

ENVT 163A WATER QUALITY

3 credits, 14 weeks, 2 hours lecture per week, 3 hours laboratory per week

This course provides an overview of water quality protection and pollution control of ground and surface water. Treatment of drinking water and municipal waste water, water quality guidelines for drinking water and surface water, pathogens, oxygen levels and nutrient loading, properties of water, related chemistry and terminology, ecology of lentic systems, turnover, thermal stratification, and hydrology of the northern river basin are discussed.

Prerequisite: CHEM 101 and EAS 100

Instructor

Dr. Blaine Legaree

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Office Hours

Mondays 12:00 – 01:00 pm

Tuesdays 12:00 – 02:00 pm

Wednesdays 09:00 – 09:50 am

Thursdays 12:00 – 01:00 pm

Hours of Instruction

Lecture: Wednesdays 01:00 – 02:50 pm Rm S218

Laboratory: Tuesdays 02:00 – 04:50 am Rm S114

Required Resources

1. **Basic Environmental Technology: Water Supply, Waste Management & Pollution Control, 6th Ed.** 2015. J.A. Nathanson & R.A. Schneider. ISBN: 9780132840149
2. **ENVT 163 Laboratory Manual.** Winter 2015 Edition. Keyano College.
3. **Laboratory coat.** (Available at the Keyano Bookstore.)
4. **Moodle access (<http://ilearn.keyano.ca>).** The course outline, lecture notes and other resources will be made available on Moodle. ****Please download/print lecture notes before coming to class.**

Course Outcomes

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

1. Demonstrate an understanding of water chemistry, biology and fluid dynamics through laboratory and field exercises, assignments and tests.
2. Discuss processes used in drinking water and wastewater treatment.
3. Examine environmental issues related to water quality protection and pollution control.
4. Discuss the challenges of water treatment and processing faced by industry and society.
5. Create scientific lab reports that discuss and analyze laboratory data.

Evaluation

Tests (5)	40%	Test dates TBA
Laboratory	35%	<i>Evaluation detailed in the laboratory manual.</i>
Final Examination	25%	<i>Date to be set by the Registrar</i>

A grade of C- is required for progression or transfer.

Tests and Examinations

Test dates will be determined by class progress and will be approximately every 2 weeks.

Tests and exams may include both multiple choice questions and written answer questions, and will be based on material covered in lectures and labs.

Absences from tests or exams will result in a mark of zero (0%), unless the absence is verified (doctor's note or other acceptable excuse).

The final lecture examination is cumulative and **must** be written in order to complete this course.

Laboratory

The laboratory component is detailed in the course laboratory manual and includes written assignments and reports.

Students are expected to attend all labs and complete all lab assignments in order receive a passing grade.

Late assignments will be penalized 10% per day late and will not be accepted if more than 5 days late.

Grading System

Descriptor	Alpha Grade	4.0 Scale	Percent	Rubric for Letter Grades
Excellent	A+	4.0	> 92.9	Work shows in-depth and critical analysis, well developed ideas, creativity, excellent writing, clarity and proper format.
	A	4.0	85 – 92.9	
	A-	3.7	80 – 84.9	
Good	B+	3.3	77 – 79.9	Work is generally of high quality, well developed, well written, has clarity, and uses proper format.
	B	3.0	74 – 76.9	
	B-	2.7	70 – 73.9	
Satisfactory Progression	C+	2.3	67 – 69.9	Work has some developed ideas but needs more attention to clarity, style and formatting.
	C	2.0	64 – 66.9	
	C-	1.7	60 – 63.9	
Poor	D+	1.3	55 – 59.9	Work is completed in a general way with minimal support, or is poorly written or did not use proper format.
Minimum Pass	D	1.0	50 – 54.9	
Failure	F	0.0	< 50	Responses fail to demonstrate appropriate understanding or are fundamentally incomplete.

Schedule of Topics

Lecture Topic	Textbook
1. Introduction – Water Properties	Ch. 1, 3
2. Water Chemistry	4.1-4.3
3. Water Biology	1.2-1.3, 4.4
4. Hydraulics and Hydrology	2, 3
5. Water Pollution & Water Quality Standards	5, 6.1
6. Water Distribution Systems	7
7. Water Processing	6
8. Wastewater: Characteristics & Collection	8, 9
9. Wastewater: Processing	10, 11

Please Note:

Date and time allotted to each topic is subject to change. It is your responsibility as a student to contact the Office of the Registrar to complete the forms for Withdrawal or Change of Registration, and any other forms. Please refer to the list of important dates as noted in the Academic Schedule in the Keyano College Credit Calendar.

Performance Requirements

Laboratory Safety

In the science laboratories, safety is important. Students must complete the *WHMIS for Students* online training course on Moodle before entering the science laboratories.

Students must comply with the mandatory laboratory safety rules for this course as provided in the laboratory manual. Failure to do so will result in progressive discipline such as a verbal warning, refused entry into the laboratory, or suspension from the College.

Student Attendance

Class attendance is useful for two reasons. First, class attendance maximizes a student's learning experience. Second, attending class is a good way to keep informed of matters relating to the administration of the course (e.g., the timing of assignments and exams). Ultimately, you are responsible for your own learning and performance in this course.

It is the responsibility of each student to be prepared for all classes. Students who miss classes are responsible for the material covered in those classes and for ensuring that they are prepared for the next class, including the completion of any assignments and / or notes that may be due.

Students are required to attend all labs unless excused for valid reasons. *Unexcused absence from any lab period or failure to submit a lab report may result in your being assessed a failing grade in the course.*

Academic Misconduct

Students are considered to be responsible adults and should adhere to principles of intellectual integrity. Intellectual dishonesty may take many forms, such as:

- Plagiarism or the submission of another person's work as one's own
- The use of unauthorized aids in assignments or examinations (cheating)
- Collusion or the unauthorized collaboration with others in preparing work
- The deliberate misrepresentation of qualifications
- The willful distortion of results or data
- Substitution in an examination by another person
- Handing in the same unchanged work as submitted for another assignment

Penalties for academic offences range from a verbal reprimand to dismissal from the College, and in certain circumstances may involve legal action.

Specialized Supports

Counselling and Disability Services

Counselling Services provides a wide range of specialized counselling services to prospective and registered students, including personal, career and academic counselling.

SKILL Centre

The SKILL Centre is a learning space in the Clearwater Campus at Keyano College where students can gather to share ideas, collaborate on projects and get new perspectives on learning from our tutorial staff.

The SKILL Centre, through a variety of delivery methods, provides assistance in skill development to Keyano students. Assistance is provided by instructors, staff and student tutors. Individuals wishing to improve their mathematics, writing, grammar, study, or other skills, can take advantage of this unique service.

Authorization

This course outline has been reviewed and approved by the Program Chair.

Blaine Legaree, Instructor

Louis Dingley, Chair

Date Authorized

Guy Harmer, Dean

Date Authorized

Signed copies to be delivered to:

Instructor
Registrar's Office