

University of Nevada, Las Vegas
Howard R. Hughes College of Engineering

EGG 102.2 – INTRODUCTION TO ENGINEERING DESIGN

Tuesday & Thursday
8:30–9:20AM
TBE B178

CLASS SYLLABUS – Spring 2002

Dr. Thomas (Tom) Piechota

TBE B372C

Department of Civil and Environmental Engineering
UNLV, Box 454015
Las Vegas, Nevada, 89154-4015

P: 895-4412

F: 895-3936

Email: *piechota@unlv.edu*

OFFICE HOURS: TBA

EGG 102.2 – INTRODUCTION TO ENGINEERING DESIGN (Spring 2002)

- COURSE OBJECTIVES:**
- To identify the phases of the engineering design process.
 - To design an engineering project and construct a physical model of the project.
 - To prepare a technical report for a design project and make an effective oral presentation that summarizes the project.
 - To recognize the importance of working in a design team.
 - To recognize the importance of the NSPE Code of Ethics and the responsibility of Professional Engineers.

COURSE ASSESSMENTS: You will be assessed in the course based on three activities:

Course Lecture and In Class Activities: In addition to my lecture on engineering design, we will be performing various activities both individually and in groups during class.

Reading and Homework: The course follows the textbook with some additional materials. The reading and homework are fundamental to learning the course subjects. I will be assigning reading material that you should read before class. This will help you better understand the material. The homework assignments will help you master the material and has two benefits: (1) credit is obtained for handing in the homework material on time; and (2) familiarity is gained with the types of problems that will be candidates for the final exam.

Engineering Design Project: Your mastering of the course material should be reflected in a design project that you will work on as a team (maximum of four people in assigned groups). Your group is expected to work as a team through the various phases of the project. You will be responsible for handing in several phases of the project throughout the semester. At the end of the semester, your group will turn in a technical report on your project and orally present your project. More details will be provided to you in the following weeks.

TEXTBOOK REQUIRED: Engineering by Design, Gerard Voland
Addison Wesley, 1999

PREREQUISITE: MAT 127 (Precalculus) & ENG 101 (English Composition)

GRADING:	Homework	35%
	Final Exam	25%
	Project Report	25%
	Project Oral Presentation	10%
	Class Participation	5%
	TOTAL	100%

The A B C D F plus/minus system will be used. Cumulative grades above 90% will be at least an A-, above 80% will be at least a B-, above 70% will be at least a C-. If your cumulative grade is below 60%, then you will have to retake the course.

HOMWORK POLICY: Homework will be **due at the beginning of the class**. Late homework (after the start of class) is unacceptable and will receive a maximum grade of 50%.

Your homework should be **neat and organized**. All writing assignments should be typed and have proper grammar and spelling. There will be a lot of writing in this course and the **Engineering Writing Center** is available to assist you. Please use this resource prior to handing in assignments. For certain assignments, you will be required to have your homework reviewed by the writing center.

EXAMS: There will be a closed book Final Exam, but you will be permitted to use one 8 ½” x 11” note sheet (front and back). **The Final Exam will be on Thursday, May 16th, from 8:00 – 10:00AM.** Late exams will not be administered. If you have a scheduling conflict with the time of the Final Exam, please notify me and we can schedule an alternative time for you to take the exam.

EMAIL AND WEB There will be a course website that can accessed from my personal webpage: www.egr.unlv.edu/~piechota. You will also be **REQUIRED** to obtain a UNLV email account at newuser.nevada.edu

ACADEMIC ETHICS: Your ethics in this course are very serious:

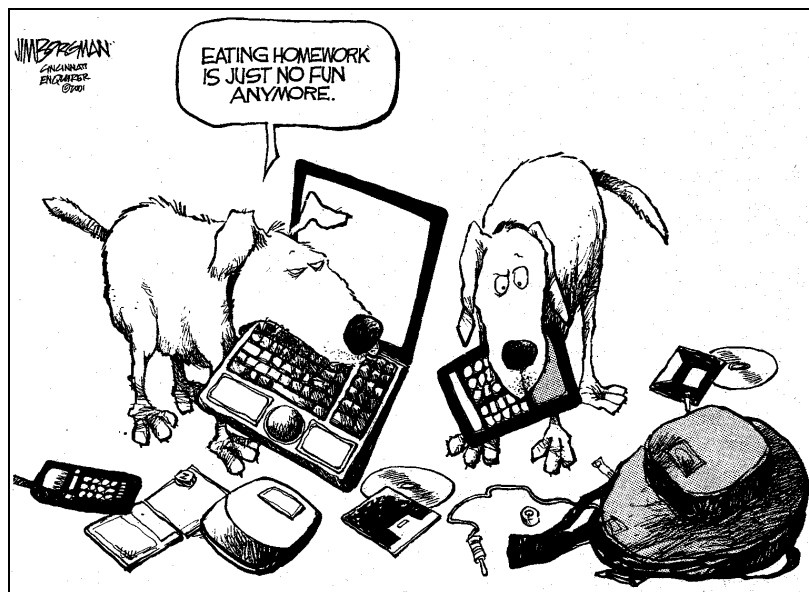
1. If you are found cheating on an exam, you will receive an F in this course.
2. As I stated earlier, you can work in groups to do the homework, but you are responsible for your own work. Students that hand in nearly identical homework will not receive credit for that assignment.

CLASS ATTENDANCE: Attendance is **mandatory**. Some of the lectures and assignments will deal with material that is not in the text. Please inform me if you intend to miss a lecture for personal reasons or for a religious holiday.

DISABILITIES: If you have a documented disability that requires assistance, you will need to go to the Disability Resource Center (DRC) for coordination in your academic accommodations. The DRC is located in the Reynolds Student Services Center rm 137. The DRC phone is 895-0866 or TDD 895-0652.

SUGGEST STRATEGY: This course will be a lot of fun and I hope to expose you to the exciting field of engineering. Engineering is a lot of fun and I encourage all of you to be **CREATIVE!**

The course was planned so that you will build your grade step by step with the homework and the different phases of the project. **Make sure you do and understand the homework.** Do not wait to clarify issues you did not understand in class or in the homework. **THERE ARE NO STUPID QUESTIONS!** Finally, make sure you **take advantage of my office hours**. If you are not able to see me during these hours, please contact me (phone or email) and we can set up an appointment.



EGG 102.2 – INTRODUCTION TO ENGINEERING DESIGN (Spring 2002)

COURSE OUTLINE (subject to change)

WEEK	CLASS	DATE	SUBJECT [CHAPTER]	READING	HOMEWORK OR PROJECT	CLASS EXERCISE
1	1	1/22	Phases of Engineering Design [1]			#1: Writing and Oral Assessment
	2	1/24	Writing Problem Statements	Chp. 1, 2-10		#2: Problem Statements
2	3	1/29	Working in Teams	Chp. 1, 11-22, 42- 44	HW #1: Handout	#3: Team Building
	4	1/31	Intro. to Final Projects/ Technical Reports			#4: Brain Storming for Projects
3	5	2/5	Establishing Need [2]	Chp. 2, 48- 58, Case History 2.1, 2.3, 2.10	HW #2: (1.4, 1.7,1.10)	#5: Design considerations soft drink can
	6	2/7				#6: Kwik- Lock Tests
4	7	2/12	Case History		HW #3: (2.3, 2.4, 2.5)	
	8	2/14			PHASE 1 DUE	
5	9	2/19	Bellagio Tour			#7: Bellagio Tour
	10	2/21	Bellagio Tour			#7: Bellagio Tour
6	11	2/26	Formulating the Problem [3] (Duncker Diagrams)	Chp. 3, 77- 86-95	HW #4: Bellagio Tour Handout	#8: Duncker Diagrams

WEEK	CLASS	DATE	SUBJECT	READING	HOMEWORK	
	12	2/28	Formulating the Problem [3] (Kepner – Tregoe)		PHASE 2 DUE	
7	13	3/5	How to Solve the Problem [4]	Chp. 4, 105-136	HW #5 (3.1, 3.2, 3.6)	
	14	3/7	Case History			
8	15	3/12	Design Analysis [10]	Chp 10., 354-372		
	16	3/14	Design Analysis [10]		PHASE 3 DUE	#10: Decision Matrix
9	17	3/19	Design Analysis [10]		HW #6 (10.1, 10.8)	
	18	3/21	Bring it All Together (Synthesis) [7]	Chp. 7, 238-246		
SPRING BREAK						
10	19	4/2	Models [6]	Chp. 6, 212-224	HW #7 (7.7, 7.8, 7.9)	
	20	4/4	Physical Models			#11: Physical Bridge Design
11	21	4/9	Computer Models		HW #8: (6.1, 6.2)	#12:Computer Bridge Design
	22	4/11	Computer Models		PHASE 4 DUE	#12:Computer Bridge Design
12	23	4/16	Alternative Energy			
	24	4/18	Alternative Energy		HW #9: (6.4)	#13: Water or rubber-band powered car
13	25	4/23	Guide to Oral Presentations			
	26	4/25	Ethics and Product Liability [8]	Chp. 8, 277-285		

WEEK	CLASS	DATE	SUBJECT	READING	HOMEWORK	
14	27	4/30	Presentations and Competition		HW #10: (8.2, 8.4)	
	28	5/2	Presentations and Competition		FINAL REPORT DUE	
15	29	5/7	Review			
	30	5/9	Guest Speaker			