

Student Name \_\_\_\_\_

**UNIVERSITY OF TEXAS AT ARLINGTON**

COURSE TITLE: DESIGN GRAPHICS

COURSE NUMBER: MAE 1350

SECTION \_\_\_\_\_

INSTRUCTOR'S NAME: \_\_\_\_\_Cecil Harris\_\_\_\_\_

OFFICE LOCATION: ROOM \_\_\_\_\_

BUILDING \_\_\_\_\_

TELEPHONE: \_\_\_\_\_

OFFICE HOURS: Mon/Wed 9:00-11:30 am, 1:30-4:30 pm by appt...Tues/Thurs 9:00-11:30 am,  
4:30-5:30 pm by appt...Fri by appt

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY

REQUIRED TEXTBOOK: Technical Drawing, Custom Edition, by Giesecke

REQUIRED WORKBOOK: Technical Drawing Problems – series Workbook-Custom Edition, by Spencer, Hill, Dygdon and Novak

REQUIRED LAB BOOK PRO E, Sections 004, 005, 001, 007, 008 Pro Engineer Tutorial Wildfire Release 4, by Toogood

EQUIPMENT: A list of required equipment is attached to this course syllabus

## MAE 1350

### COURSE OBJECTIVES:

1. Using of the textbook, lecture material, drawing instruments and drawing board, the student will solve graphics problems.
2. With the aid of a computer the student will make spreadsheets to communicate with other engineers and vendors.
3. Drawing accurately and neatly will enable the student to detect errors on a drawing.
4. Solving graphics problems will enable the student to visualize an object more readily.
5. Successful completion of this course will provide the students a sellable skill.

### COURSE GOALS:

1. Students will learn how to take a conceptual idea and sketch it on paper or draw it on a computer.
2. Students will learn how to draw with drawing instruments on a computer.
3. Students will have "hands on" experience with the computer and experience with the drawing board.
4. Students will learn how to visualize objects from different perspectives.
5. Students will learn how to make a spreadsheet.
6. Students will learn the following types of drawings:
  - a. Geometric construction
  - b. Orthographic projections
  - c. Sectioning
  - d. Auxiliary
  - e. Fasteners
  - f. Drawings with dimensions

## MAE 1350 GRAPHICS FOR ENGINEERS

REQUIRED TEXT: TECHNICAL DRAWING, CUSTOM EDITION, BY GIESECKE, PUBLISHED BY: PRENTICE HALL PUBLISHING CO.

REQUIRED WORKBOOK: TECHNICAL DRAWING PROBLEMS (SERIES WORKBOOK - CUSTOM EDITION), BY SPENCER, HILL, DYGDON AND NOVAK PUBLISHED BY: MACMILLIAN PUBLISHING CO.

REQUIRED LAB BOOK: Pro E, Section 004, 005, 001, 007, 008 Pro Engineer Tutorial Wildfire Release 4, by Toogood

### GENERAL INSTRUCTIONS

1. Two one hour classroom lecture periods along with one three hour computer lab per week.
2. All drawing plates are due at the end of the period for which they are assigned or at the beginning of the following period which they may be assigned unless otherwise specified by the instructor.
  - a. Due dates for each assignment will be posted on the chalkboard.
  - b. Class cuts: students who miss class without approval of their instructor will receive a zero for material covered. Late work will not be accept.
  - c. IT IS YOUR RESPONSIBILITY to see your instructor for make-up work due to emergency, and illness, or authorized absences.
3. All drawing plates will be graded for accuracy, neatness, method, procedure, and completeness.
  - a. On drawing plates problems leave construction lines.
  - b. Keep your drawing lead sharp.
4. Computer lab:
  - a. Design Graphics Laboratory Sections will have first priority for the computer lab during their assigned lab periods. In addition Design Graphics students have first priority during all other times when the computer lab is not in use for classroom instruction. **Warning, lab attendance will be taken and excessive absences will result in dismissal from the course. Also, ALL UNEXCUSED ABSENCES FROM LAB WILL HAVE NO MAKE UP QUIZ AND WILL RECEIVE AN AUTOMATIC ZERO.**

- b. Due to our limited facilities students will not be permitted to use the computers for miscellaneous assignments or out-of-class work. IN NO WAY ARE ANY DESIGN GRAPHICS STUDENTS ALLOWED TO BRING IN PERSONAL "FLOPPY DISK" INTO THE COMPUTER ROOM. ALSO NO PERSONAL COMPUTER PROGRAMS ARE ALLOWED TO BE USED. PRO E IS THE ONLY PROGRAM THAT YOU HAVE AUTHORIZATION TO BE IN. DESIGN GRAPHICS STUDENTS ACCESSING PROGRAMS OUTSIDE OF PRO E WILL BE CHARGED WITH ACADEMIC DISHONESTY.
- c. Your daily computer assignment of that day will be due the day assigned (saved and plotted). Regardless of how much is done.
- d. Computer assignments not done due to an authorized absence will be made-up at the discretion of the instructor.
- e. Each student will be issued a MAE# (number), when you use Pro E be sure that you are using that number issued to you. If you misplace or forget your number check with the instructor or lab assistant to find out what your number is; someone using another MAE# other than the one issued them will be charged with academic dishonesty.
- f. NO FOOD OR DRINKS in the computer lab.
5. Final Grade will be composed of the following.
- |     |                                   |            |
|-----|-----------------------------------|------------|
| (1) | (6) Computer quizzes/Final Exam   |            |
| a)  | Three quizzes                     | 30%        |
| b)  | Approx. 10 in class assignments   | <u>20%</u> |
|     | PERCENTAGE OF GRADE COMPUTER WORK | <u>50%</u> |
| (2) | Drawing Board Assignments         | 30%        |
|     | Drawing Board Tests               | <u>20%</u> |
|     | TOTAL GRADE                       | 100%       |
6. In order for a student to pass the course they must have a passing grade (Passing Grade of 60%) on the total average grade for quizzes.
7. Sketching: (may be done at the instructor's discretion.)
- a. It is recommended that students use 2H or F leads when free hand sketching - Keep the leads sharp.
- b. Be neat and accurate.

8. Students will read over the instructions concerning the period assignments before each class.
9. On completion of an assignment, place the assignment face down in the proper box.
10. Drawings will be graded and returned to students for inspection and discussion.
11. Class and lab attendance is mandatory and being late for class is unacceptable. Excessive unexcused absences could lead to dismissal from the course.
12. *Scholastic dishonesty will not be tolerated.*

If you require an accommodation based on disability, I would like to meet with you in the privacy of my office the first week of the semester to be sure you are appropriately accommodated.

If I have not received a letter from Cheryl or Jim, I will refer you to the proper professional for verification of disability and listing of appropriate accommodations. You may reach Cheryl at (817) 272-2737 or (817) 272-3364.

**Library Information:** Tom Lindsey is the Mechanical and Aerospace Engineering Librarian. He can be reached at (817) 272-7514, and by email at [lindsey@library.uta.edu](mailto:lindsey@library.uta.edu).

You will find useful research information for mechanical and aerospace engineering at <http://www.uta.edu/library/research/>.

**PRINT YOUR NAME IN INK**

PRINT YOUR LAST, FIRST INITIAL OF YOUR FIRST NAME – SEC. NUMBER (IN BLOCK). PLACE DATE UNDER SEC. NUMBER.

EXAMPLE: Drawn by Powell, P.	File No. (Sec. No.)
	Date: 01/01/09

**MAE 1350  
LECTURE CLASS – FALL 2009**

<b>Week No.</b>	<b>Date</b>	<b>Class Time</b>	<b>Class Period</b>	<b>Course Material</b>
1	M 8/24	8:00 – 8:50	1	Lecture on text required, computer lab book required-work book required, review instruction concerning course (plates due, outside assignments), late work, quizzes; how grade is achieved, class attendance. Scales, architects; engineering, metric; Design Graphics line language.  <b>Assignments 1-2, 1-3 are due period 2.</b>
1	T 8/25	8:00 – 8:50 5:30 – 6:20	1	
1	W 8/26	8:00 – 8:50	2	Geometric Construction-Student draws or follows instructor drawing from the chalk board drawing the following:  1. Bisect line 2. Bisect angle 3. Hex about circle 4. Octagon about circle 5. Pentagon inside circle 6. Divide line into equal parts.  <b>Assignment 3-1, 3-3, 2-1, 2-3 due period 3</b>
1	Th 8/27	8:00 – 8:50 5:30 – 6:20	2	
2	M 8/31	8:00 – 8:50	3	Geometric construction line tangent to another line; arc tangent to another arc.  <b>Assignment 3-2 due period 4.</b>
2	T 9/01	8:30 – 8:50 5:30 – 6:20	3	
3	W 9/02	8:00 –8:50	4	Isometrics
2	Th 9/03	8:00 –8:50 5:30 – 6:20	4	Demonstration on chalkboard on how to draw isometrics (2 sides will be shaded). Students will draw objects from stands.  <b>Assignment: two isometrics drawings of stand objects and 2-5 will be due period 5.</b>

Week No.	Date	Class Time	Class Period	Course Material
3	T 9/08	8:00 –8:50 5:30 – 6:20	5 5	Isometrics: students will draw an isometric ellipse from demonstration on the chalkboard.
3	W 9/09	8:00 – 8:50	5	<b>Assignment: student will draw two objects from the stands with isometric ellipse and 2-6 due period 6.</b>
3	Th 9/10	8:00 –8:50 5:30 – 6:20	6 6	Quiz over: geometric construction, Isometric Sketching
4	M 9/14	8:00 – 8:50	6	
4	T 9/15	8:00 – 8:50 5:30 – 6:20	7 7	Film, orthographic projection Demonstration on chalk board what a:
4	W 9/16	8:00 – 8:50	7	<ol style="list-style-type: none"> <li>1. Normal surface is in relation to top front and side views.</li> <li>2. Incline surface as to front &amp; topside views.</li> </ol> <b>Assignments 6-1, 5-2 due period 8.</b>
4	Th 9/17	8:00 – 8:50 5:30 – 6:20	8 8	Demonstration on the chalkboard of an oblique surface.
5	M 9/21	8:00 – 8:50	8	Lecture on <b>assignments 4-1, 7-1 that will be due period 9.</b>
5	T 9/22	8:00 – 8:50 5:30 – 6:20	9 9	Demonstration on chalk board of what constitutes an independent cylindrical surface
5	W 9/23	8:00 – 8:50	9	<b>Assignment 6-3, 6-4, 6-5 due period 10.</b>
5	Th 9/24	8:00 – 8:50 5:30 – 6:20	10 10	Go over H-1 assignment showing how one can draw the in section of two cylindrical surfaces.
6	M 9/28	8:00 – 8:50	10	<b>Assignment H-1; due period 11. One hour Quiz over orthographic projections (normal; incline) oblique; arcs &amp; cylindrical surfaces.(H-1 handout)</b>

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Week No.	Date	Class Time	Class Period	Course Material
6	T 9/29	8:00 – 8:50 5:30 – 6:20	11 11	Film on Sectioning
6	W 9/30	8:00 – 8:50	11	<ol style="list-style-type: none"> <li>1. Full</li> <li>2. Half</li> <li>3. Aligned</li> <li>4. Removed</li> <li>5. Revolved</li> </ol> <p>Lecture on:</p> <ol style="list-style-type: none"> <li>1. Hidden lines</li> <li>2. Crosshatching</li> <li>3. Cutting plane and with line of sight.</li> <li>4. Demonstration on chalk board as to the cutting plane in all views.</li> </ol> <p><b>Assignment 8-1 due period 12.</b></p>
6	Th 10/01	8:00 – 8:50 5:30 – 6:20	12 12	Lecture and Demonstration on assignment sheet 8-6.
7	M 10/05	8:00 – 8:50	12	<ol style="list-style-type: none"> <li>1. Finish mark &amp; location on views</li> <li>2. Hidden circle &amp; solid circle</li> <li>3. How to treat center lines in half sections</li> </ol> <p><b>Assignment sheet 8-6 due period 13.</b></p>
7	T 10/06	8:00 – 8:50 5:30 – 6:20	13 13	Lecture and demonstration on problems in assignments 8-7 (prob-1), 8-2 (prob 2) and 8-5.
7	W 10/07	8:00 – 9:50	13	<ol style="list-style-type: none"> <li>1. How to treat aligned sectioning when the cutting plane goes at an angle</li> <li>2. What features may be seen of a half sectioning.</li> </ol> <p><b>Assignment 8-7, 8-2 due period 14</b> <b>Course Material</b></p>
7	Th 10/08	8:00 – 8:50 5:30 – 6:20	14 14	Lecture & Demonstration on assignment Sheets:
8	M 10/12	8:00 – 8:50	14	<ol style="list-style-type: none"> <li>1. Aligned sectioning</li> </ol> <p><b>Assignments 8-5 due period 15.</b></p>

Week No.	Date	Class Time	Class Period	Course Material
8	T 10/13	8:00 –8:50 5:30 – 6:20	15 15	<b>One hour quiz on sectioning</b>
8	W 10/14	8:00 – 8:50	15	
8	Th 10/15	8:00 –8:50 5:30 – 6:20	16 16	Spreadsheet Lecture 1. Elements of Presentation 2. Significance of Data 3. Forms Development/Tools 4. Ethics/Role of Graphics in Litigation  Film on auxiliary views 1. Lecture and Demonstration on primary Auxiliary views (reasons for auxiliary views) 2. Show how to use numbers on lines to help draw auxiliary views 3. Go over <b>assignment 9-1 due period 17.</b>
9	M 10/19	8:00 – 8:50	16	
9	T 10/20	8:00 – 8:50 5:30 – 6:20	17 17	1. Lecture and Demonstration on how surfaces at different angles to each other may be brought into an edge view that will show the true angle between the two surfaces and how two intersecting planes at different angles may be brought into an edge view to show the true angle between the surfaces. 2. Discuss assignment, <b>9-2 &amp; 9-3 due period 18.</b>
9	W 10/21	8:00 – 8:50	17	
9	Th 10/22	8:00 – 8:50 5:30 – 6:20	18 18	1. Lecture and Demonstration on: Why it is sometimes necessary to draw a regular view. 2. Show how on incline surface may be brought to an edge to show the angle of either the backside or front surface. 3. Discuss <b>assignment 9-4, (10-1 or 9-5) due period 19.</b>
10	M 10/26	8:00 – 8:50	18	

<b>Week No.</b>	<b>Date</b>	<b>Time of Class</b>	<b>Class Period</b>	<b>Course Material</b>
10	T 10/27	8:00 – 8:50 5:30 – 6:20	19 19	<b>One hour Quiz over Auxiliary Views</b>
10	W 10/28	8:00 – 8:50	19	
10	Th 10/29	8:00 – 9:50 5:30 – 6:20	20 20	<p>Demonstration of Threads &amp; Fasteners:</p> <p>25 Thread types</p> <p>25 Sharp "V"</p> <p>b. American National</p> <p>c. Unified</p> <p>d. Square</p> <p>e. Acme 6.womm</p> <p>f. Knuckle</p> <p>g. Buttress</p> <p>25 Thread pitch and how one determines thread pitch</p> <p>25 Illustrate on chalkboard how to make thread notes on a drawing.</p> <p>4. Demonstration on chalkboard how to make simple and schematic threads on a drawing.</p> <p><b>Assignment 12-1, 12-2 due at beginning of period 21.</b></p>
11	M 11/02	8:00 – 8:50	20	
11	T 11/03	8:00 – 8:50 5:30 – 6:20	21 21	<p>Illustrate on chalkboard how to draw bolt and nut with detail right and left-hand threads on a drawing.</p> <p><b>Discuss assignment 0-5 (handout) due at the beginning of period 22.</b></p>
11	W 11/04	8:00 – 8:50	21	

Week No.	Date	Class Time	Class Period	Course Material
11	Th 11/05	8:00 – 8:50 5:30 – 6:20	22 22	25 Discuss the Rules of dimensions 25 Placement of dimensions on drawing (near the fracture) b. Place only one dimension on each drawing 25 Dimensioning techniques 25 Arrow heads b. Gaps of dim c. Extension line d. Spacing of dimension lines 3. Using decimals versus fractions.  <b>Discuss assignment 11-1. 11-2 due at the beginning of period 23.</b>
12	M 11/09	8:00 – 8:50	22	
12	T 11/10	8:00 – 8:50 5:30 – 6:20	23 23	Demonstration of dimensioning the: 25 Holes b. Cylinders c. Arcs & curves d. Placement of notes e. Keyways  <b>Discuss assignment 11-3 due at beginning of period 24.</b>
12	W 11/11	8:00 – 8:50	23	
12	Th 11/12	8:00 – 8:50 5:30 – 6:20	24 24	Demonstration and lecture on the Tolerancing of: 1. Upper & lower limits 2. Class of fits 3. Fits between mating parts.  <b>Discuss 11-4 worksheets that will be due at beginning of period 25.</b>
13	M 11/16	8:00 – 8:50	24	
13	T 11/17	8:00 – 8:50 5:30 – 6:20	25 25	Demonstration and lecture on the Limited Dimensioning  <b>Discuss worksheet 11-5 that will be due at beginning of period 26.</b>
13	W 11/18	8:00 – 8:50	25	

Week No.	Date	Class Time	Class Period	Course Material
13	Th 11/19	8:00 – 8:50 5:30 – 6:20	26 26	Demonstration and lecture on Oblique Projection
14	M 11/23	8:00 – 8:50	26	Discuss <b>assignment 14-1 that will be due at beginning of period #27</b>
14	T 11/24	8:00-8:50 5:30-6:20	27 27	Demonstration and lecture on Oblique Projection
14	W 11/25	8:00-8:50	27	Discuss <b>assignment 14-2 that will be due at beginning of period #28</b>
14	Th 11/26			THANKSGIVING DAY
15	M 11/30	8:00-8:50	28	Review
15	T 12/01	8:00-8:50 5:30-6:20	29	Review
15	W 12/02	8:00-8:50	29	END OF COURSE QUIZ
15	Th 12/03	8:00-8:50 5:30-6:20	30	END OF COURSE QUIZ

### Key Assignment for MAE 1350

The computer part for MAE 1350 is being taught in Woolf Hall Room 406. The software that is being used on the computer will be Pro Engineer Tutorial Wildfire Release 4.0, by Toogood.

The Key Assignment for the course MAE 1350 will be the mid-term examination on the computer. [Each student will be given an object to be drawn on the computer in detail.] A grade of 60 or better must be met for the student to pass the course MAE 1350. If the student does not make a passing grade of 60 or better on the mid-term examination (Key

Assignment) then the student has the rest of that semester to pass the exam. In addition to passing the Key Assignment, the student will be required to work and pass all other assigned work to get credit for the course.

In conclusion, this Key Assignment will determine if the student knows the computer commands to generate a detail drawing of an assigned object.