</i>	<i>Comments</i>
Assignments	30	
Mid-term Exam	35	
Final Exam	35	Final exam will test only on material after the midterm
<b>TOTAL</b>	<b>100</b>	

## 8 Required Materials

- a) Text – reading assigned on course web site

## 9 College Supports, Services and Policies

### Immediate, Urgent, or Emergency Support

If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ <http://camosun.ca/about/mental-health/emergency.html> or <http://camosun.ca/services/sexual-violence/get-support.html#urgent>

### College Services

Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support & education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at <http://camosun.ca/>

### College Policies

Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at <http://camosun.ca/about/policies/>. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence and Misconduct, Student Ancillary Fees, Student Appeals, Student Conduct, and Student Penalties and Fines.

## 10 Grading System

- Standard Grading System (GPA)*  
 *Competency Based Grading System*

See [Camosun Grading Policy E-1.5](#)

## 11 Class Policies

- Late assignments will have 10% deducted. Assignments submitted after graded assignments have been returned are worth 0.
- Field trips will have reports assigned that can ONLY be completed if you attend the field trip.
- Your average grade on the final and the midterm must be over 50% to pass the course