

COURSE SYLLABUS



COURSE TITLE: CIVE 278 - Water and Waste Management

CLASS SECTION: CIVE-278-X01

TERM: Winter 2023

COURSE CREDITS: 3

DELIVERY METHOD(S): Lecture/Lab

Camosun College campuses are located on the traditional territories of the Lək̓ʷəŋən and WSÁNEĆ peoples. We acknowledge their welcome and graciousness to the students who seek knowledge here.

Learn more about Camosun's [Territorial Acknowledgement](#).

For COVID-19 information please visit <https://legacy.camosun.ca/covid19/index.html>.

Camosun College requires mandatory attendance for the first class meeting of each course. If you do not attend, and do not provide your instructor with a reasonable explanation in advance, you will be removed from the course and the space offered to the next waitlisted student.

INSTRUCTOR DETAILS

NAME: Perry Peterson

EMAIL: petersonp@camosun.ca

OFFICE: TEC 105

HOURS: See Schedule on Office Door. Contact instructor directly by phone, txt or email for assistance outside of scheduled time.

As your course instructor, I endeavour to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me. Camosun College is committed to identifying and removing institutional and social barriers that prevent access and impede success.

CALENDAR 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.

PRE-REQUISITE(S):

- C in CHEM 180
- C in CIVE 271

COURSE LEARNING OUTCOMES / OBJECTIVES

Upon successful completion of this course, students 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.

REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

Texts Recommended:

1. Course Presentations and Handouts posted to D2L

Other (recommended):

COURSE SCHEDULE, TOPICS, AND ASSOCIATED PREPARATION / ACTIVITY / EVALUATION

The following schedule and course components are subject to change with reasonable advance notice, as deemed appropriate by the instructor. Please refer to the D2L for updates.

WEEK	ACTIVITY or TOPIC (Lecture/Lesson)	OTHER NOTES (Lab)
Week 1	<p>Course Overview</p> <ul style="list-style-type: none"> • Changing perspective • The ORID analytical model 	Case Study #1 - Minamata
Week 2	<p>Properties of Domestic Drinking Water</p> <ul style="list-style-type: none"> • Introduction to common mineral contaminants • Introduction to waterborne microbiology: Virus vs Bacteria, Common pathogens • Measuring Contaminates: EColi, NTU, Log Removal, mg/L(ppm) • Legislation and Guidelines 	Case Study #2 - Flint
Week 3	<p>Sources of Domestic Water: Properties of Groundwater</p> <p>Introduction to municipal water treatment</p> <ul style="list-style-type: none"> • Components of a conventional water treatment system • Disinfection: Free Chlorine, breakpoint calculation • Filtering incl. membrane filter • Particulate, metals, and hardness removal 	Case Study #3 – London I, Walkerton
Week 4/5	<p>Introduction to water distribution system design</p> <ul style="list-style-type: none"> • Components of a conventional water distribution system • Flow and Pressure: Fire protection • Design Methodology 	Case Study #4 – Bangladesh Water Distribution System Design

WEEK	ACTIVITY or TOPIC (Lecture/Lesson)	OTHER NOTES (Lab)
Week 6	<ul style="list-style-type: none"> Water Resource Planning, Legislation and Water rights Dams and Reservoirs 	Case Study #5 – Aral Sea, Dead Sea and Cochabamba
Week 7	Reading Week	
Week 8	Review, Catch up and Water Exam	Case Study #6 – Colorado River
Week 9	Properties of Sewage <ul style="list-style-type: none"> Harm to environment: Concentrating nutrients, metals, pharmaceuticals Measuring Contaminates: EColi, BOD, NTU Components of a conventional activated sludge treatment system <ul style="list-style-type: none"> Preliminary and primary treatment 	Case Study #7 – London II
Week 10	Components of a conventional activated sludge treatment system continued... <ul style="list-style-type: none"> Clarifier Operation Secondary Treatment Breakpoint analysis	Case Study #8 – Los Angeles
Week 11	Components of a conventional activated sludge treatment system continued... <ul style="list-style-type: none"> Tertiary treatment Odor control Sludge processing and disposal 	Case Study #9 – Final Project: Victoria's Sewage Circus
Week 12	On-Site <ul style="list-style-type: none"> Package plant treatment options Designing a Septic System 	
Week 13	Values and Ethics Sustainable Opportunities Introduction to solid waste management, engineered sanitary landfill	
Week 14	Review and Catch Up	
Exam Week	Sewage Exam	

Field Trips TBA – CRD Sooke Watershed & Japan Gulch Water Treatment Plant Tour, CRD Water Lab Tour, Saanich Peninsula Wastewater Treatment Plant

EVALUATION OF LEARNING

DESCRIPTION	WEIGHTING
Assignments: Case Studies, Design Labs, Video Log	60
Midterm Water Exam	20
Final Sewage (Focus of Exam Final exam cover material after the midterm)	20
	TOTAL
	100%

If you have a concern about a grade you have received for an evaluation, see instructor as soon as possible. Refer to the [Grade Review and Appeals](#) policy for more information.

Students registered with the Centre for Accessible Learning (CAL) who complete quizzes, tests, and exams with academic accommodations have booking procedures and deadlines with CAL where advanced notice is required. Deadlines can be reviewed on the [CAL exams page](http://camosun.ca/services/accessible-learning/exams.html). <http://camosun.ca/services/accessible-learning/exams.html>

COURSE GUIDELINES & EXPECTATIONS

- *Class attendance is expected. You must notify instructor by email prior to missing a class or assignment to arrange alternative delivery.*
- *Unless otherwise noted, all assignments are to be completed individually.*
- *Assignments will be due as indicated in D2L. If submitting an assignment late is unavoidable, student must email the instructor with an explanation prior to the due date. In all cases, assignments submitted after assignments have been graded will not be marked.*
- *You must complete and submit all assignments to be permitted to write the final sewage exam.*
- *Average grade on the final and the midterm must be over 50% to pass the course.*

SCHOOL OR DEPARTMENTAL INFORMATION

See Program Website for up to date information - <https://civil.camosun.bc.ca/Student>

Equity, diversity, and inclusion (EDI) are central to Camosun's culture and values. The Camosun community and the engineering community at large commit to pursuing equity in education regardless of race, heritage, religion, gender or gender identity, and ability. We learn best when we feel safe. Inappropriate, hateful, or demeaning comments or actions will not be tolerated. If your suggestions on how to make your experience here better are encouraged and appreciated.

If you wish to know more about Camosun's EDI policy, please see the EDI page on the college's website: <http://camosun.ca/about/policies/equity-diversity-inclusion.html>

STUDENT RESPONSIBILITY

Enrolment at Camosun assumes that the student will become a responsible member of the College community. As such, each student will display a positive work ethic, assist in the preservation of College property, and assume responsibility for their education by researching academic requirements and policies; demonstrating courtesy and respect toward others; and respecting expectations concerning attendance, assignments, deadlines, and appointments.

SUPPORTS AND SERVICES FOR STUDENTS

Camosun College offers a number of services to help you succeed in and out of the classroom. For a detailed overview of the supports and services visit <http://camosun.ca/students/>.

Support Service	Website
Academic Advising	http://camosun.ca/advising
Accessible Learning	http://camosun.ca/accessible-learning
Counselling	http://camosun.ca/counselling
Career Services	http://camosun.ca/coop

Support Service	Website
Financial Aid and Awards	http://camosun.ca/financialaid
Help Centres (Math/English/Science)	http://camosun.ca/help-centres
Indigenous Student Support	http://camosun.ca/indigenous
International Student Support	http://camosun.ca/international/
Learning Skills	http://camosun.ca/learningskills
Library	http://camosun.ca/services/library/
Office of Student Support	http://camosun.ca/oss
Ombudsperson	http://camosun.ca/ombuds
Registration	http://camosun.ca/registration
Technology Support	http://camosun.ca/its
Writing Centre	http://camosun.ca/writing-centre

If you have a mental health concern, please contact Counselling to arrange an appointment as soon as possible. Counselling sessions are available at both campuses during business hours. If you need urgent support after-hours, please contact the Vancouver Island Crisis Line at 1-888-494-3888 or call 911.

COLLEGE-WIDE POLICIES, PROCEDURES, REQUIREMENTS, AND STANDARDS

Academic Accommodations for Students with Disabilities

The College is committed to providing appropriate and reasonable academic accommodations to students with disabilities (i.e. physical, depression, learning, etc). If you have a disability, the [Centre for Accessible Learning](http://camosun.ca/services/accessible-learning/) (CAL) can help you document your needs, and where disability-related barriers to access in your courses exist, create an accommodation plan. By making a plan through CAL, you can ensure you have the appropriate academic accommodations you need without disclosing your diagnosis or condition to course instructors. Please visit the CAL website for contacts and to learn how to get started:

<http://camosun.ca/services/accessible-learning/>

Academic Integrity

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.13.pdf> for policy regarding academic expectations and details for addressing and resolving matters of academic misconduct.

Academic Progress

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.1.pdf> for further details on how Camosun College monitors students' academic progress and what steps can be taken if a student is at risk of not meeting the College's academic progress standards.

Course Withdrawals Policy

Please visit <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.2.pdf> for further details about course withdrawals. For deadline for fees, course drop dates, and tuition refund, please visit <http://camosun.ca/learn/fees/#deadlines>.

Grading Policy

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.5.pdf> for further details about grading.

Grade Review and Appeals

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf> for policy relating to requests for review and appeal of grades.

Mandatory Attendance for First Class Meeting of Each Course

Camosun College requires mandatory attendance for the first class meeting of each course. If you do not attend, and do not provide your instructor with a reasonable reason in advance, you will be removed from the course and the space offered to the next waitlisted student. For more information, please see the "Attendance" section under "Registration Policies and Procedures" (<http://camosun.ca/learn/calendar/current/procedures.html>) and the Grading Policy at <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.5.pdf>.

Medical / Compassionate Withdrawals

Students who are incapacitated and unable to complete or succeed in their studies by virtue of serious and demonstrated exceptional circumstances may be eligible for a medical/compassionate withdrawal. Please visit <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.8.pdf> to learn more about the process involved in a medical/compassionate withdrawal.

Sexual Violence and Misconduct

Camosun is committed to creating a campus culture of safety, respect, and consent. Camosun's Office of Student Support is responsible for offering support to students impacted by sexual violence. Regardless of when or where the sexual violence or misconduct occurred, students can access support at Camosun. The Office of Student Support will make sure students have a safe and private place to talk and will help them understand what supports are available and their options for next steps. The Office of Student Support respects a student's right to choose what is right for them. For more information see Camosun's Sexualized Violence and Misconduct Policy: <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.9.pdf> and camosun.ca/sexual-violence. To contact the Office of Student Support: oss@camosun.ca or by phone: 250-370-3046 or 250-3703841

Student Misconduct (Non-Academic)

Camosun College is committed to building the academic competency of all students, seeks to empower students to become agents of their own learning, and promotes academic belonging for everyone. Camosun also expects that all students to conduct themselves in a manner that contributes to a positive, supportive, and safe learning environment. Please review Camosun College's Student Misconduct Policy at <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.5.pdf> to understand the College's expectations of academic integrity and student behavioural conduct.

Changes to this Syllabus: Every effort has been made to ensure that information in this syllabus is accurate at the time of publication. The College reserves the right to change courses if it becomes necessary so that course content remains relevant. In such cases, the instructor will give the students clear and timely notice of the changes.