



# **MEEN 360-W Materials and Manufacturing Selection in Design: A Writing Intensive Course**

**Fall 2007**

**August 27, 2007**

**Dr. Terry S. Creasy**

1-070827-01TSC

## **Backup Email Addresses**

- **creasy3k-meen360@yahoo.com**
- **creasy3K-meen360help@yahoo.com**
  
- **Both addresses work, your mail goes to the same folder.**

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## **Assignment**

- **Your assignment appears on the last two slides.**

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## **Labs Start Monday, 3 September 2007**

- **Goto 307 ENPH-T (Cain) to start each lab unless you receive other instructions.**
- **You need the lab manual.**
- **Buy it at WERC copy center.**
- **You do not need safety glasses for the first lab.**

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# Syllabus

→ **FINAL EXAM** → 8:00 A.M. TO 10:00 A.M., MONDAY, 10 DECEMBER, 2007

You may not take the final exam early. Do not leave campus until you complete the final exam. Also, you may not take any exam early.

→ **PERFORM ALL WORK ON HOMEWORK, EXAMS, AND LABORATORIES IN SI UNITS**

Convert all data to SI units before you work with it.

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# Syllabus

## **ABET Outcomes Covered by this Course**

- (a) an ability to apply knowledge of mathematics, science, and engineering
- (b) an ability to ~~design and~~ conduct experiments, as well as to analyze and interpret data
- (c) an ability to design a ~~system, component, or~~ process to meet desired needs within realistic constraints such as ~~economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability~~
- (d) an ability to function on multi-disciplinary teams
- (e) an ability to identify, formulate, and solve engineering problems
- (f) an understanding of professional and ethical responsibility
- (g) an ability to communicate effectively

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# Syllabus

## ABET Outcomes Covered by this Course

(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

## PREREQUISITES

Students who take MEEN 360 must have a passing grade in these courses:

- MEEN 260—Mechanical Measurements
- CVEN 305—Mechanics of Materials
- MEEN 222 or ENGR 213 Materials Science

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# Syllabus

## EXPECTED PREPARATION

I expect you to have this knowledge and these capabilities:

- Know the three strong atomic bonds and what materials have each bond.
- Know basic metallic, polymeric, and ceramic crystal structures.
- Apply mechanics of materials analysis to simple components.
- Estimate linear regression coefficients for a data pair set using your calculator or Microsoft Excel; this includes data that is simple linear, log-log, or semilog.
- Perform a linear interpolation or limited extrapolation based on a least-squares error fit.
- Sketch a simple component, machine, or process either manually or by using Solidworks, Microsoft Visio, or a dedicated drawing package such as Corel Draw<sup>3</sup>.
- Understand diffusion and simple thermally activated processes in materials.
- Read and write fundamental stoichiometric chemical formulas.
- Perform a units analysis for a formula or during a calculation.

If you feel that you are deficient in these areas, you can take these steps: review your texts and notes from the prerequisite courses, research the area yourself, use the tutorials in Solidworks or Visio to gain an ability, and meet with me during office hours to discuss your preparation.

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# Syllabus

## EXAMS

- **Exam #1:** Materials Engineering and Design. This is either a closed book, formula sheet exam or an open textbook, closed note exam.
- **Exam #2:** Technical writing. This is a closed book exam.
- **Final Exam:** This is a comprehensive exam on engineering content. The exam is either closed book with formula sheets or open textbook/closed notes. Monday, 10 December 2007, 8:00 a.m. to 10:00 a.m.

## QUIZZES

The instructors may assign a written quiz on technical writing at any time during the semester.

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# Syllabus

## Lecture Topics and Calendar

The lecture covers these topics:

- Technical Writing within Mechanical Engineering
- Mechanical Properties
- Material Selection and Design
- Strain Hardening and Annealing
- Solidification Principles
  
- Material Removal
- Dispersion Strengthening and Eutectic Phase Diagrams
- Dispersion Strengthening Phase Transformations and Heat Treatment
- Steels and Cast Iron Heat Treatment
- Corrosion and Wear

The lecture calendar appears in Table 1.

After the first lecture you must read all assigned materials before each class starts.

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# Syllabus

## Laboratory Topics and Calendar

The laboratory includes these activities:

- Design, rapidly prototype, cast, and test a link
- Weld components
- Test steel's impact behavior
- Test metal hardness
- Test metals in tension
- Test polymers in tension
- Cold work and anneal brass
- Heat treat steel and age aluminum

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# Syllabus

## GRADING POLICY

Table 3 shows the grading policy for the overall course. **Please notice that you must perform the writing assignments in order to pass the course.** The best grade you can earn without writing is 65 %, which is a D. You must earn a C or better grade to continue in Mechanical Engineering.

Activity	Percent of Grade	Technical Writing	Engineering
Quizzes	5	5	0
Homework	5	0	5
Writing Worksheets	5	5	0
Exams	60	15	45 = 15 + 30
Laboratory	25	10	15
<b>Total</b>	<b>100</b>	<b>35</b>	<b>65</b>

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# Syllabus

Activity	Percent of Grade	Technical Writing	Engineering
Group memo	10	5	5
Group business letter	15	5	10
Group formal report	20	10	10
Individual formal report	35	15	20
Editing another student's writing	5	5	0
Group Analysis	5	0	5
Machining project	5	0	5
Laboratory Final Exam	5	0	5
<b>TOTAL</b>	<b>100</b>	<b>40</b>	<b>60</b>
<b>Value to Lecture Section</b>	<b>25</b>	<b>10</b>	<b>15</b>

We grade the laboratory results on this scale:

- Numbers within  $\pm 10\%$  of standard value receive 90%. credit.
- Numbers within  $\pm 20\%$  of standard value receive 80%. credit.
- Numbers within  $\pm 30\%$  of standard value receive 70%. credit.
- Numbers within  $\pm 40\%$  of standard value receive 60%. credit.
- Numbers within  $\pm 50\%$  of standard value receive 50%. credit.

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# Grade Curve

- A – Top 16 %
- B – Next 36 %
- C – Next 42 %
- D – Lowest 5 %
- F – Failure 1 %

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# Syllabus

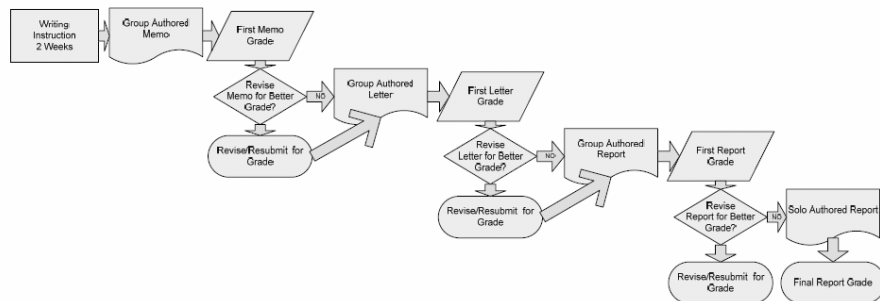
## WRITING INSTRUCTION AND FEEDBACK

Week	Presented/Returned	Student Submits
1	Writing Lectures	1 Nothing--no lab
2	Writing Lectures	2 Nothing due
3		3 Link Design Analysis and STL Files
4	Graded designs	4 Group Memo
5	Graded Group Memos	5 Analysis
6	Graded Analysis	6 Group Letter
7	Graded Group Letters	7 Analysis
8	Graded Analysis	8 Group Report
9	Graded Group Reports	9 Individual Report Draft with Final Analysis & Exhibits
10		10 Individual Report Final
11	Return 33% of Final Reports	11 Nothing due
12	Return 33% of Final Reports	12 Nothing due
13	Return 33% of Final Reports	13 Thanksgiving--No Labs
14		14 Grade Hammers, Test Links & Welds

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# Syllabus

## WRITING INSTRUCTION AND FEEDBACK



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# Syllabus

## **Overall Attendance Policy**

For absences of less than three TAMU business days, you may use the Texas A&M University Explanatory Statement for Absence from Class form available at <http://attendance.tamu.edu> with one exception: if you miss an exam because you are ill you must provide a medical confirmation note before you can make up the exam.

## **Lecture Exams**

The 50-minute midterm exams will occur on 26 October 2007 and on 5 November 2007. You will take the final exam on Monday, 10 December 2007 starting at 8:00 a.m. and ending at 10:00 p.m.

## **Laboratory Final Exam**

You will take a final exam on the laboratory activities during the classroom lecture period on Wednesday, 28 November 2007. The laboratory final exam is an individual-effort, closed book exam that lasts 50 minutes. It adds to your laboratory grade; Table 4 shows its value.

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# Syllabus

## **AMERICANS WITH DISABILITIES ACT (ADA) POLICY STATEMENT**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services ([disability.tamu.edu](mailto:disability.tamu.edu)) in Room B118 Cain Hall or call 845-1637.

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# Syllabus

## ACADEMIC INTEGRITY STATEMENT

*Aggie Honor Code: "An Aggie does not lie, cheat, or steal, or tolerate those who do."*

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the Texas A&M University community from the requirements or the processes of the Honor System. For additional information please visit:

[www.tamu.edu/aggiehonor/](http://www.tamu.edu/aggiehonor/)

On all course work, assignments, and examinations at Texas A&M University, the following Honor Pledge shall be preprinted and signed by the student:

*"On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."*

On all group course work in MEEN 360 the students who performed the work will preprint and sign the following Honor Pledge:

*"On our honor, as Aggies, We have neither given nor received unauthorized aid on this academic work."*

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# Duplex Scanner

- We scan your documents into a database.
- If you submit materials for regrading, we check them against the scanner record.
- Do not cheat.

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# Syllabus

## REQUIRED TEXTS, SAFETY GOGGLES/GLASSES AND CLOTHING

The lecture and laboratory require these items:

- Engineering Materials 1 : An Introduction to Properties, Applications and Design (Paperback) by Michael Ashby (Author), D R H Jones, 424 pages, Publisher: Butterworth-Heinemann; 3 edition (March 14, 2005)
- Engineering Materials 2, Third Edition: An Introduction to Microstructures, Processing and Design by Michael Ashby (Author), D R H Jones (Author), 352 pages, Publisher: Butterworth-Heinemann; 3 edition (October 27, 2005)
- MEEN 360 Laboratory Manual—purchase this at the Wisenbaker copy center.
- A Pocket Guide to Technical Writing, Third Edition (Paperback) by William Sanborn Pfeiffer (Author), 240 pages, Publisher: Prentice Hall; 3 edition (February 25, 2003)
- Cambridge Engineering Selector (CES) software. Buy a copy at SELL.

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**Read the Lab Manual BEFORE the lab, DURING the lab, and BEFORE you leave the lab.**

- Record everything that might be useful.
- Answer the questions before you leave. The references are in the lab.
- You are responsible for completing the lab. TAs and staff are there to assist.

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## Expectations

- Track your assignments and deadlines. Keep a planner or put personal reminders on the WebCT calendar.
- Take notes in lecture and lab.
- Submit legible materials.
- Do not email and ask when something is due. Check your notes, your lab manual, and WebCT.

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## WebCT Crash

- Get documents at
- <http://www1.mengr.tamu.edu/SMC/index.html>
- Until WebCT returns
- Path:
- <http://www.mengr.tamu.edu/>
- Click on Research
- Click on Synthetic Multifunctional Composites
- Click on MEEN 360 link

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## **WebCT Crash**

- **Email:**
- **creasy3k-meen360@yahoo.com**
- **This is always the backup email address for this course.**

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## **WebCT Crash**

- **IF the system is out a long time, we will go directly to [turnitin.com](http://turnitin.com) to submit assignments.**

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## **This is a WebCT/Vista Course**

- **All email goes through WebCT.**
- **Some or all homework and some quizzes on Vista**
- **You have all course materials available 24/7.**
- **You have a calendar.**
- **You see your grade record.**

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## **Use WebCT Email**

- **+ Your mail to me will not get buried with other mail. – You and I can schedule our time for dealing with the course.**
- **+ You can email your classmates without knowing their addresses.**
- **+ Your personal mailbox will not be jammed with email from me.**
- **+ WebCT becomes the primary stop for all work except CPR.**
- **– Attachments limited to 5MB and popups must be enabled.**

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## I post an FAQ

- Your email question will appear on the Frequently Asked Questions (FAQ) page.

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## WebCT Grade Book

- Shows your physical section, lab group, lab writing group, and your grade on each assignment.

ns

<u>Section</u> ▾ Alphanumeric	<u>Lab Group</u> ▾ Numeric (out of 4)	<u>Lab Writing Gr</u> Alphanumeric
<a href="#">^MEEN360902</a>	<u>1</u>	<u>a</u>
<a href="#">^MEEN360902</a>	<u>1</u>	<u>a</u>
<a href="#">^MEEN360905</a>	<u>1</u>	<u>a</u>
<a href="#">^MEEN360903</a>	<u>1</u>	<u>a</u>
<a href="#">^MEEN360906</a>	<u>1</u>	<u>a</u>

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## **Section, Lab Group and Lab Writing Group**

- **Physical Sections 901 to 907**
  - The lab time that you attend every week
- **Lab Group – 1, 2, 3, or 4**

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## **Grade Formula for Lab Assignments**

- **Value = attend X (1-turnitin) X servicecharge X assignmentgrade**
- **0 <= attend <= 1**
- **0 <= turnitin <= 1**
- **0 <= servicecharge <= 1**
- **See Table in the syllabus for the writing and engineering credit on each assignment.**

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$$0 \leq \text{attend} \leq 1$$

- You must attend lab to get credit.
- We dock your time for late arrivals and early departures.

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$$0 \leq (1 - \text{turnitin}) \leq 1$$

- turnitin rates your document similarity
- You may use 10% cited quotations without penalty.
- Excessive quotations or plagiarized material charged at three times content. Copy 33% or more and get zero credit.

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**$0 \leq \text{servicecharge} \leq 1$**

- Improper filename – 5%
- Need turnitin help – 5%
- Late—1<sup>st</sup> 24 hours—10%
- Late—24 to 48 hours—50%
- Late—over 48 hours—100%

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### **Filenames**

**90X-Y-Lastname-Assignment.doc**

- **X is your section number**
  - $X \in \{1, 2, \dots, 7\}$
- **Y is your group number**
  - $Y \in \{1, 2, 3, 4\}$
- **Lastname is your lastname**
- **Assignment is**
  - Letter
  - Memo
  - Report

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## Lab Schedule in Manual and Syllabus

2	3-Sep	<i>due in one week.</i>	<i>due in</i>
		<b>LINK STL files and group link analysis</b> are due at lab start. <u>Polymer Tensile Test.</u> (Staff) <i>Group memo is due in 1 week.</i>	<b>Link group are d</b> start. (Staff <i>is due</i>
3	10-Sep	<b>Polymer tensile test group memo</b> is due by 11:59 p.m. <u>Welding</u> (Staff) <i>No assignment for next week.</i>	<b>Impa mem</b> 11:59 Polyn Test. <i>analy week</i>
4	17-Sep		<b>Poly test c</b>

- Things due appear in bold.
- The lab you will perform is underlined.
- What is due next is in italics.

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## Lab Schedule in Manual and Syllabus

2	3-Sep	<i>due in one week.</i>	<i>due in</i>
		<b>LINK STL files and group link analysis</b> are due at lab start. <u>Polymer Tensile Test.</u> (Staff) <i>Group memo is due in 1 week.</i>	<b>Link group are d</b> start. (Staff <i>is due</i>
3	10-Sep	<b>Polymer tensile test group memo</b> is due by 11:59 p.m. <u>Welding</u> (Staff) <i>No assignment for next week.</i>	<b>Impa mem</b> 11:59 Polyn Test. <i>analy week</i>
4	17-Sep		<b>Poly test c</b>

- Things due appear in bold.
- The lab you will perform is underlined.
- What is due next is in italics.

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## Lab Schedule in Manual and Syllabus

2	3-Sep	<i>due in one week.</i>	<i>due in</i>
		<b>LINK ST</b> mes and group link analysis are due at lab start. <u>Polymer Tensile Test.</u> (Staff) <i>Group memo is due in 1 week.</i>	Link group are d start. (Staff is due
3	10-Sep	<b>Polymer tensile test group memo is due by 11:59 p.m.</b> <u>Welding</u> (Staff) <i>No assignment for next week.</i>	impairment 11:59 Polym Test. analy week Polym test c
4	17-Sep		

- Things due appear in bold.
- The lab you will perform is underlined.
- What is due next is in italics.

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## Lab Assignments

- Upload memos, letters, and reports to turnitin via Vista before 11:59 p.m. on your lab day.
- Upload 1 group assignment.
- Deliver analysis assignments to your TA when your lab starts.

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## **DOC Files – Office 2003 ONLY Use File/Save As/**

- Your DOC file must be Office 2003 compatible—No DOCX
- Your document must be small enough for turnitin.
- Do not use BMP images.
- 1) Use Paste special/Picture to keep the image size small.
- 2) Use adjust and crop image.
- 3) Use compress picture tool to reduce all images.
- If these steps fail, remove the images or make JPGs and compress them yourself.

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## **Assignments**

- **Before class on Wednesday**
  - Review this PPT file, read beyond the last slide shown in class.
  - Read Pfeiffer, Chapter One.
  - Complete Homework 1
- **Before class on Friday**
  - Read Pfeiffer, Chapter Two and Chapter Three formats one through five, 12, and 17.
  - Print the handout “Writers Checklist.PDF” and bring it to class.

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**Homework 1:  
Deadline 11:59 p.m. on  
Monday 3 September 2007**

- Visit [backdraft.org](http://backdraft.org).
- Download "Ending\_The\_Writing\_Crisis.PDF"
- Read that report.
- Write an essay. Discuss the steps necessary to end the writing crisis.
- Use WORD with 1 inch margins, 12 pt. type, double spaced.
- Fill one 8.5 x 11 inch page with your essay.
- Upload your DOC file to [turnitin.com](http://turnitin.com) via webct.

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