**CTE Engineering Design and Presentation – Course Syllabus**

**Course Title:** Engineering Design and Presentation

**Course Description:**

This course introduces students to the engineering design process and the tools used in technical communication, including sketching, technical drawing, computer-aided design (CAD), and engineering presentations. Students will use industry-standard software to model, analyze, and present solutions to real-world engineering problems. Emphasis is placed on innovation, problem-solving, technical accuracy, and collaboration.

**Course Objectives:**

By the end of this course, students will:

* Apply the engineering design process to solve technical problems.
* Communicate design ideas using technical drawings and CAD software.
* Understand and apply geometric and dimensioning standards (GD&T).
* Analyze and improve design solutions using feedback and testing.
* Present engineering projects using visual, verbal, and written methods.
* Build a digital portfolio of projects and presentations.
* Collaborate effectively as part of an engineering team.

**Units of Study:**

| **Unit** | **Topic** |  |
| --- | --- | --- |
| 1 | Engineering Design Process Review |  |
| 2 | Freehand Sketching & Technical Drawing |  |
| 3 | CAD Basics (2D & 3D Modeling) – Autodesk Inventor, Fusion 360, or SolidWorks |  |
| 4 | Dimensioning, Tolerances & GD&T |  |
| 5 | Design Projects & Prototyping (3D Printing or Manual) |  |
| 6 | Material Properties & Selection |  |
| 7 | Mechanical Systems & Simple Mechanisms |  |
| 8 | Engineering Presentations & Technical Reports |  |
| 9 | Capstone Project – Team Engineering Challenge |  |

*Each unit includes individual and group projects with presentations and technical documentation.*

**Instructional Materials & Tools:**

* Engineering notebook (physical or digital)
* Textbook/Resources: [District-approved or instructor-provided materials]
* Software: Autodesk Inventor, Fusion 360, TinkerCAD, or SolidWorks
* Tools: Calipers, rulers, 3D printers, basic hand tools
* PPE as needed (safety glasses, gloves)

**Grading Policy:**

| **Category** | **Weight** |
| --- | --- |
| Classwork & Daily Assignments | 25% |
| Projects & Design Challenges | 40% |
| Quizzes & Tests | 20% |
| Presentations & Participation | 15% |

**Late Work & Retake Policy:** Follows school/district guidelines.

**Classroom Expectations:**

* Maintain safety procedures at all times.
* Respect people, tools, and ideas.
* Document your work thoroughly in an engineering notebook.
* Collaborate respectfully and effectively in teams.