

CONSTRUCTED WETLANDS FOR WATER QUALITY CONTROL

Course Outline

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Meetings: 4 – 5 PM Tuesday & Thursday
Virtual Classroom

The timetable course description is “design and construction of wetland areas for water quality control.” We will focus on:

- 1) Examples of wetlands used for water quality control
- 2) Water quality functions of wetlands and their potential for water quality improvement
- 3) Methods of quantifying the design of treatment wetlands

The course will meet twice weekly in a virtual classroom using zoom for lecture, discussion and problem-solving. Be prepared for some problem-solving exercises each meeting. Grading is based on the in-session problems/assignments (15%), short quizzes on several Thursdays (10%), individual project (40%) and a final quiz (35%).

| Week | Topics |
|------|---|
| 1 | <i>Introduction to Treatment Wetlands</i> <i>Terminology & Examples</i> <i>Hydrology & Hydraulics</i> |
| 2 | <i>Treatment Wetlands in the Watershed</i> <i>Hydrology/Hydraulics Continued</i> |
| 3 | <i>Physical Removal of Contaminants - Suspended Solids</i> <i>Design & Construction</i> |
| 4 | <i>Introduction to Chemical / Biological Removal</i> <i>Oxygen Demanding Substances / Organic Compounds</i> |
| 5 | <i>Biological Pathogens</i> <i>Nitrogen</i> |
| 6 | <i>Nitrogen & Phosphorus</i> |
| 7 | <i>Phosphorus</i> <i>Project Presentations (Thurs March 11)</i> |
| 8 | <i>Presentations (Tues March 16) & Final Quiz (Thurs March 18)</i> |

Course References (Journal articles will be added during the course)

Kadlec, R.H. and S.D. Wallace. 2009. Treatment Wetlands, Second Edition. CRC Press.. (available online through UWSP library)

USEPA. 2000. Constructed Wetlands Treatment of Municipal Wastewaters. EPA/625/R-99/010 (available online)

Mitsch, W.J. and J.G. Gosselink. 2015. Wetlands. John Wiley and Sons, New York. (available online through UWSP library)

Stefanakis, Alexandros, et al. 2015. Vertical Flow Constructed Wetlands : Eco-Engineering Systems for Wastewater and Sludge Treatment, Elsevier Science & Technology (online through UWSP library).