1. CEE 3430 – Environmental Engineering Laboratory

2. Course credit hours: 1
   Contact hours per week: 2
   Credit category: Engineering Topics

3. Course coordinator: Julia B. Avera

4. Textbook: None

5. Course information:

2020 Catalog description	Laboratory experiments to illustrate the application of engineering fundamentals to environmental systems
Prerequisite(s) or Concurrent Enrollment	CEE 3413
Course type	Selected Elective – choice of two of CEE 3040, CEE 3430, or CEE 3120 are required

6. Course instructional outcomes:

Course Outcome No.	Course Outcome (CO)	ABET Student Outcome
CO1	Know how to safely conduct laboratory analyses	3, 6
CO2	Know the definitions of the major water quality parameters	1
CO3	Know laboratory methods to determine the major water quality parameters	6
CO4	Be able to apply basic data analysis techniques to environmental data	3, 6

ABET criterion 3 Student Outcomes addressed by this course:

SO No.	Student Outcome (SO)
3.1	An ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science, and mathematics
3.3	an ability to communicate effectively with a range of audiences
3.6	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgement to draw conclusions

7. Course topics:
   1. Lab safety/Chemistry review/Report writing (1 class)
   2. Data analysis (1 class)
   3. Natural color/calibration curves (1 class)
   4. Turbidity (1 class)
   5. Solids determination (1 class)
   6. Total and calcium hardness (1 class)

7. Jar test/coagulation (1 class)
8. Solids (1 class)
9. Microscopy (1 class)
10. Dissolved oxygen & BOD (1 class)
11. Design of experiments (1 class)
12. WWTP tour (1 class)
13. Contemporary issues presentation (1 class)

Program criteria (curriculum) addressed by this course:

1. Apply knowledge of mathematics through differential equations, calculus-based physics, chemistry, and at least one additional area of basic science
2. Conduct experiments in at least two technical areas of civil engineering and analyze and interpret the resulting data

8. Additional topics, assignments, or requirements for dual-level (4000/5000) course:
   N/A

9. Date: 01/24/2020