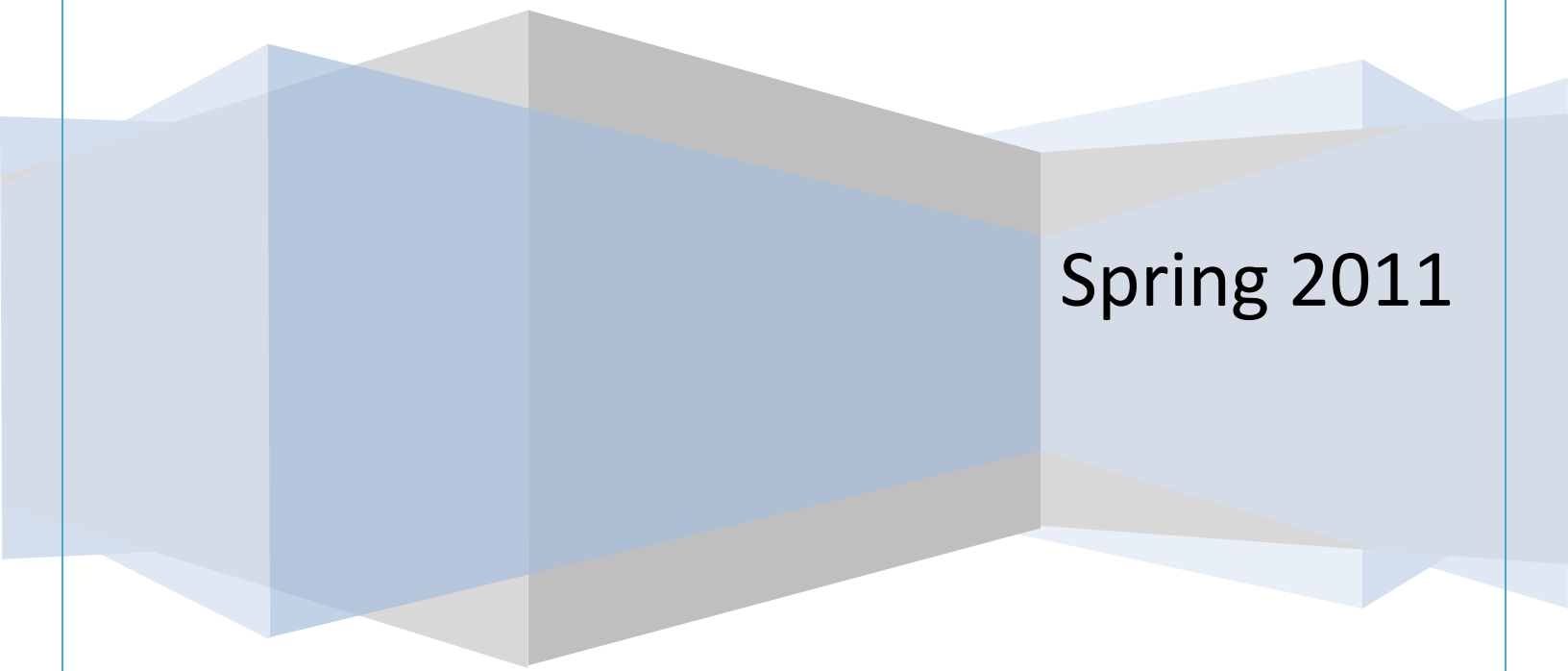


Department of Industry & Technology  
Millersville University of Pennsylvania

# ITEC 241

## Drafting Communications

Hosein Atharifar, PhD, CMfgE



Spring 2011

## ITEC 241.01-Drafting Communications (Spring 2011)

Date	Day	Session	Reading assign. from books	Subject of lecture and class work		
Jan 18	Tu	1	B1-Ch1	Introduction, graphic language in design, drafting instruments		
Jan 20	Th	2	B1-Ch2	Projection systems, Lines, lettering, scales		
Jan 25	Tu	3	B1-Ch2	Scales, drawing sheets, and layouts (sizes, title block, preparations, etc)		
Jan 27	Th	4	B1-Ch3	Drafting exercise in the class		
Feb. 1	Tu	5	B1-Appendix 6	Geometry construction I		
Feb. 3	Th	6	B1-Appendix 6	Geometry construction II		
Feb. 8	Tu	7	B1-Ch4	Orthographic projections; exercise on missing drawings		
Feb. 10	Th	8	B1-Ch4	Orthographic projections; exercise on missing drawings		
Feb. 15	Tu	9	B1-Ch4	Orthographic projections; exercise on missing drawings		
Feb. 17	Th	10	B1-Ch5	2D drawings representation; exercise on missing drawings		
Feb. 22	Tu	11	B1-Ch9	Dimensioning and annotation, surface finish marks		
Feb. 24	Th	12	B1-Ch10 or Ch7	Dimensioning and Tolerances OR Auxiliary Views		
March 1	Tu	13	<b>Mid Term Exam</b>			
March 3	Th	14	B2-Ch 1 & 2	Introduction to AutoCAD, lines, coordinate systems, zoom	<b>Drafting using AutoCAD</b>	
March 8	Tu	<b>Spring Break</b>				
March 10	Th					
March 15	Tu	15	B2-Ch 3, 5 & 12	Basic drawing and editing, plotting, multiple exercises		
March 17	Th	16	B2-Ch 3, 5 & 12	Basic drawing and editing, plotting, multiple exercises		
March 22	Tu	17	B2-Ch 4 & 6	Dimensioning, annotation, text, spline, pline, scale, etc.		
March 24	Th	18	-	Drawing exercises in the class		
March 29	Tu	19	<b>CAD exam 1</b>			
March 31	Th	20	B1-Ch 6	Sectional views I		
April 5	Tu	21	B1-Ch 6	Sectional views II		
April 7	Th	22	B1-Ch 3	Pictorial drawings, Isometric drawings using paper and pencil	<b>Drafting using AutoCAD</b>	
April 12	Tu	23	-	Projections in AutoCAD, <u>CAD project</u> will be announced.		
April 14	Th	24	-	Sectional views in AutoCAD		
April 19	Tu	25	-	<i>Work on the CAD project I</i>		
April 21	Th	26	-	Pictorial Drawings in AutoCAD		
April 26	Tu	27	-	<i>Work on the CAD project II</i>		
April 28	Th	28	<b>CAD project is due April 29-Friday at 12 pm - CAD exam 2</b>			
May 3	Tu	<b>Final Exam - 10:15am-12:15pm-Osburn Room #301</b>				

**Time:** Tuesday-Thursday 12:45 pm - 2:50 pm

**Location:** Osburn hall, rooms #301 and #300 (only for CAD)

**Instructor:** Hosein Atharifar, office number 320 at Osburn hall

**Office hours:** MW 10-11:30 am and TuTh 3:30 -4:30 pm

**Contact:** (717) 872-3328; [hatharifar@millersville.edu](mailto:hatharifar@millersville.edu); web site: <http://www.millersville.edu/~hatharifar/>

# Millersville University

## Department of Industry and Technology

### Drafting Communications (ITEC 241), 3 credit hours

**PREREQUISITES:** none

**INSTRUCTOR:** Hosein Atharifar

**CONTACT:** office #320 at Osburn hall; [hatharifar@millersville.edu](mailto:hatharifar@millersville.edu); (717) 872-3328

#### TEXT BOOKS:

1. (required), **Modern Graphics Communications** (4th Ed.), 2009, (by Giesecke et al.), ISBN-13: 978-0135151037, *Available at MU's bookstore located in Student Memorial Center*
2. (Optional), **AutoCAD 2011: A Problem Solving Approach**, by Sham Tickoo, ISBN 13: 978-1111127725, publisher: Autodesk Press
3. (required), **Engineering Drawing, problem series 1** (10th Ed.), by Alva Mitchell, Frederick E. Giesecke and et al., publisher: Prentice Hall; ISBN-10: 0136585361 or ISBN-13: 978-0136585367, *Available at MU's bookstore located in Student Memorial Center*

#### RECOMMENDED REFERENCES

- "Engineering Drawing and Design", by David A. Madsen and et al., 4<sup>th</sup> ed., 2006, publisher: Delmar Cengage Learning, ISBN-10: 1418029874 or ISBN-13: 978-1418029876
- "Technical Drawing", by Frederick E. Giesecke and et al., 13<sup>th</sup> ed., 2008, publisher: Prentice Hall, ISBN-10: 0135135273 or ISBN-13: 978-0135135273

#### CATALOG DESCRIPTION

This is an introductory course in visual communications dealing with lettering, English and Metric measurement, engineering geometry, multi-view drawings, sectioning, pictorial representation, dimensioning, detail drawing, computer-aided drafting applications, reproduction of drawings, and selection of equipment and supplies. No prerequisites. 2 hours lecture, 3 hours lab.

#### OBJECTIVES

As a result of this course student will:

1. Describe the elements of the universal systems model as each relates to a communication system.
2. Identify and use various drafting tools, aids, and equipment and their uses in graphic communication.
3. Demonstrate the ability to compose single stroke gothic lettering both freehand and with mechanical lettering devices.
4. Develop problem-solving skills in the use of equipment and in graphical representation and layout.
5. Develop the ability to measure using the English and metric measurement system.
6. Develop the ability to visualize and solve space problems graphically.
7. Demonstrate an understanding of principles of sketching, geometric construction, orthographic projection, dimensioning, sectioning, pictorials, detail and assembly drawings, and conventional practice followed in graphical communication.
8. Develop accurate and expedient manipulative skills for producing engineering drawings using pencils, an inking system, and a CAD system.
9. Demonstrate a basic working understanding of a computer-aided drafting system.
10. Develop an understanding of drafting standards (American Drafting Standards, etc.) and be able to relate them properly to drawing and industry.

11. Demonstrate an understanding of surface finish characteristics and relate them to drafting and production.
12. Describe the types, principles, and uses of various reproduction techniques.
13. Identify careers and opportunities in drafting due to technological advancement.
14. Demonstrate the ability to apply mathematic and scientific principles in communication technology.

#### GRADING POLICY

- Homework (20%)
- Mid-term exam (20%)
- CAD exam 1 (7.5%)
- CAD exam 2 (7.5%)
- CAD project (15%)
- Class activities and participation (10%)
- Final exam (20%)

#### GRADING SCALE

<u>Grade</u>	<u>Percent</u>	<u>Grade</u>	<u>Percent</u>
A	≥ 94	C	73 – 76.9
A-	90 – 93.9	C-	70 – 72.9
B+	87 – 89.9	D+	67 – 69.9
B	83 – 86.9	D	63 – 66.9
B-	80 – 82.9	D-	60 – 62.9
C+	77 – 79.9	F	< 60

#### CLASS ATTENDANCE POLICY

**Students are expected to attend all classes.** It is the student's responsibility to complete all course requirements even if a class is missed. If a student misses class for an officially excused reason, then he/she is entitled to make up the missed work but only at the convenience of the faculty member. Responsibility for materials presented in, assignments made for, and tests/quizzes given in regularly scheduled classes lies solely with the student. **Note: each absence beyond three sessions will reduce two points from your cumulative final grade.**

#### ACADEMIC DISHONESTY

Academic dishonesty is not tolerated and may result in failure in the course. University's description of academic dishonesty is available at <http://www.millersville.edu/~govern/sect3/acaddis.html>.

#### CLEAN-UP AND LABORATORY MAINTENANCE

All students are required to clean all areas in which they have worked at the end of the period—discard all scrap paper and tape in the trash can, dust all eraser crumbs from drafting table top and auxiliary furniture, remove all excess tape from equipment, and drafting furniture. It is each student's responsibility to participate in the general clean up and maintenance at the conclusion of the semester to restore the drafting facility.

#### MISCELLANEOUS

- Students must check Desire2Learn (<https://millersville.desire2learn.com/>), their marauder e-mail, and <http://www.millersville.edu/~hatharifar/> for announcements, and other course material.
- Failure to take all tests and submit all assignments by the required deadlines invalidates this grading system.

- *There is one week allowance to return the homework.* Put your name, student number, and course section (e.g. ITEC 241.01). Submit your homework in the class. If there was an emergency, you can put your homework in my mail box.
- CAD homework should be printed and submitted to me in the class.
- CAD project is printed on a standard sheet with requested scale and submitted to me on or before the announced due date.
- There are no make-up exams. Exceptions may be made at my discretion for reasons of illness or university excused absences.
- Students with special needs should contact “Office of Learning Service” at (717) 872-3178, or <http://www.millersville.edu/learningservices/>.

### My expectations

- Bring your text book and workbook all the time. If you do not bring them, I cannot help you.
- Bring your drafting instruments all the time (not for CAD classes).
- Always have some blank ANSI A-size paper.
- Do not leave your seat unless you want to go out or participate in the class activities.
- For homework, group working is encouraged, but do not copy from one another.
- **Do not communicate** with others while drafting. You are simply distracting other students.
- Pay attention to the instructions.
- **During lecture**, you can stop me and ask questions.
- **During drafting**, if you need assistance, raise your hand. I will come and assist you.
- Cell-phones should be off or be set on vibrate. There should not be any messaging in the class.
- No MP3 players and head sets in the class.
- No drinks and eating in the drafting room and CADD lab.
- Take notes in the class.
- Always hand-in homework at the **beginning of the class** (since at the end of the class, homework may be solved and discussed).
- Clean your table after drafting.
- Read the text-books (drafting and CAD) before and after each lecture.
- Come to class prepared.

### EQUIPMENT REQUIRED

MU bookstore has kits made up containing the required equipment. If you want to purchase it separately, the following lists the required equipment.

#### Architects’ Scale:

A low priced triangular plastic scale is sufficient for our needs. Avoid cheap wooden scales and expensive wood and plastic combinations. Look for fractional identifications.

#### \*Engineers’ Scale:

Purchase an inexpensive triangular shaped scale. This scale is also called the curl engineer’s scale. It divides one inch into 10, 20, 30, 40, 50, and 60 units; therefore, decimal dimensions can easily be set off. (Kit available in the University Store may not have this scale. You have to buy this scale individually from local stores or online.)

#### Metric Scale:

The international system of measurement scale should contain these scales (1:1, 1:2, 1:2.5, 1:33.3, 1:5, and 1:75). Purchase an inexpensive triangular shaped scale.

<b>Triangles:</b>	<p>You have a choice to make. Traditional triangles used include one 30-60 degree, and one 45 degree. Triangles are measured by their longest altitude and are commonly sold in two-inch increments. We recommend an 8 inch 45 degree and a 10-inch 30-60 degree. Colored Lucite triangles decrease the shadow along the edge of the triangles but are not necessary in good lighting. Your triangles should have a modification of their inner edge to facilitate lifting them from the work. If they have an undercut around the outside edge this will be to your advantage when we ink our drawings, but this is not an essential feature.</p> <p>Your alternative to the two triangles is the purchase of an adjustable triangle, which has the advantage of allowing measurement of angles in one-degree increments up to 90 degrees. It also has a handle that allows easy lifting.</p>
<b>Compass:</b>	A six-inch bow compass is ideal for the type of drawing you will do this semester. Additional features to look for include: center wheel adjustment, quick acting feed screw, and removable leg ends. Do not buy compass leads.
<b>Circle Template:</b>	Fractional identification of circles adapts well to most of our needs (1/64" graduations).
<b>*Lead Holders:</b>	Preferred a <b>0.3 mm (or 0.5 mm) HB</b> and <b>0.7 mm HB</b> lead mechanical pencils are necessary for drawing thin and thick lines respectively. Do not buy any leads until you have had additional instruction and experience that will make you a good consumer of leads. Its biggest advantage is that it does not require sharpening. (The thin lead of 0.3 mm accompanying a fit mechanical pencil may not be included in your drafting kit if you buy it from University Store. <b>So, you may need to buy the 0.3 mm mechanical pencil individually from local stores or online.</b> )
<b>Dust brush:</b>	A 10" horsehair dusting brush with 2" x 6" bristles set in a wooden or polypropylene handle is useful for removing eraser crumbs without smearing your drawing.
<b>Eraser:</b>	One vinyl eraser for erasing drafting leads, and one vinyl-impregnated eraser for eradicating ink on drafting film are necessary when correcting errors on a drawing.
<b>Erasing Shield:</b>	A plastic or metal erasing shield will be satisfactory for use in this course. It assists in removing pencil line errors.
<b>*Drafting Tape:</b>	Drafting tape will assist in holding paper on the drafting table.
<b>*Calculator:</b>	Having a calculator capable of doing basic arithmetic function (including sin, cos, tan, log ...) is strongly recommended.

*\* Note: those of instruments that specified with asterisk might not be included in the kit available in the University Store. You can buy them separately from the same store or online.*

## OPTIONAL EQUIPMENT

<b>Dividers:</b>	Six-inch friction-hold dividers make transferring of dimensions a simple task.
<b>Uni-adapter:</b>	Assists in mounting all drawing, inking, and cutting instruments to a compass. Make sure the uni-adapter you purchase fits the compass.

<b>Carrying Case:</b>	A small fishing tackle box or artist box provides organization and protection for your drafting tools.
<b>Sandpaper Pad:</b>	A wooden pad holding numerous sheets of sandpaper. It's used for sharpening a compass.
<b>Lead Pointer:</b>	Pencil pointer for sharpening mechanical pencil leads. EMCA LP120 preferred.
<b>Arrowhead Template:</b>	Timely T-63 preferred.
<b>T-Square and Drawing Board:</b>	These two tools allow you to complete accurate drawings outside of class. An inexpensive 20" x 24" softwood board and 24" wooden T-square will be quite adequate for achieving high quality drawings.
<b>Ames Lettering Guide:</b>	A plastic Ames lettering guide facilitates the construction of guidelines for neat and accurate lettering on a drawing.
<b>Isometric Ellipse:</b>	RapiDesign No. 123 is preferred.
<b>Irregular Curve:</b>	Also known as a French curve for drawing non-symmetrical curves.
<b>Technical Pens:</b>	One .35mm (0) wide pen and one .70 (2-1/2) wide pen. Both tips should be of the cylindrical metal sleeve style for use with lettering scribes.  Caution: Do not disassemble pens until you have complete instructions on their use.
<b>Caution:</b>	There are a large number of "drafting sets" on the market that include unnecessary extras like bowed inking pens, extra compasses, compass extensions, extra compass tips . . . etc. These sets are frequently "marked down" for "great buys". Avoid them for purposes of this course.

## SOURCES OF EQUIPMENT

### MU Campus Bookstore (kits available)

#### Staples

1296 Lititz Pike  
Lancaster, PA 17601  
Phone: 396-8917

#### Staples

2090 Lincoln Hwy E # 9  
Lancaster, PA 17602  
Phone: 392-8710

#### OfficeMax

1700 Fruitville Pike # B  
Lancaster, PA 17601  
Phone: 481-9859

<http://www.draftingsteals.com/>

<http://www.hearlihy.com/store/>