

1. understand basics of blueprint reading, preparation and detailing of technical drawings, drawing scale, title block, revision block, additional notes, etc.;
2. utilize free-hand sketching and basic drafting instruments in geometric construction;
3. employ shape description and drawing preparation techniques of multi-view orthographic projection and 3D visualization using isometric, oblique, and perspective views using instrumental drafting techniques;
4. apply shape description and drawing preparation techniques through creation of parametric 3D solid models using Inventor software. Prepare detailed drawing along with all necessary dimensions and annotations, including tolerancing and geometric dimensioning & tolerancing (GD&T);
5. use additional shape description tools of sectioning, auxiliary, detail, break, and broken-out views to complete shape description. Create assembly of many components of the design object and generate exploded assembly and bill of materials;

Measurable Course Performance Objectives:

Upon successful completion of this course, students should specifically be able to do the following:

1. understand basics of blueprint reading, preparation and detailing of technical drawings, drawing scale, title block, revision block, additional notes, etc.;
 - 1.1 *examine actual working drawings from industry;*
 - 1.2 *break down a blueprint into shape and size description and additional annotations;*
 - 1.3 *determine how blueprints are prepared and detailed based on ANSI standards;*
2. utilize free-hand sketching and basic drafting instruments in geometric construction:
 - 2.1 *introduce basic drafting instruments: scales, triangles, T-square, compass, protractor, etc.;*
 - 2.2 *employ these tools to complete several drawings;*
 - 2.3 *understand drawing scale, perform exercises using engineering/architect's scales.;*
3. employ shape description and drawing preparation techniques of multi-view orthographic projection and 3D visualization using isometric, oblique, and perspective views using instrumental drafting techniques;
 - 3.1 *prepare several geometric shape description exercises, complete lettering;*
 - 3.2 *complete isometric and oblique views of objects given standard orthographic views;*
4. apply shape description and drawing preparation techniques through creation of parametric 3D solid models using Inventor software. Prepare detailed drawing along with all necessary dimensions and annotations, including tolerancing and geometric dimensioning & tolerancing (GD&T);
 - 4.1 *create parts and drawings in Inventor and dimension the drawings;*
 - 4.2 *complete drawings with specific tolerances and geometric dimensioning;*
5. use additional shape description tools of sectioning, auxiliary, detail, break, and broken-out views to complete shape description. Create assembly of many components of the design object and generate exploded assembly and bill of materials;

- 5.1 generate standard views and sectional, auxiliary, detail, broken-out, and break views;
- 5.2 detail individual parts of the assembly, show exploded view, etc.
- 5.3 add bill of materials to the final assembly drawing;

Methods of Evaluation: Final course grades will be computed as follows:

Grading Components	% of final course grade
• Attendance	5%
• Weekly projects and homework	35%
• 2 or more Tests (dates specified by the instructor) Tests will show evidence of the extent to which students meet course objectives...	30%
• Final Exam The comprehensive final exam will examine the extent to which students have mastered the course content.	30%

Academic Integrity: Dishonesty disrupts the search for truth that is inherent in the learning process and so devalues the purpose and the mission of the College. Academic dishonesty includes, but is not limited to, the following:

- plagiarism – the failure to acknowledge another writer’s words or ideas or to give proper credit to sources of information;
- cheating – knowingly obtaining or giving unauthorized information on any test/exam or any other academic assignment;
- interference – any interruption of the academic process that prevents others from the proper engagement in learning or teaching; and
- fraud – any act or instance of willful deceit or trickery.

Violations of academic integrity will be dealt with by imposing appropriate sanctions. Sanctions for acts of academic dishonesty could include the resubmission of an assignment, failure of the test/exam, failure in the course, probation, suspension from the College, and even expulsion from the College.

Student Code of Conduct: All students are expected to conduct themselves as responsible and considerate adults who respect the rights of others. Disruptive behavior will not be tolerated. All students are also expected to attend and be on time for all class meetings. No cell phones or similar electronic devices are permitted in class. Please refer to the Essex County College student handbook, *Lifeline*, for more specific information about the College’s Code of Conduct and attendance requirements.

Course Content Outline: based on the text *Fundamentals of Graphics Communication 6th Ed.*, by Bertoline, Wiebe et al, Publisher: McGraw Hill, 2011.

Class Meeting (80 minutes)	Chapter/Section
1	INTRODUCTION TO BLUEPRINT READING
2	3D Spatial Visualization
3	FREE-HAND SKETCHING/LETTERING Introduction to Drafting Instruments
5	WORKING WITH DRAFTING INSTRUMENTS AND SCALES EXERCISES ON USING THE SCALES
6	Test #1
7 - 9	GEOMETRIC CONSTRUCTIONS WITH instruments Exercises on GEOMETRIC CONSTRUCTIONS
10 - 12	GEOMETRIC CONSTRUCTIONS WITH INVENTOR SOFTWARE
13	Test #2
13 - 14	INTRODUCTION TO MULTI-VIEW (ORTHOGRAPHIC) PROJECTIONS USING FREEHAND & INSTRUMENTS
15 - 16	INTRODUCING TO 3D VISUALIZATION INVENTOR AND SKETCHING Exercises
17 – 18	INTRODUCTION TO AUXILIARY VIEWS AUXILIARY VIEW Exercises USING INVENTOR
19	Test #3
20 – 21	INTRODUCTION TO SECTIONING SECTIONING Exercises USING INVENTOR
22	MORE ON SECTIOAL VIEWS Full, half, offset, align, broken-out views
23	INTRODUCTION TO DIMENSIONING DIMENSIONING Exercises USING INVENTOR
24 -25	DIMENSIONING WITH GEOMETRIC TOLERANCES DIMENSIONING Exercises USING INVENTOR
26	COURSE REVIEW
27	Final Exam