

# **Passive Wastewater Treatment North of 60: Beyond Lagoons**

## **Course Outline**

### **Course Description**

This 2 day (12 hour) course introduces participants to the fundamentals of Passive Wastewater treatment systems such as Constructed Wetlands. The course is focused on treatment in extreme cold climates, presenting case studies and current state of knowledge in this field. Design considerations are presented, along with a variety of sizing tools such as Subwet. The participants are also introduced to operations and maintenance of treatment wetlands.

This course was developed by Dr Colin Yates in collaboration with Fleming College (ON). Guest speakers will present and discuss the Yukon experience in terms of passive wastewater treatment systems such as Constructed Wetlands, Slow Rate Infiltration Systems, and Bioreactors.

The course is targeted to operators working in wastewater treatment, and is relevant to any health professional, supervisor, technician or homeowner involved with or interested in water & wastewater.

### **Course Pre-requisites**

There are no specific pre-requisites for this course. However, Grade 12 (or equivalent) math skills are an asset. Math upgrades are available –contact us.

### **Continuing Education Units (CEUs)**

This course is accepted for 1.2 CEUs by EOCP as Core for WWT, SWWS and Related for WD, WT, WWC, SWS.

### **Course Duration**

- 2 days
- 8:30 am to 4:00 pm each day
- 1 hour lunch break
- morning and afternoon break (15 minutes each)

### **Course Topics and Learning Outcomes**

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

- Identify the key components of a typical constructed treatment wetland
- Describe the key processes (physical, biological and chemical) in a constructed treatment wetland
- Understand the treatment capabilities and limitations of constructed wetlands
- Develop an understanding of treatment wetland systems used across the Canadian Far North
- Recognize predictive performance modeling tools and use them to design and size up effective constructed treatment wetland systems
- Interpret data acquired from treatment wetland systems

### **Delivery Method/Format**

<b>Instructional Method</b>	<b>Percentage of Class Time</b>
Examples/Case Study	20%
Slides	75%
Demonstration	5%

### **Material/Handouts (supplied)**

- Student Binder: Yukon University. Passive Wastewater Treatment North of 60: Beyond Lagoons; an elective –Technical Development– course. Whitehorse, Yukon.
- EOCP Course Completion and Evaluation Form.
  - every student needs to complete and return this form for any CEU allocation
- Calculators are provided but students are welcome to use their own.
  - please return

### **Course Requirements**

Attendance and participation in class are required. It is the student's responsibility to attend all classes. CEUs will be allocated based on attendance and course completion; Yukon University records will show a pass or fail result. If the participant doesn't attend the class, Yukon University records will show a "no show" result and no CEUs will be allocated.

### **Evaluation**

There will be a quantifiable evaluation at the end of this course with a passing mark of 70%. Please note that this evaluation is for self-assessment purpose only.

**The final evaluation for this course is NOT an EOCP certification exam. To challenge a certification exam, register separately with EOCP at least 3 weeks in advance: 1-866-552-3627 or crm.eocp.ca.**

### **Appropriate Language**

In all areas of the University environment, students are responsible for showing respect for others. Swearing, or language that is discriminatory or derogatory in relation to race, sex, ethnic background, religious beliefs, age, and physical condition is not appropriate.

### **Electronic Devices**

In order to be successful in classes and minimize distractions for others, cell phones, iPods, and other electronic devices must be turned off while students are in class. In an emergency situation, the instructor may give a student permission to use a cell phone or pager.

### **Academic and Student Conduct**

Information on academic standing and student rights and responsibilities can be found in the current Academic Regulations that are posted on the Student Services/Admissions & Registrations web page.

### **Plagiarism**

Plagiarism is a serious academic offence. Plagiarism occurs when students present the words of someone else as their own. Plagiarism can be the deliberate use of a whole piece of another person's writing, but more frequently it occurs when students fail to acknowledge and document sources from which they have taken material. Whenever the words, research or ideas of others are directly quoted or paraphrased, they must be documented according to an accepted manuscript style (e.g., APA, CSE, MLA, etc.). Resubmitting a paper which has previously received credit is also considered plagiarism. Students who plagiarize material for assignments will receive a mark of zero (F) on the assignment and may fail the course. Plagiarism may also result in dismissal from a program of study or the University.

### **Academic Accommodation**

Reasonable accommodations are available for students requiring an academic accommodation to fully participate in this class. These accommodations are available for students with a documented disability, chronic condition or any other grounds specified in section 8.0 of the Yukon University Academic Regulations (available on the Yukon University website). It is the student's responsibility to seek these accommodations. If a student requires an academic accommodation, they should contact the Learning Assistance Centre (LAC) at LearningAssistanceCentre@yukonu.ca.

### **Class Outline**

- Context and Review of Basic Wastewater Treatment Principles (1 hr)
- Fundamentals of Passive Wastewater Treatment (1.5 hr)
- Constructed Treatment Wetlands (1 hr)
- Constituents of Wastewater and Treatment Processes in Passive Systems (1.5 hr)
- Recent Advances in Passive Wastewater Treatment (1 hr)
- Case Studies of Treatment Wetlands for Municipal WW (1 hr)
- Design, Sizing and Modeling of Constructed Wetlands (1.5 hr)
- Operation and Management of Constructed Wetlands (1.5 hr)