

Applied Environmental Biotechnology/ CEMM 525 / 306 Addams Hall

Instructor: Karl Rockne
 Associate Professor, Director of Undergraduate Studies
 Civil and Material Engineering
 Room 3077 ERF
 312/413-0391; 312/996-2426 Fax
krockne@uic.edu

4 cr grad Spring 2006 Mon/Wed 5:15-6:30

% of total grade

Midterm I	20
Midterm II	20
Homework	30
Project Report	15
Poster presentation	15

class webpage: www.uic.edu/classes/cmeng/cmeng525/

Office hours Wednesdays 1-3 PM, also by email, 24/7

This course provides a review of biological processes involved in the biodegradation of environmental pollutants by microorganisms. This background information will then be developed within the context of advanced biological treatment processes for wastewater treatment, soil and sediment bioremediation, and groundwater cleanup with a focus on reactor-based processes. The course is divided into three sections: quantitative tools, applied processes and remediation strategies. Students will design a remediation system for selected contaminated sites/flowstreams (**Due during poster session**). We will have a poster session during the time of the final where each student will present and answer questions for their poster. The poster session will be similar to one at a conference.

Homeworks are very important, constituting 30% of the total grade. The homeworks will be graded on a 5 point scale:

No homework	0 pts
Not finished/mostly incorrect	1 pt
Not finished/mostly correct	2 pts
Finished/mostly incorrect	3 pts
Finished/mostly correct	4 pts

Course texts: "Environmental Biotechnology" 2001 By Rittmann and McCarty (ISBN 0-07-234553-5; McGraw-Hill)

"Engineered Approaches to In Situ Bioremediation of Chlorinated Solvents: Fundamentals and Field Applications, 2000 USEPA (EPA 542-R-00-008)

"Introduction to Phytoremediation", 2000 USEPA (EPA 600-R-99-107) **THE LAST TWO WILL BE IN THE CME LIBRARY FOR SHORT TERM LOAN**

(ALL DATES ARE APPROXIMATE!)

Week	Class #	Date	Day	Topic	Reading	
Quantitative Tools	1	1	9-Jan	Mon	Class overview/ Micro primer	Ch. 1.1-1.4, 1.7-1.16.3
		2	11-Jan	Wed	Micro primer	"
	2	3	16-Jan	Mon	MLK day, NO CLASS	
		4	18-Jan	Wed	Stoichiometry of biological reactions	Ch. 2.1-2.8
	3	5	23-Jan	Mon	"	"
		6	25-Jan	Wed	"	"
	4	7	30-Jan	Mon	Biokinetics	Ch. 3.1-3.6, 3.9-3.10
		8	1-Feb	Wed	"	"
	5	9	6-Feb	Mon	Reactors	Ch. 5.1-5.7, 5.9-5.10
		10	8-Feb	Wed	"	"
	6	11	13-Feb	Mon	"	"
	11	15-Feb	Wed	MIDQUARTER I/ Ch. 1-3, 5		
Treatment Processes		12	20-Feb	Mon	Activated sludge	Ch. 6.1-6.7
		13	22-Feb	Wed	"	"
	8	14	27-Feb	Mon	"	"
		15	1-Mar	Wed	Lagoons	Ch. 7.1-7.4, 7.10
	9	16	6-Mar	Mon	"	"
		17	8-Mar	Wed	Nitrification	Ch. 9.1-9.3, 9.6-9.7
	10	18	13-Mar	Mon	"	"
		19	15-Mar	Wed	Denitrification	Ch. 10.1, 10.3
	11	20	27-Mar	Mon	"	"
		21	29-Mar	Wed	Anaerobic processes	Ch. 13.1-13.5
	12	22	3-Apr	Mon	"	"
	23	5-Apr	Wed	"	"	
Remediation Strategies		24	10-Apr	Mon	MIDQUARTER II/ Ch. 6-7, 9-10, 13	
		25	12-Apr	Wed	Detoxification of Hazardous compounds	Ch. 14.1-14.4, 14.6
	14	26	17-Apr	Mon	"	"
		27	19-Apr	Wed	Bioremediation	Ch. 15.1-15.3, 15.5
	15	28	24-Apr	Mon	"	supplement
	29	26-Apr	Wed	"	"	
Finals	16	5-May		TERM PROJECT DUE/POSTER SESSION/NO FINAL	PROJECT DUE MAY ???	