

“The capacity to design includes more than mere technical competence. It involves a willingness to attack a situation never seen or studied before and for which data are often incomplete; it also includes an acceptance of full responsibility for solving the problem on a professional basis.”

Report of the Committee on Evaluation of Engineering Education, “The Grinter Committee”, 1955.

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TEACHING ASSISTANT:

OBJECTIVE: Introduction to the basics of structural design in structural steel using current design codes. Students are expected to become proficient in this basic knowledge.

TIME: M, W, F 2nd Period Weimer 1094

TEXTS : Segui, William T., LRF D Steel Design, 3rd Edition, Thomson-Brooks/Cole, 2003.
(ISBN 0-534-39373-x)

Manual of Steel Construction, LRF D, 3rd Edition, American Institute of Steel Construction, 2001.

Available for purchase through instructor during first week of class - \$95.00 -
Check made payable to “AISC” - NO CASH WHATSOEVER

WEB PAGES:

http://ces4605.home.mindspring.com	For homework and quiz solutions
http://www.mindspring.com/~sputoeng/default.htm	Sputo’s general web page
http://www.aisc.org	American Institute of Steel Construction

GRADING CRITERIA:	(7) One-Hour Quizzes	75%
	Homework / Projects	21%
	Attendance	04%

MAXIMUM GRADING SCALE: (May be relaxed at the option of the instructor)

93 - 100	A
90 - 92.99	B+
85 - 89.99	B
83 - 84.99	C+
77 - 82.99	C
75 - 76.99	D+
70 - 74.99	D
00 - 69.99	E

CLASS RULES:

1. Attendance at lecture is mandatory and timeliness is important. Attendance will be taken at the beginning of class. Attendance grade will be based on the percentage of class sessions attended. For basis of computing grades, there will be no “excused absences”.
2. Each lesson requires preparation by the student prior to the lecture. The AISC Manual and textbook are required for all lectures.
3. Quiz Information: Quizzes are closed textbook, closed note. You are allowed to have your copy of the *Manual of Steel Construction*, calculator, straightedge, pencil(s), eraser, 1 sheet of white paper with whatever you want on it (to be turned in with quiz and not returned) and green calculation paper to write on.
4. Homework will be assigned, typically at each class meeting. Working with fellow students on homework will be allowed as “self-help”, but the final homework which is turned in must represent the work of the individual student. Do not copy another student’s work. Homework will be compared and violations will be dealt with. Assigned homework will be due the second following class meeting date, at the beginning of the 2nd period class meeting. **Late homework may be turned in no later than the start of the next class meeting after the due date with a 25% penalty.** Homework not turned in by that date will not be accepted.
 - a. Homework will be submitted on engineering computation paper or as computer output (**DO NOT RE-USE PAPER!**) **ONLY ONE PROBLEM PER SHEET**. Number and label all pages. **Work neatly. All work will be graded on the basis of content and neatness. Use straightedges**, reasonable scales, use pencil (that means also using an eraser), and print and label clearly. Reference equations to AISC (i.e.: AISC Eqn. H1-1a). List assumptions or rationale for your work. **Sloppy or difficult to follow work will be returned ungraded. No exceptions.**
5. The lowest of the 7 quiz grades will be dropped for purposes of computing final grades.
6. No make-up work or quizzes will be allowed, except in cases of emergencies or civic responsibilities (jury duty, etc.), provided that the instructor is notified by e-mail in advance. Provisions for make-up work will be determined on a case-by-case basis. The decision of the instructor is final.
7. Some class communication will be by means of e-mail. Check your e-mail regularly (at least daily). Keep the instructor informed of any changes to your e-mail address. Failure on the part of the student to keep-up with e-mail communications is not excusable.
8. Solutions will be posted to the class web site for a period of 2 weeks after the due date, at which time they will be removed.
9. Grade Appeals:

General: At any time that you do not understand the solution to a quiz or homework problem, please see either the TA or Dr. Sputo. We will be happy to assist. However, if you believe that a grade was assigned in error, please comply with the following procedures:

Quiz: Please carefully consider what you did wrong. If you still believe that an incorrect grade has been assigned, you must make your case in writing only. Verbal requests will not be

considered. You must provide substantial information as to why your grade should be changed. Your request for re-grade must be received no later than 10 calendar days after the quiz date. After that date, no requests will be considered. Turn in your request to Dr. Sputo.

Homework: Please carefully consider what you did wrong. If you still believe that an incorrect grade has been assigned, you must make your case in writing only. Verbal requests will not be considered. You must provide substantial information as to why your grade should be changed. Your request for re-grade must be received no later than 10 calendar days after the homework due date. After that date, no requests will be considered. Turn in your request to Rachel Conn.

General Grading Rules

It is not the responsibility of the course instructor or TA to try to decipher your work. It should be clear what your intent is, and easy to follow in a logical sequence. Due to recurring problems each semester, the following criteria are set.

The following criteria will be used in grading homework:

Homework with more than 1 problem per sheet:	Minus 2 points out of 10
Lines drawn freehand (i.e.: no straightedge)	Minus 1 points out of 10
Work otherwise sloppy or difficult to follow	Minus 1 to 7 points out of 10

For quizzes, the following criteria will be used in grading:

Lines drawn freehand (i.e.: no straightedge)	Minus 10 points out of 100
Work otherwise sloppy or difficult to follow	Minus 10 to 25 points out of 100

These point deductions will be applied as the instructor or TA sees fit. We like to assign partial credit for problems with incorrect answers, but if we cannot follow or otherwise decipher your work to find the incorrect step without expending excessive effort, we cannot assign partial credit.

IMPORTANT UNIVERSITY INFORMATION:

Academic Honesty:

All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a student at the University of Florida and to be honest in all work submitted and exams taken in this class and all others.

Accommodations for Students with Disabilities:

Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation.

TENTATIVE LECTURE SCHEDULE
(Subject to modification)

Class No.	Date	Topic	Text (Segui)	HW	HW Due
1	24 Aug	Introduction			
2	26 Aug	Specifications and Codes	Chapter 1		31 Aug
3	29 Aug	Steel Properties, Safety, LRFD	Chapters 1, 2		02 Sept
4	31 Aug	Tension Members	3.1 - 3.3		07 Sept
5	02 Sept	Tension Members	3.4, 3.7		09 Sept
	05 Sept	Labor Day (No Class)			
6	07 Sept	Tension Members	3.6		12 Sept
7	09 Sept	Tension Members	3.5		14 Sept
8	12 Sept	Tension Members: Block Shear	3.5		16 Sept
9	14 Sept	Quiz 1			19 Sept
10	16 Sept	Compression Members	4.1 - 4.3		21 Sept
11	19 Sept	Compression Members	4.1 - 4.3		23 Sept
12	21 Sept	Compression Members	4.1 - 4.3		26 Sept
13	23 Sept	Column Design	4.4 - 4.5		28 Sept
14	26 Sept	Column Design	4.4 - 4.5		30 Sept
15	28 Sept	Quiz 2			03 Oct
16	30 Sept	Column Design	4.4 - 4.5		05 Oct
17	03 Oct	Column Design: Local Buckling	4.6		10 Oct
18	05 Oct	Built-up Compression Members	4.7		12 Oct
	07 Oct	No Class - Homecoming			
19	10 Oct	Simple Beam Bending - Shape Factor, Compact Section, Plastic Action	5.1 - 5.2		14 Oct
20	12 Oct	Quiz 3			17 Oct
21	14 Oct	Simple Beam Bending	5.3, 5.5		19 Oct

Class No.	Date	Topic	Text	HW	HW Due
22	17 Oct	Simple Beam Bending - Beam Tables	5.5, 5.10		21 Oct
23	19 Oct	Lateral-Torsional Buckling	5.5, 5.7, 5.10		24 Oct
24	21 Oct	Laterally Unbraced Beams	5.5, 5.7, 5.10		26 Oct
25	24 Oct	Laterally Unbraced Beams	5.5, 5.7, 5.10		28 Oct
26	26 Oct	Quiz 4			31 Oct
27	28 Oct	Beams - Shear, Deflection, Web Crippling and Yielding	5.8, 5.9, 5.14		02 Nov
28	31 Oct	Beams - Local Buckling, Non-Compact Flanges	5.4, 5.6		04 Nov
29	02 Nov	Combined Axial and Bending Forces, Interaction Formulas	6.1, 6.2		07 Nov
30	04 Nov	Beam-Columns	6.3, 6.5, 6.6		09 Nov
31	07 Nov	Beam-Columns	6.3, 6.5, 6.6		14 Nov
32	09 Nov	Quiz 5			16 Nov
	11 Nov	No Class - Veteran's Day			
33	14 Nov	Beam-Columns	6.7, 6.8		18 Nov
34	16 Nov	Beam-Columns	6.7, 6.8		21 Nov
35	18 Nov	Connections	7.1 - 7.9		23 Nov
36	21 Nov	Quiz 6			28 Nov
37	23 Nov	Structural Bolts, Loads, Installation	7.1 - 7.9		30 Nov
	25 Nov	No Class - Thanksgiving Break			
38	28 Nov	Bolted Connections	7.1 - 7.9		02 Dec
39	30 Nov	Welding, Joint Types, Design Stresses	7.10, 7.11		05 Dec
40	02 Dec	Welded Connections	7-10, 7.11		07 Dec
41	05 Dec	Connection Design	7-10, 7.11		07 Dec
42	07 Dec	Quiz 7 - Instructor Evaluation			

This short paper by Professor Yao from Texas Tech is a pretty good summary of my thoughts and philosophy on grades. I could not have said it better than this.

Sputo

ON GRADES AND GRADING

by James T. P. Yao for his students and interested colleagues

The grade in a given course is a measure of the student's performance in that endeavor. The overall grade point averages are indeed important considerations for all students. When I was a student at the University of Illinois in Urbana-Champaign, I did care about my grades at that time. However, I never complained about any of my grades though, at times, I felt that the grade I received in a particular course might not be fair. The fact is, on the average, the overall grade point average did reflect the knowledge gained and the effort that I put into my college education. There were courses for which I thought that I deserved a better grade than the one on my record. On the other hand, I also had grades that were better than what I expected and/or deserved. In the long run, they all averaged out at the end of my college career. Most importantly, I learned from each professor and from each course that I had.

A few years after I graduated, I forgot all my grades. No one has ever asked for my grades just a few years after I graduated from college. To date, however, I have kept all the basic knowledge that I gained from my college education. Especially, the method of learning new things on my own has been useful. If the students aim at learning as much as they can from each course and each professor, the good grades will come as a result of their diligent work, on the average. On the other hand, if the students waste their time arguing about their grades, they will lose time for studying new lessons and thus hurt their future grades.

As a teacher, I try very hard to be fair and consistent in grading student papers. The student will get a perfect score if he/she gives a correct answer. If the answer is not correct, the teacher is the one who judges how serious the error is and assigns a partial score accordingly. As a student, I had several professors who did not give partial scores. The reason was that, the engineering system could fail with the wrong answer, no matter how close the answer is to the correct one (e.g., exactly the same number but with a wrong sign). I do not agree with that policy but respect their judgement in those courses. In any event, partial scores are subjective depending on the experience and viewpoints of the individual teachers. It is counter-productive to argue about it.

Please be careful in doing your homework, tests, and other assignments. People's lives and properties will depend on your work someday in the near future. Try to learn as much as you can while you are in school. Communicate with your teachers and classmates frequently, and concentrate on the learning process. With knowledge, you will become a successful and proud engineer soon. **HAVE KNOWLEDGE, WILL SUCCEED!**

OCCAM'S RAZOR
by John H. Lienhard
The University of Houston

There is a wonderful old Shaker tune,

'Tis a gift to be simple, 'tis a gift to be free;
'Tis a gift to come down where you ought to be

Those lines should make up the first chapter in any book on engineering design. But how do we find the natural threads of simplicity that run through the world around us?

Simplicity in design was a lesson I fell into when the Army drafted me -- after I'd finished college. They assigned me to the Signal Corps Engineering Labs and put me to work designing research equipment. There I met a fine designer, Jules Soled, a person who could clearly teach me things. So I said to him, "Teach me, and I'll work for you." He taught me many things I hadn't learned in school, and his central lesson was always this:

Do a first design. Then attack it. Your first design will be elegant and complicated, but it'll always work better when you get rid of complication. In a really good design you eventually make the very design itself unnecessary. And that is very hard to do because we like complication.

That idea is really quite old. The towering 14th-century philosopher William of Occam put it this way: "Multiplicity ought not to be posited without necessity." William was telling us we should make no more assumptions than we really need to explain anything -- the simplest explanation is best. We call that idea Occam's Razor because it helps slice away the junk in our thinking.

Look at the safety razor. For years designers fought with the problem of loading, mounting, and unloading a blade in a holder. If you're old enough, you'll remember Schick's "push-pull, click-click" advertisement for its mechanism. Keeping the action workable, and the blade solidly in place, was a big problem. Then some bright person applied Occam's razor to the razor-mounting problem. That designer realized you could simply mold the blade right into the plastic packaging. Now who buys replaceable razor blades? Instead, the blades are set, very solidly and with great precision, right into a cheap throwaway piece of plastic. We've designed blade-holding mechanisms out of existence. That's what Soled meant when he said that good design makes the design itself unnecessary.

But to take that last step -- to walk the plank from a clever design to no design at all -- takes nerve as well as imagination. We're so tempted to look smart by mastering complication instead of simplicity. If we go back to our Shaker tune,

'Tis a gift to be simple, 'tis a gift to be free;

the second line says:

'Tis a gift to come down where you ought to be

Good design exacts a price from our egos, but it really is a gift -- it really is freedom -- to find the simplicity in things and finally to reduce an engineering design down to where it ought to be.