

CE 3131 - 003: Environmental Analysis
Fall 2013

Instructor: Srinivas Prabakar

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Office Hours: Mon, Wed and Fri: 10:00 am to 12 pm

Other than office hours you can meet me by making an appointment.

Section Information: CE 3131-003

Time and Place of Class Meetings: Monday 1:00 pm – 3:50 am, ERB 130

Description of Course Content: Laboratory examinations of water, wastewater, and air. Water and air quality parameters and their significance. Sources and types of pollutants and their effects. Prerequisite: Grade of C or better in CE 3334 or concurrent enrollment.

Student Learning Outcomes: The major goal of this course is to familiarize the student with 1) the procedures used in the analysis and 2) the environmental significance of various water quality parameters in assessing the water quality, uses and treatment methods. In addition students learn to design and conduct the experiments, analyze and interpret the data from the laboratory experimental results, and communicate effectively by producing the high quality technical report

The student abilities and outcomes from this course are

- Ability to apply knowledge of mathematics, science and Engineering to understand and solve environmental Engineering problems
- Ability to design and conduct Experiments
- Ability to analyze and interpret data
- Ability to communicate effectively by producing high quality lab reports and discussion of data in the class room

Requirements: Few laboratory experiments may require students to return to the lab outside of normal class hours to take readings.

Required Textbooks and Other Course Materials: Required Text: Laboratory Descriptions and CE 3334 Notes. Laboratory Descriptions will be posted on Blackboard. Link to the Blackboard:

<https://elearn.uta.edu>

Reference: Chemistry for Environmental Engineering, Sawyer, McCarty, and Parkin, 4th Edition, McGraw-Hill, 1994.

Water Quality, Tchobanoglous and Schroeder, Addison and Wesley, 1987.

Wastewater Engineering: Treatment and Reuse, 4th Edition, Metcalf & Eddy, McGraw-Hill, 2003.

Standard Methods for the Examination of Water and Wastewater, American Public Health Association, 2005.

Descriptions of major assignments and examinations:

Group Assignment: The laboratory work will be performed in groups of 4 students, and only the raw data information will be shared by the group members.

Laboratory Report: Each Lab report will have two parts of submission. Instructions for the part I and part II lab reports are given in the “Instruction for preparing the notebook and laboratory reports”. Part I of the lab report will be submitted as a single group report and for the part II lab report submission, each student will be responsible for data interpretation, accuracy and assumptions and will submit his/her own individual report.

List of lab reports and the due dates are given under “List of Lab Reports”. There will be no make-up opportunities for missed laboratory experiments. Students that miss a lab session without a written medical excuse or an excuse approved by the instructor will receive a grade of zero for the lab report. Students presenting proper documentation of an excused absence will have the missed laboratory assignment excluded from their grade.

Exams: There will be one midterm exam and one final exam. Students that miss the exam without a written medical excuse or an excuse approved by the instructor will receive a grade of zero for the exam. Students presenting proper documentation of an excused absence will have to schedule the makeup test within 3 days of the return. No makeup exam for the final.

Quizzes: The schedules for the quizzes are given in the laboratory assignments. No make- up opportunities for the missed quizzes. Students presenting proper documentation of an excused absence will have the missed quizzes excluded from their grade.

Laboratory Notebook: Each student will be required to record his/her data in a laboratory note book. Laboratory notebook will be separate from class note book. The laboratory notebook must be submitted at the time of the final exam.

Attendance: Participation in each laboratory session is mandatory for successful completion of the course. Students that miss a lab session without a written medical excuse or an excuse approved by the Instructor will be dropped from the class roll. If past the automatic drop date, the student will be dropped with a grade of "F".

Grading: I reserve the right to vary from the grade schedule listed below.

Midterm	15%
Final Test	15 %
Quiz	10%
Laboratory Reports / Homeworks	50%
Laboratory Notebook	10 %

Grade Basis:	90 – 100 %	A
	80 - 89.9 %	B
	70 - 79.9 %	C
	60 - 69.9 %	D
	Below 60 %	F

Students are expected to keep track of their performance throughout the semester and seek guidance from available sources (including the instructor) if their performance drops below satisfactory levels.

Make-up Exam Policy: No make-up exams are given except for medical or other similar hardships where advanced arrangements are made with the instructor; or in case of non-selective medical emergencies with appropriate physician's note or documentation. Other than circumstances described above, failure to take the exam at the scheduled time will constitute a grade of zero in the exam.

Grade Grievance Policy: Grade grievances will be handled according to the policy described in the College of Engineering portion of the Catalog.

Laboratory Safety:

Students registered for this course must complete the University's required "Lab Safety Training" prior to entering the lab and undertaking any activities. Until all required Lab Safety Training is completed, a student will not be given access to lab facilities, will not be able to participate in any lab activities, and will earn a grade of zero for any uncompleted work. Technical questions about the training website should be directed to the University Compliance Services training helpline, 817-272-5100, or to compliance@uta.edu. General questions about scope and content of the Lab Safety Training should be directed to the Office of Environmental Health and Safety, 817-272-2185, or to ehsafety@uta.edu.

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance.** Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://www.uta.edu/aao/fao/>).

Americans with Disabilities Act: The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the *Americans with Disabilities Act (ADA)*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Academic Integrity: It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University. According to the UT System Regents' Rule 50101, §2.2, "Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts."

Student Support Services: UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at www.uta.edu/resources.

Electronic Communication: UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

Student Feedback Survey: At the end of each term, students enrolled in classes categorized as “lecture,” “seminar,” or “laboratory” shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student’s feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington’s effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit <http://www.uta.edu/sfs>.

Final Review Week: A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Emergency Exit Procedures: Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, which is located in the stairwell near the elevators. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist handicapped individuals.

Librarian to Contact: Sylvia George-Williams, Engineering Librarian, NH - B03D, Tel: 2-7519, Email: sylvia@uta.edu

Course Schedule
List of Experiments

Experiment	Title	Description
1	Solids	Determine total suspended and dissolved solids; and total volatile and fixed solids in the given samples.
2	Turbidity	Determine the turbidity of a given lake water, raw, primary effluent, secondary effluent and effluent of the waste water.
3	Normality	Determine the normality of the given standard solution
4	Alkalinity	Determine pH, phenolphthalein and total alkalinities of a given lake water, tap water and lake water spiked with sodium hydroxide.
5	Phosphorus	Determine the concentration of orthophosphate phosphorus in given secondary- plant effluent and lake water samples.
6	Jar Testing	Determine the optimum coagulant dose by conducting the coagulation study in a given primary effluent waste water sample.
7	Ammonia nitrogen	Determine the ammonia nitrogen in given raw waste water, effluent waste water and tap water.
9	Hardness	Determine the total hardness of a given lake water, and tap water samples.
8	Dissolved Oxygen	Determine the temperature and dissolved oxygen of a given lake water, tap water and synthetic water.
10	Biochemical Oxygen Demand	Determine the biochemical oxygen demand (BOD ₅) of a given primary treated waste water.
11	Chemical Oxygen Demand	Determine the chemical oxygen demand in given raw municipal waste water and the secondary effluent municipal waste water samples.
12	Indicator organisms	Study experiment – Demonstration will be done for the determination of total coliform in the primary effluent waste water sample.

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Laboratory Assignments

Date	Quiz	Topics
Aug - 26		Discussion of course objectives, water quality parameters, group assignment, lab safety, lab tour.
Sep - 9	1	Experiment 1 - Solids determination Experiment 2 - Turbidity determination
Sep - 16	2	Experiment 3 - Normality
Sep - 23	3	Experiment 4 - Alkalinity
Sep - 30	4	Experiment 5 – Phosphorus
Oct - 7	5	Experiment 6 – Jar Testing
Oct - 14		Experiment 6 – Continuation
Oct - 21		Midterm
Oct - 28	6	Experiment 7 - Ammonia nitrogen
Nov - 4	7	Experiment 8 - Hardness
Nov - 11	8	Experiment 9 - DO
Nov - 18	9	Experiment 10 - BOD Experiment 11 – COD
Nov - 25	10	Study Experiment - Indicator organisms
Dec - 2		Final Exam , turn in lab notebook.

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List of Lab Reports and due dates:

Lab Report	Title	Description	Lab Report Due
1	Solids	Determine total suspended and dissolved solids; and total volatile and fixed solids in the given samples.	09/23/2013
	Turbidity	Determine the turbidity of a given lake water, raw, primary effluent, secondary effluent and effluent of the waste water.	
2	Normality	Determine the normality of the given standard solution	10/07/2013
	Alkalinity	Determine pH, phenolphthalein and total alkalinities of a given lake water, tap water and lake water spiked with sodium hydroxide.	
3	Phosphorus	Determine the concentration of orthophosphate phosphorus in given secondary- plant effluent and lake water samples.	10/14/2013
4	Jar Testing	Determine the optimum coagulant dose by conducting the coagulation study in a given primary effluent waste water sample.	10/28/2013
5	Ammonia nitrogen	Determine the ammonia nitrogen in given raw waste water, effluent waste water and tap water.	11/11/2013
6	Hardness	Determine the total hardness of a given lake water, and tap water samples.	11/118/2013
7	Dissolved Oxygen	Determine the temperature and dissolved oxygen of a given lake water, tap water and synthetic water.	11/25/2013
8	Biochemical Oxygen Demand	Determine the biochemical oxygen demand (BOD ₅) of a given primary treated waste water.	12//2013
	Chemical Oxygen Demand	Determine the chemical oxygen demand in given raw municipal waste water and the secondary effluent municipal waste water samples.	

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