

Course Handout

ENCE 3323: INTRODUCTION TO ENVIRONMENTAL ENGINEERING (4 Cr. Hrs) SPRING 2011

Scheduled Class Timings

Class: 1:30–4:15 PM, Wednesdays (EN 321)

Lab: 11:00-1:40 PM, Fridays (EN 321/510)

Office Hours: 11:30 – 1:30 PM Wednesdays

Instructor: Amit Sengupta / B. Kura, Ph.D., P.E.
833/828 Engineering Building
bkura@uno.edu; Ph.: 504-280-6572

Teaching Assistant: Ms. Vandana Karap (EN 833) and Ms. Suruchi Verma (EN 831)
Engineering Building

Course Description:

ENCE 3323 INTRODUCTION TO ENVIRONMENTAL ENGINEERING — 4 cr

Topics include: water quality, water and wastewater treatment processes, air pollution control, and solid and hazardous waste management. Laboratory provides hands-on analytical experience with various pollution parameters. Three hours of lecture and three hours of lab.

Prerequisites:

CHEM 1018 (General Chemistry), credit or registration in ENCE 3318 (Principles of Hydraulics) or credit or registration in both ENME 3720 (Fluid Mechanics) and ENME 3716 (Fluid Mechanics Lab) [**Ref: 2003-2005 Online Catalog**]

Course Objectives:

After successfully completing this course each student will be able to:

1. Calculate runoff quantities from catchment areas; estimate storage capacities required; yield from confined and unconfined wells. [More in ENCE 3318: Principles of Hydraulics, which is a required course]
2. Design water treatment units such as coagulation, softening, flocculation, sedimentation, filtration, and disinfection. [More in ENCE 4323: Water and Wastewater Treatment, which is a required course]
3. Forecast water quality within rivers and lakes with respect to dissolved oxygen and others.
4. Design wastewater treatment units, both primary and secondary treatment units. [More in ENCE 4323: Water and Wastewater Treatment, which is a required course]
5. Understand the sources of air pollution, health effects, and air quality regulations; design important particulate collection devices.

6. Understand solid waste quantities, characteristics, collection, and disposal options.
7. Understand hazardous waste characteristics, classification, and cradle-to-grave concepts in management.
8. Conduct basic laboratory experiments to evaluate water and wastewater characteristics such as Solids (TSS, MLSS, VSS, TDS), pH, DO, BOD, COD, Alkalinity, and Turbidity; understand basic concepts in air quality monitoring (particulates).

Text Book:

Required: Introduction to Environmental Engineering, Fourth Edition by M.L. Davis and D.A. Cornwell, WCB McGraw-Hill, ISBN 978-0-07-242411-9.

Course Syllabus (Topics):

Introduction: Laws & Regulations, Ethics, Environmental Systems

Mass Balance Approach: Applications in Environmental Engineering Systems

Hydrology: Rainfall, Runoff, Reservoir Storage, Groundwater & Wells

Water Treatment: Physical and Chemical Treatment Methods

Water Quality Management: Sources of Pollution, Lake Quality Management, River Quality Management

Wastewater Treatment: Characteristics, Physical / Chemical / Biological Treatment Methods, Sludge Treatment

Air Pollution: Sources, Standards, Meteorology, Dispersion, and Air Pollution Control Systems for Particulates

Solid Wastes: Collection, Transfer, and Disposal Methods

Hazardous Wastes: Definition and Classification, Hazardous Waste Management, and Land Disposal

Grading

Test 1	100 pts.
Test 2	100 pts.
Test 3	100 pts.
Final Exam	100 pts.
Homework/Quizzes	100 pts.
Lab Reports	100 pts.
Technical Paper	100 pts.

The grading scale will be based upon overall student performance as follows:

A	93% to 100%
B	85% to 92%
C	75% to 84%
D	65% to 74%
F	below 65%

Important UNO Published Dates

(Check the Website, <http://registrar.uno.edu/bulletin/importantdates/index.cfm> for more details and reconfirmation)

March 6-11	Mardi Gras Holidays / Spring Break; No classes
March 14-18	Mid-semester examinations week
May 6	Last day of classes.
May 7	Final examinations begin.
May 13	Final examinations end.

Tentative Lab Schedule and Assignments

<u>Lab No.</u>	<u>Schedule & Assignment</u>
1	Lab Introduction, Laboratory techniques, Lab Safety
2	pH, Acids, Bases, and Alkalinity HW: Lab Report 1 - Acids and Bases
3	Turbidity HW: Lab Report 2 - Turbidity
4	Solids Analyses: TS, TSS, TDS, VSS, FSS, VDS, FDS. HW: Lab Report 3 - Solids Analyses Hardness
5	Hardness HW: Lab Report 4 – Hardness
6	Dissolved Oxygen HW: Lab Report 5 – Dissolved Oxygen
7	Biochemical Oxygen Demand
8	Biochemical Oxygen Demand HW: Lab Report 6 – BOD
9	Chemical Oxygen Demand HW: Lab Report 7 – COD

Suggested Lab Report Outline:

- I. Title
- II. Purpose (Significance of the Experiment and Parameter Tested)
- III. Apparatus
- IV. Chemicals
- V. Procedures

- VI. Data & Observations
- VII. Calculations
- VIII. Source of Errors
- IX. Conclusions (Also Answers to any Questions)
- X. References

Lab reports will be graded based upon technical correctness, completeness, and presentation.

Important Policies

Attendance Policy:

Attendance is required. If you cannot attend class for some reason, e-mail at asengupt@uno.edu and explain why. You must sign in on a sign-in sheet passed around during class. You will not be able to participate in the curve, if any, if your attendance is not satisfactory (missing more than one class) and if you have not turned in the homework, project work on timely basis.

The class will be taught in a highly interactive manner. Your attendance at every class session is especially important. The class participation portion of your final grade will be automatically decreased by 5% for each absence exceeding one.

Make-up Exams:

Make-up exams will be given for anyone who cannot take the regularly scheduled exam due to illness, conflicts, or serious personal problems. It is the student's responsibility to demonstrate the existence of conflicts or personal problems to the instructor before the regular exam takes place. Unexcused absences for any exam will count as a zero grade.

Dropping:

The UNO catalogue and schedule book establishes the dates when courses may be dropped and the various consequences involved. The decision to drop or not is entirely the student's responsibility.

Academic Integrity:

Academic integrity is fundamental to the process of learning and evaluating academic performance. Academic dishonesty will not be tolerated. Academic dishonesty includes, but is not limited to, the following: cheating, plagiarism, tampering with academic records and examinations, falsifying identity, and being an accessory to acts of academic dishonesty. Refer to the UNO Judicial Code for further information.

Accommodations for Students with Disabilities:

Students who qualify for services will receive the academic modifications for which they are legally entitled. It is the responsibility of the student to register with the Office of Disability Services (UC 260) each semester and follow their procedures for obtaining assistance.

Classroom Conduct:

Be in class on time. Please do not come late as distracting interruptions are inconsiderate, disrespectful, and time-wasting. There is no excuse for repeatedly arriving late. Parking is often a hassle; allow enough time for it. Cell phones should be turned off before class begins.

Feel free to ask questions of the instructor during class. But please do not ask other students, as talking disturbs teacher concentration and the concentration of other class members.

Civility in the classroom and respect for the opinions of others is very important in an academic environment. It is likely that you may not agree with everything that is said or discussed in the classroom. Courteous behavior and responses are expected.

Expectations of Students:

Students must have Internet access to www.uno.edu and the Blackboard portion of ENCE 3323. Often, communications, homework assignments, and project assignments will be done through Blackboard. Students are responsible for all e-mail communications from the instructor to their UNO email drop box.

Students are expected to fully participate in all classroom activities. Full participation means that students arrive on time, have prepared for class by completing all assignments, and are ready for active and purposeful engagement with the topic in hand.

All students are expected to read the material from the text book ahead of the classroom discussion for active participation in the class. Also, the quizzes given may include the material that may not have been covered in the class.
