

COLLEGE OF ENGINEERING AND COMPUTER SCIENCE EGN 2095L Engineering Chemistry Lab Spring 2011

	Dr. Daniel E. Meeroff Telephone: 561-297-3099, E-mail: dmeeroff@fau.edu
INSTRUCTOR	Class Time: TBA
	Office Hours: TBA
	Engineering Chemistry Lab (1 credit)
	Prerequisites: MAC 1105 College Algebra or equivalent
COURSE	Co-requisites: EGN2095 Engineering Chemistry
DESCRIPTION	Experiments and demonstrations in fundamental quantitative concepts and principles of
	stoichiometry, kinetics, equilibrium, and organic chemistry most relevant to practical
	engineering disciplines.
	• Lab Manual Supplement included in special edition of Brown and Holme 2011.
	Handouts provided by instructor
	Blackboard registration
	Other useful references:
	• L.S.Brown and T.A. Holme, <i>Chemistry for Engineering Students</i> . Special Edition.
	Thompson (Brooks / Cole) Publishers, 2011
	L.S.Brown and T.A. Holme, Thompson (Brooks / Cole) Publishers, 2006 (ISBN 0-534-
	38974-0)
TEXTBOOK & OTHER REQUIREMENTS	• Leonard Fine, Herbert Beall, John Stuehr Chemistry for Scientists and Engineers, 1st Edition, 2000, ISBN-10: 0030312914 ISBN-13: 9780030312915.
	• Mary Jane Shultz, Chemistry for Engineers: An Applied Approach. 1st Edition, ISBN-10:
	0618271945 ISBN-13: 9780618271948
	• James Glanville, General Chemistry for Engineers, 2/E, Prentice Hall, 2004. ISBN-10:
	0131449559, ISBN-13: 9780131449558.
	• Leonard W. Fine. Chemistry for Scientists and Engineers, Preliminary Edition. Saunders
	Golden Sunburst Series. 2007.
	• Sawyer, McCarty, and Parkin, Chemistry for Environmental Engineering and Science,
	Fifth Edition, McGraw-Hill, Inc., 2003 (ISBN:0-07-248066-1)
	• Snoeyink, V.L. and Jenkins, D., Water Chemistry. John Wiley & Sons, 1980.
	• Sawyer and McCarty, Chemistry for Environmental Engineering, Third Edition,
	McGraw-Hill, Inc., 1978
	1. Lab Safety
	2. Matter and Measurement
	3. Properties of Atoms, Elements, Molecules, Ions
-	4. Properties of Compounds, Mixtures, Solutions
TOPICS	5. Engineering Applications of Chemical Formulas, Chemical Equations, and
	Stoichiometry
	6. Engineering Applications of Gas Laws
	7. Engineering Applications of Equilibrium Reactions
	8. Kinetics and Reactor Design
	9. Basic Olganic Chemistry
Correct	1. Present the fundamental concepts of storenometry, equilibrium, kinetics, and organic
ODIECTIVE	chemistry as applied to engineering.
ODJECTIVE	
	A Ability to understand the fundamental concents of conservation of mass staichiometry
	as laws kinetics equilibrium and organic chemistry necessary to analyze basic
COURSE	engineering problems (a b c e f b k)
OUTCOMES & RELATIONSHIP TO ABET A –K OUTCOMES	B Ability to understand spectroscopic methods and creating calibration curves and
	dilutions (h e f h i)
	C Ability to function on multi-disciplinary teams (d e f h i k)
	D Ability to communicate effectively about issues of chemistry in engineering $(d \in f, g)$
	i)



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Contribution to Program Curriculum	Teaching students the principles of engineering chemistry, kinetics, stoichiometry, equilibrium, and organic chemistry in preparation for engineering design coursework in the various disciplines, in accordance with Program Outcomes 3, 7, and 8.			
	Outcome 1 : An understanding of professional and ethical responsibility.	Н		
	Outcome 2 : A working knowledge of fundamentals, engineering tools, and experimental methodologies.			
	Outcome 3 : An understanding of the social, economic, and political contexts in which engineers must function.			
R ELATIONSHIP TO	Outcome 4 : An ability to plan and execute an engineering design to meet an identified need.			
PROGRAM	Outcome 5 : An ability to function on multi-disciplinary teams.			
OUTCOMES	Outcome 6 : An ability to communicate effectively.	Н		
	Outcome 7: Graduates will have a proficiency in the following areas of civil			
	engineering: (a) structural engineering, (b) transportation engineering, (c)			
	geotechnical engineering, and (d) water resources/environmental engineering.	H		
	Outcome 8: Graduates will have an appreciation for the role of civil engineering	М		
	in infrastructure planning and sustainability, including hazard mitigation.	II		
	and/or pursuing further academic studies.	Н		
	The class meets for one lab session per week. Homework assignments are give	en weekly,		
APPROACH	typically. There are periodic quizzes given randomly, two term exams, and a fina	al practical		
	exam.			
	The course grade is based on the following components:			
EVALUATION	Final exam 40%			
METHODS	Assignments 53%			
	Laboratory Technique 7%	•		
	1. Cell phones and beepers should have the ringers turned off as a courtesy to the	instructor		
	and your fellow classmates.			
	2. Exams will be given only at the scheduled times and places. No make-ups, except in			
	documented emergencies. No one is exempt from the final examination.			
COURSE POLICY	sessions Final grades will be reduced by one letter for every three (3)	unexcused		
COURSET OFFICE	absences (as determined by the instructor)			
	4. You are expected to complete the assigned reading prior to the date indicated on the			
	class schedule, to do all assignments, and to participate fully in group projects.			
	5. Homework and other assignments are due at the beginning of class on the date			
	on the assignment sheet. Late assignments are not accepted. All assignment	ts must be		
	completed by strictly following the format given at the end of this syllabus.			
	6. Consultation with your classmates on assignments is expected and encouraged	l; however		
	representing the work of others as your own is unethical (see below). The i	nstructor's		
	duty is to pursue any reasonable allegation, taking action where appropriate, as	described		
	in <u>nttp://www.tau.edu/regulations/chapter4/4.001_Code_ot_Academic_Integri</u>	ty.pdf and		
	the Florida Administrative Code. Be advised that the copying of material from the			
	Code of Academic Integrity	ach of the		
	Pertinent University instructional policies may be found on the FAU we	eh site at		
	http://www.fau.edu/academic/provost/facbook.htm#teaching. It is your responsib	ility to be		
UNIVERSITY	familiar with them. A paper copy of the most pertinent of these policies is available from			
POLICY	Jessica Meith in EG 214. In compliance with the Americans with Disabilities Act. students			
-	who require special accommodations, due to a disability, to properly execute coursework			
	must register with the Office for Students with Disabilities, located in SU 133, 7-38	80.		



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Laboratory Schedule				
This is a tentative schedule of topics to be covered.				
Week	Topics	Assignments		
1	 Introduction Units of Measurement, Accuracy/Precision, Significant Digits Engineering Experimental Methods Recording Data & Statistics and Graphing Practicing Safety in the Chemistry Laboratory Laboratory Report Writing for Engineers 	Lab Manual		
2	 Introduction Review Pre-Lab #1 Stoichiometry Pre-Lab #2 Beer's Law 	Lab Safety QuizSyllabus Quiz		
3	• Lab #1 Stochiometry lab	• Pre-Lab#1 Due		
4	• Lab #2 Beer's Law lab	• Pre-Lab #2 Due		
5	 Methodology Review Pre-Lab #3 Gas Laws Pre-Lab #4 Kinetics 	• Lab#1 Due		
6	• Lab #3 Gas Laws lab	 Pre-Lab #3 Due Lab #2 Due		
7	Lab #4 Kinetics lab	• Pre-lab #4 Due		
8	 Results Review Pre-Lab #5 pH Acid Neutralization Pre-Lab #6 Photometric Determination of K_{eq} 	 Pre-Lab #5 Due Lab #3 Due		
9	Lab #5 pH Acid Neutralization lab	Pre-Lab #6 Due		
10	• Lab #6 Photometric Determination of K _{eq} lab	• Lab #4 Due		
11	 Conclusions Review Pre-Lab #7 K_{sp} precipitation reactions Pre-Lab #8 Organics Jeopardy 	• Pre-Lab #7 Due		
12	• Lab #7 K_{sp} precipitation reactions lab	 Pre-Lab #8 Due Lab#5 Due		
13	Lab #8 Organics Jeopardy	• Lab #6 Due		
14	• Review	• Lab #7 Due		
15	Final Exam	• Lab #8 Due		