***DRAFTING***

**Course Description:** Drafting is the universal language of industry, as it is used in technical fields such as architecture, electrical, machining, and mechanical technologies. In this course, students will become familiar with the fundamentals of drafting and the significance it has in our present way of life. Areas to be covered include sketching, mechanical drawing, pictorials, views of objects, and dimensioning. Students will use conventional techniques and/or CAD to complete drawings.

**Course Expectations:** This course is designed as an introduction to drafting and design.  Students interested in the fields of interior design, manufacturing, construction, military, graphic design, and engineering would benefit from this course of study.  This course introduces drafting as the universal language of graphic communication and lends itself to everyday application.

**Course Goals and Objectives**

I.  The student will construct freehand sketches.

II.  The student will effectively use drafting hardware by demonstrating accuracy, proper technique, neatness and speed.

III.  The student will letter according to lettering principles and techniques.

IV.  The student will construct accurate geometric constructions on drafting problems.

V.  The student will construct three-dimensionally shaped objects.

VI.  The student will apply dimensions to drafting problems according to dimensioning standards

VII.  The student will plan and draw mechanical drawings.

VIII.  The student will construct pictorial drawings from orthographic views and dimensions.

IX.  The student will construct section views with dimensions.

X.  The students will utilize CADD software used in industry to construct and plot various drawings.

**Enduring Understandings:** Drafting is a fundamental communication tool within all industries.   
Standards in drafting are universal in a global economy.

Taking a conceptual idea to a universal working drawing requires knowledge and understanding of the drafting industry.   
Successful inventors can convey their ideas on paper.   
Autocad software allows people to more accurately convey an idea in a more professional and timely manner.

A working drawing is complex and has all the information needed to bring a product to market.   
There are many careers related to the engineering and design field.

**Essential Questions:** Why does a student need to learn drafting?   
How will drafting impact your daily life?   
Why should communication be universal in the drafting field?   
In what ways can drafting express communication of ideas and concepts?   
Why is it important to convey your idea on paper?   
What are the pros and cons of technological progress?   
In what ways can technology enhance expression and communication? In what ways might technology hinder it?   
How do manufacturing processes impact the design process?   
Why study drafting and design?

**Essential Vocabulary:** Alphabet of lines, Sketching, Working drawing, Geometric construction, Proportion, Lettering, Line qualities, Surfaces, Projection, Height, Width, Depth, Plane, Visualization, Aligned dimensioning, Unidirectional dimensioning, Chained dimensioning, Leader, Notes, Machined surfaces, Tolerance, Isometric drawing, Obliques, Sectioning, Cross hatch patterns, Cutting planes, Icons, Polygon, Drag, Hatch, Mirror, Fillet, Chamfer, Extend, Array, Scale, Zoom, Regenerate, Assembly, Process, Prototype, Machine tools, Exploded drawing, Heat treating, Welding, Grid,Snap, Object snap, Ortho, Isometric, Viewing plane, Plot, X, Y and Z Coordinates, Trim, Axis, Industrial designer, Design drafter, Engineering fields, Educational requirements, Occupational outlook

***Units of Instruction***

**1. Drafting Fundamentals**

Students will be able to describe how drafting is used as a communication, problem-solving and design tool.  Students will be able to apply this knowledge to the solution of simple problems with the use of drafting tools and equipment, technical sketching, proper lettering technique, and geometric construction.

**2. Drafting Techniques and Skills**

Students will be able to: (a) draw multi-view drawings of objects using the orthographic projection method, (b) utilize basic principles of dimensioning, (c) solve and create sectional views, (d) develop 3-dimensional pictorial drawings, (e) generate a finished drawing.

**3. Computer Assisted Design and Drafting (CADD)**

Students will understand the importance of computers in design and manufacturing.  They will also be able to identify the CADD components and understand their function in a CADD system.  Computers wil be used by students to generate working drawings and conveying design concepts.

**4. Drafting and Design Applications**

Students will gain an understanding of the basics of manufacturing processes and how they are communicated through drafting.  They will also understand the interaction between the design and manufacturing process.  By the end of this unit, students will then be able to generate a working drawing that conveys all neccessary information to bring an idea to market.

**5. Careers and Opportunities**

Students will be able to site how drafting is used to communicate ideas and plans.  They will also be able to list careers in drafting and related technical fields and list the duties and requirements of these career fields.