**Principles of Applied Engineering – Syllabus**

**Course Title:** Principles of Applied Engineering

**Course Description:**

This course provides students with an overview of the various fields of science, technology, engineering, and mathematics (STEM) and their interrelationships. Students will explore engineering careers, technical communication, the engineering design process, and foundational concepts in mechanical, electrical, fluid, and thermal systems. Hands-on projects and teamwork are core components.

**Course Objectives:**

By the end of this course, students will:

* Understand the engineering design process.
* Explore various fields within engineering (civil, mechanical, electrical, etc.).
* Develop technical drawing and CAD skills.
* Apply basic physics concepts related to engineering (force, motion, energy, etc.).
* Practice problem-solving, collaboration, and critical thinking.
* Use tools, materials, and machines safely and effectively.

**Units of Study:**

| **Unit** | **Topic** |  |
| --- | --- | --- |
| 1 | Introduction to Engineering & STEM Careers |  |
| 2 | Engineering Design Process |  |
| 3 | Technical Communication & Documentation (Sketching, Technical Drawing, CAD) |  |
| 4 | Engineering Systems & Control (Electrical, Mechanical, Fluid, Thermal) |  |
| 5 | Materials & Safety (Including OSHA and lab safety practices) |  |
| 6 | Tools, Machines & Measurement |  |
| 7 | Team-Based Engineering Project |  |
| 8 | Robotics & Automation (optional or elective extension) |  |
| 9 | Final Capstone Project & Presentation |  |

*Units may include guest speakers, field trips, or virtual tours.*

**Instructional Materials:**

* Engineering notebook or digital portfolio
* Textbook/Resources: [List any district-approved texts or online platforms]
* Software: Autodesk Inventor / Fusion 360 / TinkerCAD (or other CAD tools)
* Supplies: Safety glasses, measuring tools, basic hand tools, Arduino kits (optional)

**Grading Policy:**

| **Category** | **Weight** |
| --- | --- |
| Classwork & Daily Assignments | 25% |
| Quizzes & Tests | 25% |
| Projects & Labs | 35% |
| Participation & Safety | 15% |

Late work and retake policies follow school/district guidelines.

**Classroom Expectations:**

* Follow all safety rules and wear PPE when required.
* Participate actively in all activities.
* Respect tools, equipment, and peers.
* Follow the engineering design process for all projects.
* Maintain an organized engineering notebook or digital portfolio.