**Process Control for Wastewater Treatment Systems**

**WW6.154 Spring 2018**

**Instructor:** Troy Kemper

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**Class Hours:** Monday 9:00 - 1:00

**Course Description:** This course covers the operational control strategies for biological wastewater treatment facilities. Common biological control strategies are covered with an emphasis on advanced operator control skills as they are related to these processes. Data handling and interpretation for process control decision making is a core theme in this course.

**Reference**:

Operation of Wastewater Treatment Plants, Volume II, Chapter 11

- California State University, Sacramento

Operation of Municipal Wastewater Treatment Plants , WEF

* Library reserve

WE&T Magazine, WEF

WEF website: [www.wef.org](http://www.wef.org)

**Moodle**: there is a class Moodle page for this course.

**Grading Policy and Procedures:**

There are five (5) tests scheduled in this class.

1. Activated Sludge Systems – Process Control Review 20%
2. Process Mode/Flow Changes 20%
3. Nutrient Removal: Nitrogen 20%
4. Nutrient Removal: Phosphorus 20%
5. Filamentous Bacteria Identification and Control 20%

Class Total 100%

**Overall Grading Summary:**

90-100% A 80-89% B

70-79% C 60-69% D

**Subject Schedule:**

**Week Subject/Activity**

**1** Course Introduction.

Review of Process Control Calculations.

Data handling and trend charts.

**2 Quiz #1**

Process Mode/Flow Changes

**3 Quiz #2**

Nutrient removal: Nitrogen

**4**  Nutrient removal: Nitrogen

Nitrification, Denitrification

Anammox

**5 Quiz #3**

**TBD**

**6** Nutrient Removal: Phosphorus

Chemical Phosphorus removal

Biological Phosphorus removal

Combined Nutrient removal systems

**7**  **Quiz #4**

**TBD**

**9 Memorial Day, School Closed.**

**10** Filamentous Bacteria Identification

Filamentous Bacteria Control

**Quiz #5**

**11 Finals Week**

**Subject Schedule:**

**Note**: Topics and schedule are subject to change.

**Field Trips**: Trips will be scheduled throughout the term to treatment facilities demonstrating the five test topics. Credit for participation is part of the course grading structure. Transportation will be provided to the treatment facilities. Due to the travel distances involved, some trips will take more time than normal class hours.

**Attendance:** The highest grade you can earn in this class will reflect on the percentage of classes you are present and engaged in. This is regardless of the scores of tests and daily assignments. If you are more than 10 minutes late to class, you will be counted as absent for the day.

**Academic Integrity:**

It is understandable that you will discuss your homework and other assignments with your classmates and that is fine, but you are expected to write up your own results, whether it is on paper or using a spreadsheet or other program, **even if you are in the same lab group**. I assume that you are ethical and honest. However, if there is an incident of academic dishonesty (cheating), which includes sharing computer files, you will receive a score of zero for that assignment/test and the incident will be reported to the college administration for possible further disciplinary action. If there is a second offense, you will receive a grade of F for the course and the incident will be reported to the college administration with a recommendation for disciplinary action.

**Drop/Withdraw Policy:** If you are withdrawing from the class you must file a Schedule Change Form with Registration or use WebRunner. If you formally drop the class **before Monday of the second week of the term**, you will receive a tuition refund. If you withdraw after the Monday of the second week of instruction through the seventh week a **‘W’** will show up on your transcript. No withdrawals are allowed after the end of the seventh week. An instructor may not assign a “W” grade.

If you received financial aid or veteran’s benefits, PLEASE talk with associates at the appropriate office to determine what effects on eligibility dropping a course will have. Don’t jeopardize your eligibility!! You can contact the Financial Aid Office by calling (541) 917-4850 or by visiting the Financial Aid Office in Takena Hall.

If you stop attending the course without formally withdrawing you will continue to accumulate grades (zeroes for all assignments not turned in) and will receive the grade assigned by the instructor. You will also be held accountable for all charges on your account.

**Nondiscrimination and Non-Harassment:** Linn-Benton Community College is committed to providing an atmosphere that encourages individuals to realize their potential. We embrace diversity and inclusion of all persons. LBCC prohibits unlawful discrimination based on race, color, religion, ethnicity, use of native language, national origin, sex, sexual orientation, gender, gender identity, marital status, disability, veteran status, age, or any other status protected under applicable federal, state, or local laws. For further information see Board Policy P1015 in our Board Policies and Administrative Rules. Title II, IX, & Section 504: Scott Rolen, CC-108, 541-917-4425; Lynne Cox, T-107B, 541-917-4806, LBCC, Albany, Oregon.

To report: linnbenton-advocate.symplicity.com/public\_report. In addition, the college complies with related federal, state, and local laws (Civil Rights, Disability & Rehabilitation Acts, Veterans Acts).

LBCC is committed to providing equal opportunity in all of its programs, policies, procedures, and practices, and the college shall promote equal opportunity and treatment through application of this policy and other college efforts designed for that purpose. For further information see Administrative Rule No. 1015-01 at <http://po.linnbenton.edu/BPsandARs/>

**Center for Accessibility Resources:**

You should meet with your instructor during the first week of class if:  
 1. You have a documented disability and need accommodations.  
 2. Your instructor needs to know medical information about you.  
 3. You need special arrangements in the event of an emergency.

If you have documented your disability, remember that you must make your request for  
accommodations through the Center for Accessibility Resources Online Services web page every  
term in order to receive accommodations. If you believe you may need accommodations but are not  
yet registered with CFAR, please visit the CFAR website at <http://www.linnbenton.edu/cfar> for steps on how to apply for services or call 541-917-4789.

**Veterans and active duty military personnel** with special circumstances are welcome and encouraged to communicate these, in advance if possible, to the instructor.

**Students Rights, Responsibilities, and Conduct Policy:**

LBCC students have rights: the right to free speech, the right to assemble, the right of a free press, etc. LBCC students also have responsibilities to their community: the responsibility to participate and engage in class, the responsibility to advocate for their needs (ask for help), the responsibility to support a respectful teaching and learning environment, the responsibility to treat all persons with respect, the responsibility to be truthful and honest in all work and communications, and the responsibility to follow staff directions, local, state, and federal laws. Rights and responsibilities balance together to create the best learning environment. For example, while you have free speech in the café or courtyard, in class the instructor decides whose turn it is to talk and what the topics for conversation will be. Students are free to believe what they believe, but instructors may require students to learn and recite concepts, principles, or theories for a class even if the student does not believe those concepts. You play a role in creating a positive community at LBCC. Please review your rights and responsibilities at this link: www.linnbenton.edu/go/studentrights.

If you believe a student is violating your rights, ask to be treated with respect. If that does not resolve the situation, report to Associate Dean Dr. Lynne Cox, Takena 107. If you believe a faculty member or LBCC employee is violating your rights, please report to Human Resources, Scott Rolen, CC-108.

In cases of immediate danger, report to Public Safety, Red Cedar Hall (RCH-119), 541-926-6855. (We encourage all students to enter this Public Safety phone number into their cell phone.)

**Personal Empowerment Through Self-Awareness:**

LBCC is launching a new training called “Personal Empowerment Through Self-Awareness.” This training is an online video series on dating, sexual consent, and on preventing sexual violence or partner violence. Every student has a right and healthy learning climate. Every new student is required by federal law to complete this training to learn how to safeguard yourself and others from sexual assault. We ask students to watch for email notification and to ensure that they complete this new training. (For example, do you know the number one date rape drug? It’s not what you think! Check out the training.) This online series reviews federal and Oregon law and is designed for your safety. The training will also direct you how to report dating, sexual, or partner violence to LBCC officials.