CAD I Mechanical 1st semester 23/24

Instructor:
Jeff Wusk
jeff.wusk@fillmorecentral.org

Reference:
Mechanical Drawing, Board and CAD Techniques
Exploring Drafting. Brown; Goodheart Willcox
Drafting for Industry; Goodheart Wilcox

Software:
AutoCAD
Fusion CAD

Course Description:
This class is designed to give students a knowledge and understanding of drafting and design terminology. The fundamentals of Computer Aided Drafting/Design will be covered. Students will be required to design a final mechanical project that consists of three parts. Students will also create a 3d project on the 3D printer. A multimedia will be required over the new advances in CAD

EXPECTATIONS:

Students are expected to:

1. Be on time and in class everyday
2. Be in their assigned seats
3. Participate in the designated daily activity displaying a productive effort.
4. Remain in the assigned area until the bell sounds and the teacher dismisses the class.
5. Be responsible for any of their equipment used in the lab area.
6. Make up all work missed due to an excused absence.
7. Have respect for others working in the lab.
8. Be polite to others working in the lab.
9. Have self-control when working in the lab.
10. Be reliable in their work.
11. Notify teacher immediately in case of an accident, no matter how trivial it may appear.
12. Know the locations of the fire extinguisher and first aid kit.
13. Notify the instructor immediately if a machine is not working properly.
14. Most of all have FUN!

Course objectives:

TLW demonstrate the proper way to dimension.
TLW identify drafting tools and demonstrate their proper use.
TLW evaluate and employ effective methods of communication.
TLW utilize electronic and graphic systems to send, receive, and process information.
TLW analyze the interaction of humans and technology.
TLW solve problems effectively as an individual and as a member of a group.
TLW employ higher-order thinking skills for solving problems.
TLW utilize ingenuity and creativity in the use of design.
TLW examine career opportunities related to CAD.
TLW demonstrate the ability to develop and comprehend oral and written directions.
TLW analyze the relationship of drawings with other drawings.
TLW compare and contrast mechanical tools of old and new.
TLW understand and recognize the principles of good design, layout, and drafting techniques.
TLW understand the universal language of design in our industry today.
TLW draw isometrics, orthographic, multi-view, sectional, one point, two point, and auxiliary.
TWL apply different measuring techniques.
TLW use sophisticated three-dimensional modeling software to communicate the details of products.
TLW demonstrate proper usage of CAD software.
TLW assemble parts in a virtual world.
TLW prepare a final project and presentation.
TLW examine differences and similarities of various cultures as related to content area.

Course Content:

- Careers
- Different types of drawings
  - Sketching
  - Drafting tools
  - Multi-views
  - Dimension
  - Sectional
  - Auxiliary
  - Isometric
  - Oblique
  - Perspective
  - Working Drawings
  - Final project consisting of three or more parts
  - Different line styles
  - Paper sizes
- Plotting/3D printing

Methods of Evaluation

- Summative 80%
  - Board drafting test
  - Final drawings
  - CAD Software Tests
  - Essential words test
  - Final

Formative 20%

- Unit reviews
- Multimedia x1
- Technical writing- how to steps- 100 steps= 100%
- Practice drawings
- Worksheets

For a student to be granted a retake, teacher approved remediation must have taken place. We may do the remediation during class study time, before school (7:45-8:10), after school (3:35 – 3:45). It is the student's responsibility to make arrangements for the retake.

Outline Mechanical

1. Rules, Expectations
2. Why study drafting/design, Careers in drafting/design
3. Sketching
4. Drafting tools demonstration
5. Multi-view drawing
6. Dimension rules
7. Sectional view worksheets
8. Auxiliary view worksheets
9. Pictorial Drawing worksheets (isometric, oblique, perspective)
10. Overview of entering commands, opening templates, Units
11. Basic drawing commands (line, circles, arcs, ellipses, rectangles, polygons), grips and erasing an object, zoom commands, drawing practice
12. Chamfers, Fillets, multiline commands, drawing practice
13. Copying, mirroring, rectangular array, circular array, drawing practice
14. Section command and drawing practice
15. Auxiliary views
16. Dimension
17. Extruding, shading, 3D orbit, Revolve,
18. Creating a 3D model, using a Lego, Students will use a caliper to measure a Lego, drawing commands, extruding, shelling, holes,
19. Assembly commands
20. Design principles
21. Invention principles
22. Print a 3D object that they designed
23. Final project work must have three parts. A title page, parts page, assembly page, working drawing page