

**#684 ENGINEERING AND DESIGN TECHNOLOGY I**

**GRADES: 10 - 12**

**LEVEL: 1**

**CREDITS: 5**

**PREREQUISITE: None**

**BASIC TEXT: Mechanical Drawing Glencoe-McGraw/Hill French Svensen Helsel Urbanic**

**Eleventh Edition**

**Tenth Edition**

**Ninth Edition**

**SUPPLEMENTAL READINGS: Handouts provided by instructor.**

**REQUIRED MATERIALS: All drafting equipment provided by instructor.**

**COURSE DESCRIPTION:** A course designed to integrate the computer into Mechanical Drawing. The primary concern will be to teach the students how plans are put on paper using the tools of a draftsman. After learning the correct techniques of how three-dimensional objects appear on a one-dimensional surface students will be introduced to the basic commands of AutoCAD using the computer.

**MISSION RELATED GOALS:**

Academic Excellence  
Intellectual Curiosity  
Respect for others  
Self-confidence  
Fosters communication  
Fosters problem-solving skills

**STUDENT EXPECTATION FOR LEARNING ADDRESSED:**

**Communicate effectively** The students will use the tools of a draftsman and the computer to communicate technical drawings.

**Solving complex problems** The students will use math skills as well as drafting tools to translate sketches into technical drawings.

**Work with others toward a common goal.** Students will work individually and in groups in a business/engineering setting, to produce sketches and technical drawings.

**GENERAL PERFORMANCE OBJECTIVES:** The student will be able to:

1. Learn how to use drafting tools and the techniques involved to produce a drawing and the use of a computer will allow them to consider many rewarding careers.
2. Understand and practice proper safety techniques in using drafting equipment.
3. Understand the importance of sketching and lettering.
4. Understand the dimensioning rules in Mechanical Drawing.
5. Identify and use the proper tools in drafting to produce a completed single-view drawing.
6. Properly dimension a single-view drawing.
7. Understand the geometry involved in producing drawings.
8. Use the computer and the AutoCAD LT program to produce technical drawings.

**MASSACHUSETTS FRAMEWORKS STRANDS**

There are no specific strands listed.

**UNITS AND THEMES:**

A. Careers and Opportunities in Drafting.	.5	Weeks
B. Use and Care of Equipment	.5	Weeks
C. Sketching and Lettering	1.0	Weeks
D. Rules of Dimensioning	.5	Weeks
E. Single-view Drawings	10	Weeks
F. Geometry in Drafting	2.5	Weeks
G. AutoCAD LT and how to use it	4.0	Weeks

**COURSE OUTLINE:** This course provides the student with an integrated introduction to technical drawing. Emphasis will include problem-solving skills required to draw three-dimensional objects in two dimensions and an introduction to computer aided drawing (CAD) using the industry standard AutoCAD LT 2000. Students will

begin their experience on the board and after learning basic concepts, progress to the computer. THIS IS A GOOD COURSE FOR THOSE CONSIDERING A CAREER IN ENGINEERING.

**1. CAREERS AND OPPORTUNITIES IN DRAFTING**

Mechanical Drawing  
Exploring Drafting

Chapter 1  
Chapters 1, 2

**2. USE AND CARE OF EQUIPMENT**

Mechanical Drawing  
Exploring Drafting

Chapter 3  
Chapter 4

**3. SKETCHING AND LETTERING**

Mechanical Drawing  
Exploring Drafting

Chapter 2  
Chapter 3, 7

**4. RULES OF DIMENSIONING**

Mechanical Drawing  
Exploring Drafting

Chapter 6  
Chapter 5, 9

**5. SINGLE-VIEW DRAWINGS**

Mechanical Drawing  
Exploring Drafting

Chapter 4  
Chapter 6

**6. GEOMETRY IN DRAFTING**

Mechanical Drawing  
Exploring Drafting

Chapter 5  
Chapter 8

**7. AUTOCAD LT AN ITS USE**

AutoCAD LT Fundamentals and Applications  
AutoCAD and its Applications

Handouts  
Handouts

**USE OF TOOLS/TECHNOLOGY**

**1. Computer and software for AutoCAD LT**

2. Use of the Internet to view various URL's relating to drafting topics and careers.

**ASSESSMENT:**

1. Teacher Observation of skills and safety techniques.
2. Projects on developing designs.
3. Written/Oral/Visual Pre and Post tests in various units.
4. Student drawings produced on the drafting board and the computer.