

**ESSEX COUNTY COLLEGE**  
**Engineering Technology & Computer Science Division**  
**ENR 105-01V – Applied Computer-Aided Design**  
**Fall 2022 Syllabus**



**Instructor:** Theophilus Acquaye  
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**Office Hours:** Regular –Monday from 1:00 pm to 1:45 pm,  
Tuesday 4:20 pm to 5:10 pm  
Wednesday from 1:00 pm to 1:45 pm  
By Appt. – Monday from 10:30 am to 11:20 am  
Tuesday 3:00 pm to 3:45 pm

**Classroom:** Room T111  
**Class Meeting Times:** Fridays \_from 10:00 am to 12:50 pm,  
from September 1, to December 21, 2022

**Required Textbook:** AutoCAD and its Applications – Basics- by Shumaker & Madsen,  
26th Edition, G-W Publishers.

**Other Required SUPPLIES:** USB Flash Disk, and Folder.

**Course Prerequisite:** A grade of "C" or better in ENR 103

**Course Co-requisite:** None

**Course Description:** This first course in Computer Aided Design (CAD) uses the latest release of AutoCAD software. Students are introduced to the terminology, use, and capabilities of CAD. Through hands-on instruction, students learn to complete projects using the latest hardware and software. After starting with the beginning draw and edit commands, the course proceeds to cover tolerance dimensioning, printing, the creation of symbols libraries, isometric rendering, three dimensional wire-frame modeling, and blocks with attributes.

**Course Goals:** Upon successful completion of this course, students should be able to:

1. set up a drawing (blueprint) from different disciplines (e.g., mechanical, architectural, civil, etc.), within a CAD system (namely AutoCAD);
2. utilize Draw and Modify tools of AutoCAD to construct and modify different geometries using these tools;
3. employ dimensioning tools of AutoCAD to add dimensions to the blueprint, and setup dimensioning variables of AutoCAD to add tolerances to the dimensions in mechanical design applications;
4. apply Hatch command in drawings involving sectional views to highlight interior complexities of the design;
5. employ Layer command in organizing the drawing according to the different categories of elements present in the design document;
6. build library of symbols and employ the existing ones in electrical/architectural/mechanical, and other applications;
7. communicate with other members of the technical team through using the acceptable industry standards (i.e., ANSI/other applicable industry standards).

**Measurable Course Performance Objectives:**

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

1. Demonstrate knowledge of drawing setup:
  - 1.1 *examine the units of the drawing;*
  - 1.2 *decide on the drawing scale;*
  - 1.3 *set up template files for different disciplines and demonstrate their reuse;*
2. Demonstrate knowledge of drawing and modifying different geometries in AutoCAD :
  - 2.1 *execute different Draw and Modify tools efficiently;*
  - 2.2 *employ these tools to complete a drawing;*
3. Demonstrate knowledge of dimensioning:
  - 3.1 *examine the dimension variables pertinent to the current drawing;*
  - 3.2 *set these system variables to achieve a particular dimension appearance*
4. Demonstrate knowledge of Hatch command:
  - 4.1 *examine the options available under Hatch command;*
  - 4.2 *complete drawings with sectional views to employ the Hatch command;*
5. Demonstrate knowledge of utilizing the Layer command:

- 5.1 *create new layers with different attributes using the Layer command;*
  - 5.2 *place elements on the current layer and move elements from one layer to another;*
  - 5.3 *utilize the Layer command as a drawing organizing tool;*
6. Demonstrate knowledge of creating a symbols library:
- 6.1 *Create blocks and place them in a library file;*
  - 6.2 *Import the blocks in the library to other drawings to complete a design work;*
7. Demonstrate knowledge of efficient communication via drawing/blueprint:
- 7.1 *complete blueprints according to the ANSI/industry standards;*
  - 7.2 *employ dimensioning and annotation techniques consistent with industry standards;*

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

Grading Components	% of final course grade
• Attendance	5%
• Weekly projects and course portfolio	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/Term Project	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:**

<b>Class Meeting (160 minutes)</b>	<b>Chapter/Section</b>
	<b>INTRODUCTION OF COMPUTER-AIDED DESIGN</b>
1	CAD vs. traditional drafting AutoCAD's graphical user interface
2	POINT COORDINATES SPECIFICATION: ABSOLUTE, RELATIVE Introduction to Draw & Modify tools & project #1
3 - 4	<b>GEOMETRIC CONSTRUCTIONS WITH AUTOCAD</b> Using Limits and Mvsetup commands and their options to Set up drawing area (paper size), Organizing Drawing through Layers, <i>Tutorial 2-1 (parts 1 and 2)</i> .
5	<b>Test 1</b>
6	<b>ADDING TEXT AND DIMENSIONS TO YOUR DRAWINGS</b>
7	<b>CONSTRUCTING YOUR OWN TITLE BLOCK</b> Making your block available to other drawings
8	<b>SECTIONING &amp; HATCH COMMAND APPLICATIONS</b> Sectional views in mechanical and civil applications
9	<b>CREATING BLOCKS &amp; SYMBOLS LIBRARY</b> Electrical circuit design using the library of symbols
10	<b>Test 2</b>
11	Creating Tenant Space Designs _ Floor Plans
12	Advance Plotting: Using Plot Styles, Paper Space, Multiple viewports, and PDF Files
13	<b>Test 3</b>
15	<b>ISOMETRIC DRAWING</b> Setting up AutoCAD editor for drawing Isometric views

